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May 13, 2015

VIA ELECTRONIC FILING

Mrs. Gail Mount, Chief Clerk
North Carolina Utilities Commission
430 North Salisbury Street
Raleigh, North Carolina 27603

Re: Docket No. E-22, Sub 464

Dear Mrs. Mount:

In accordance with Ordering Paragraph Seven of the North Carolina Utilities Commission's May 7, 2015, *Order Approving Revised Cost Recovery and Incentive Mechanism and Granting Waiver*, Virginia Electric and Power Company, d/b/a Dominion North Carolina Power hereby files its recently completed, system-wide Energy Efficiency Potential Study.

Please do not hesitate to contact me if you have any questions. Thank you for your assistance in this matter.

Very truly yours,

s/ E. Brett Breitschwerdt

Enclosures

DNV·GL

Dominion Energy Efficiency Potential Study

Dominion Virginia Power

Prepared by KEMA, Inc.

January 9, 2015

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Tables

Figures

Glossary

Achievable potential: The amount of savings that would occur in response to specific program funding and measure incentive levels. Savings associated with program potential are savings that are projected beyond those that would occur naturally in the absence of any market intervention.

Applicability factor: The percentage of the building stock that has a particular type of equipment or for which an efficiency measure applies. For example, the applicability factor for a tankless electric water heater (compared to a base standard electric water heater) is the percentage of homes with electric water heaters. The applicability factor for high-efficiency clothes washers as an electric water heating measure is the percentage of homes with electric water heating that also have a clothes washer. For base measures, this is sometimes referred to as the equipment saturation.

Business-as-usual (BAU): Represents a continuation of current activities or trends. For utility programs, it denotes a scenario in which program marketing and administrative budgets are kept constant in real terms, and incentive levels are kept constant as a percentage of incremental costs.

Baseline analysis: Characterizes how energy consumption breaks down by sector, building type, and end use.

Base measure: The equipment against which an efficiency measure is compared.

C&I: commercial and industrial.

CBECS: EIA Commercial Buildings Energy Consumption Survey

CFL: compact fluorescent lamp.

CDA: Conditional Demand Analysis.

Coincidence factor: Utility coincidence factors are the ratio of actual demand at utility peak to the average demand, as calculated from the load shape. These factors vary by market segment or building type, end use, and by time-of-use period.

Cumulative annual: Savings occurring in a particular year that are due to cumulative program activities over time. For example, if a program installs one high-efficiency widget in year 1 of the program, two in year 2, and five in year 3, the cumulative annual savings in year three would be the savings accruing on all eight surviving units in place in year 3, regardless of what year they were installed. Cumulative annual savings does account for equipment retirement. In the example above, widgets are assumed to have an effective useful life of more than three years. If the equipment in the above example were doohickeys, which only have a two-year effective useful life, the year 1 doohickey would have retired at the end of year 2, so only the units sold in years 2 and 3 would contribute to year 3 cumulative annual savings.

Demand-side management (DSM): An electric system must balance the supply of electricity with the demand for electricity. Demand-side management (DSM) programs focus on managing the demand side of this balance through energy-efficiency and load management.

DOE: Department of Energy.

Economic potential: The technical potential of those energy conservation measures that are cost effective when compared to supply-side alternatives.

Effective useful life (EUL): A measure of the typical lifetime of an efficiency measure. Technically, it is the age at which half of the units have failed and half survive. In DNV GL's ASSYST™ model, all measures are assumed to remain in place until the end of their effective useful lives and then retire.

End-use energy intensity (EUI): Energy use per unit of building stock having a specific end use. For example, the EUI for commercial electric heating is the amount of electricity used for heating divided by the number of square feet of floor space that are electrically heated. EUI differs from EI in that it accounts for the equipment type's saturation. If the saturation of the equipment type is low, the EUI will be much higher than the EUI.

Energy intensity (EI): Energy use per unit of building stock. For example, the EI for commercial electric heating is the amount of electricity used for heating divided by the total square feet. EI differs from EUI in that it does not account for the saturation of the equipment. If the saturation for the equipment type is low, EI will be much lower than the EUI.

EUI adjustment factor: Because equipment efficiencies can change over time independent of program activities, due to either naturally occurring technological changes or external intervention, such as appliance standards, the efficiency of new equipment may differ from the typical efficiency of the equipment stock. The EUI adjustment factor is the ratio of new standard efficiency equipment's energy use to the average energy use of units in the equipment stock.

Feasibility factor: The fraction of the applicable floor space, or households, that is technically feasible to convert to a DSM technology, from an engineering perspective.

Free rider: A program participant who would have invested in an energy efficiency measure even without the intervention of the program. Free riders add to program costs but do not contribute to net energy savings.

Free-rider energy savings: The subset of naturally occurring energy savings for which the utility pays incentives or provides other program benefits. These savings are included in gross program savings but not in net program savings.

Gross program savings: The total savings for all measures installed under the program, including those that would have been installed even without program intervention (free riders). Gross program savings equals net program savings minus free ridership.

HP: horsepower. A metric for the power of a motor.

HVAC: heating, ventilation and air conditioning. These space-conditioning measures are often discussed as a group and are referred to by the abbreviation HVAC, usually pronounced H-vac.

Incomplete factor: The fraction of the applicable floor space, or households, that has not yet been converted to the particular energy-efficiency technology.

Incremental cost: The additional cost required to purchase an efficiency measure compared to base equipment.

kW: kilowatts, 1,000 watts. A measure of electric power or electricity demand.

kWh: kilowatt-hour. A measure of electrical energy.

LED: light-emitting diode. LEDs are semiconductor light sources. They have been in use for decades as indicator lights; they are increasingly being used for general-purpose lighting. They are highly efficient compared to incandescent lamps.

Line losses: When electricity is transmitted over the transmission and distribution system, some of the electricity is dissipated as heat due to resistance in the transmission lines or inefficiencies in transformers in the distribution system. As a result, the amount of electricity delivered to consumers is less than the amount produced at the generator. These are referred to as line losses or transmission and distribution losses.

MW: megawatt, one million watts. A measure of electric power or electricity demand.

MWh: megawatt-hour, equal to 1,000 kWh. A measure of electrical energy.

NAICS: The North American Industry Classification System is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

Naturally occurring energy savings: The amount of savings estimated to occur as a result of normal market forces, that is, in the absence of any utility or governmental intervention.

Net program savings: Program savings above and beyond naturally occurring levels. Net savings exclude free-rider energy savings.

Net-to-gross: The ratio of net program savings to gross program savings.

Program potential: This term is used interchangeably with achievable potential.

RASS: Residential Appliance and Saturation Survey.

RECS: EIA Residential Energy Consumption Survey.

Replace on burnout (ROB): A measure that is installed when the previous equipment reaches the end of its useful life. ROB measures penetrate the market gradually as the existing stock of equipment turns over due to equipment age and eventual failure.

Retrofit: A measure that is installed to achieve energy savings independent of the condition of the existing equipment. This includes measures that affect the energy use of other equipment, such as insulation to reduce heating costs. It also includes replacing equipment with higher efficiency equipment before the end of existing equipment's useful life, for example replacing T12 fluorescent lighting in an office with higher efficiency T8s. Retrofits can be done at any time and therefore have the potential to penetrate the market more quickly than ROB measures.

Technical potential: The savings that would result from complete penetration of all analyzed measures in applications where they were deemed technically feasible, from an engineering perspective.

Technology saturation: A factor that relates the cost units used in the model for a measure to its savings units. For example, the cost of a chiller may be expressed in dollars per ton, though the savings are in kWh per square foot. The technology saturation then represents the number of tons of cooling per square foot.

Time-of-use (TOU) period: The Assyst model can analyze energy use by up to six time-of-use periods. These periods are used to characterize the relationship between energy and peak demand, which varies over both season and time of day, and to capture differences in avoided costs and rates over different time periods. TOU periods usually capture differences between summer/winter and peak/off-peak but can also capture shoulder season, mid-peak, or super peak demand, depending on the needs of a utility.

Total resource cost test (TRC): A benefit-cost test that compares the value of avoided energy production and power plant construction to the costs of energy efficiency measures and the program activities necessary to deliver them. The values of both energy savings and peak-demand reductions are incorporated in the TRC test.

UEC: unit energy consumption.

1. EXECUTIVE SUMMARY

Dominion Virginia Power (Dominion) engaged DNV GL to assess the potential for electric energy (kWh) and demand (kW) savings from company-sponsored demand side management (DSM) programs over a ten-year horizon. The assessment produced:

- Estimates of the magnitude of potential savings on an annual basis under two program design scenarios
- Estimates of the costs associated with achieving those savings
- Calculation of the cost-effectiveness of the programs based on the estimates above.

DNV GL used its proprietary model, DSM ASSYST™, to produce these outputs.

DNV GL assumed an extensive data collection effort prior to this study to support the development of inputs required for the energy efficiency modeling effort. This included mail surveys of residential and commercial customers; a residential conditional demand analysis; and review, interpretation, and analysis of data provided to DNV GL by Dominion staff. The result of these efforts was a set of detailed and comprehensive model inputs that were specific to Dominion's service territory.

1.1 Scope and Approach

This section discusses the scope and approach of the energy efficiency modeling efforts.

1.2 Energy Efficiency Potential

This study estimated three basic types of energy efficiency potential:

- Technical potential: The complete penetration of all measures analyzed in applications where they were deemed technically feasible from an engineering perspective.
- Economic potential: The technical potential of those energy efficiency measures that are cost-effective when compared to supply-side alternatives.
- Achievable program potential: The amount of savings that would occur in response to specific program funding, marketing, and measure incentive levels. In this study we looked at the potential available under two funding scenarios: 50 percent incentives and 75 percent incentives.[1]

DSM ASSYST™ develops an estimate of naturally occurring savings, i.e., those savings that are projected to result from normal market forces in the absence of any intervention by utility sponsors. These savings are not included in the estimate of achievable program potential.

The method used for estimating potential is a "bottom-up" approach, in which energy efficiency costs and savings are assessed at the customer segment and energy efficiency measure levels. For cost-effective measures (based on the total resource cost, or TRC, test), program savings potential was estimated as a function of measure economics, rebate levels, and program marketing and education efforts. The modeling approach was implemented using DNV GL's DSM ASSYST™ model. This model

[1] These scenarios reflect the percentage of incremental measure cost that is assumed to be paid in customer incentives.

allows for efficient integration of large quantities of measure, building, and economic data to determine energy efficiency potential.

For this study, DNV GL estimated the results of program efforts under two incentive scenarios. One scenario assumed that 50 percent of incremental measure costs are paid out by Dominion in customer incentives. The second scenario allowed for incentives covering 75 percent of incremental measure costs. Program marketing costs were scaled upward across scenarios to reflect increasing program effort, and program administration costs were adjusted across scenarios proportional to achievable program energy savings. These scenarios are referenced, respectively, as the "50 percent scenario" and "75 percent scenario." Program energy and peak-demand savings, as well as program cost effectiveness, were assessed under both funding scenarios.

The study did not address incremental improvements in energy efficiency due to the ongoing evolution and gradual improvement of existing technologies. These improvements will lead to increased energy efficiency potential over time. Nor did the study address the ongoing tightening of equipment and building standards (beyond those known to be effective within the study period), which will lead to a decrease in energy efficiency potential over time. The improvements in energy-efficient technologies provide opportunities for additional program savings over a static base-case technology. However, as the market matures, codes and standards are tightened to raise base-case efficiency, and the result is subsequent reduction in program savings opportunities to levels that were available prior to the improvements in leading technology efficiency. We feel that the effects of gradual technology improvement and ongoing tightening of codes and standards offset each other over an extended period.

1.3 Results

Table 1-1 presents the overall results of the energy efficiency potential analysis for the 2014-2023 period. All efficiency results include line losses and technical and economic potential includes savings from opt-out/exempt/non-jurisdictional customers while the program savings estimates do not.[2]

Table 1-1: Summary of Cumulative Energy Efficiency Savings

Energy Efficiency 2014-2023	Technical Potential	Economic Potential	Program Savings Potential: 75% Incentives	Program Savings Potential: 50% Incentives
Energy Savings- GWh	28,308	16,599	3,782	2,111
Demand Savings- MW	7,282	4,026	698	370
Program Costs- Real, $ Million			$1,225	$495

Key takeaways from this study are as follows:

- The amount of achievable program potential in Dominion's service territory is higher than the planning assumptions in its current DSM portfolio. However, compared to similar studies in other jurisdictions using the DSM ASSYST™ model, the percentage of achievable potential as a proportion of base energy consumption is less than typical. A comparison of savings potential

[2] Opt-out, exempt, and non-jurisdictional customers do not have to participate in Dominion's DSM programs and were excluded from the program savings analysis accordingly

estimates from other jurisdictions is shown in Table 1-2 and an overview of achievable program potential is included in section 0.

- Existing and planned Dominion programs cover the majority of cost-effective measures analyzed as part of this study, but potential exists in measures not currently included in Dominion's DSM programs. For example, Dominion programs cover a large portion of cost-effective measures in non-residential lighting and HVAC, but significant potential remains in residential appliance upgrades and refrigerator recycling which are not currently offered in Dominion's programs. Information about technical and economic potential by end use can be seen in section 0.
- LED upgrades account for a significant proportion of residential achievable potential over the next ten years. More information about achievable savings in the residential sector can be found in section 0.
- When viewing the range of cost-effective measures there is a clear distinction between those that are cost effective and those that are not. As seen in the supply curves in section 5.3.10, a large amount of cost effective potential exists at a low cost per kWh, but the curve sharply increases around $0.30 per kWh. As a planning tool, the findings of this study can be helpful in identifying the cost-effective measures used in program design.

1.3.1 Aggregate Base Energy Efficiency Potential Results

Estimates of electric energy savings potential are presented in Figure 1-1, below. These savings reflect cumulative annual savings over a 10-year period potential. This can also be looked at as the annual savings potential of all installations through 2023. Technical potential is estimated at 28,308 GWh per year by 2023. Economic potential is estimated at 16,599 GWh by 2023. Achievable program potentials range between 3,782 GWh per year by 2023 in the 75 percent incentive scenario to 2,111 GWh per year for the 50 percent incentive scenario. Economic potential for energy savings is estimated to be 22 percent of base 2023 energy use; achievable potentials range from three percent of base usage in the 50 percent incentive case to five percent of base energy use in the 75 percent incentive case.[3] These results suggest that while obtaining all technical and economic potential will be difficult given Dominion's avoided cost structure and limited history of comprehensive DSM programs in Virginia and North Carolina; there is additional potential available from measures not currently in Dominion's DSM portfolio. While Dominion began offering DSM programs to customers five years ago, this is limited compared to other jurisdictions that have offered programs for more than a decade. Furthermore, Dominion's past programs have not touched all end uses, so additional opportunities to start programs exist in those markets.

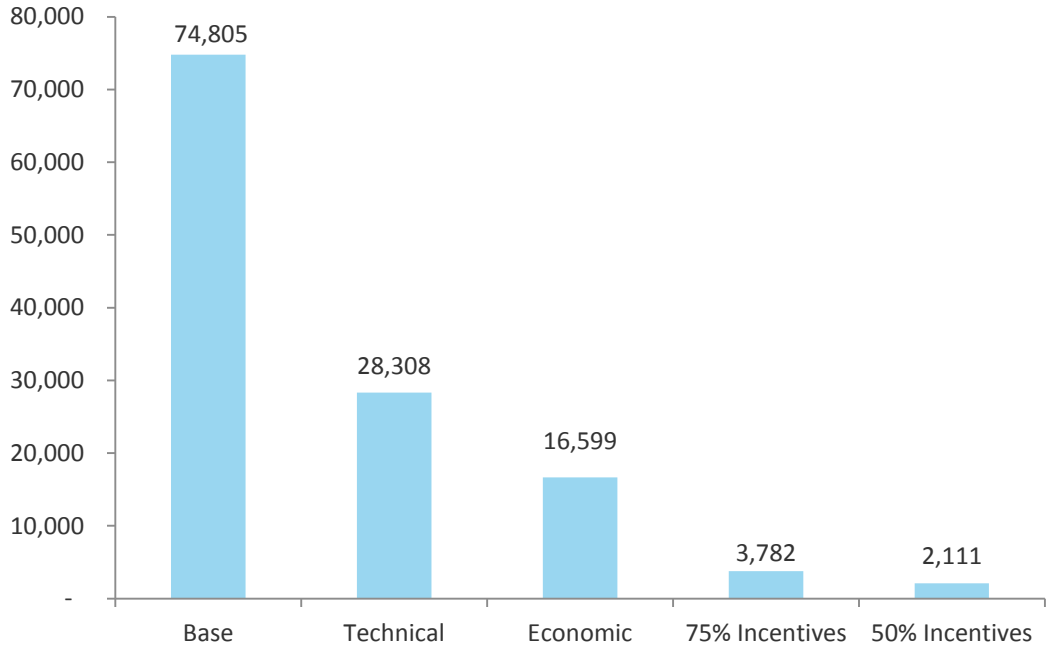
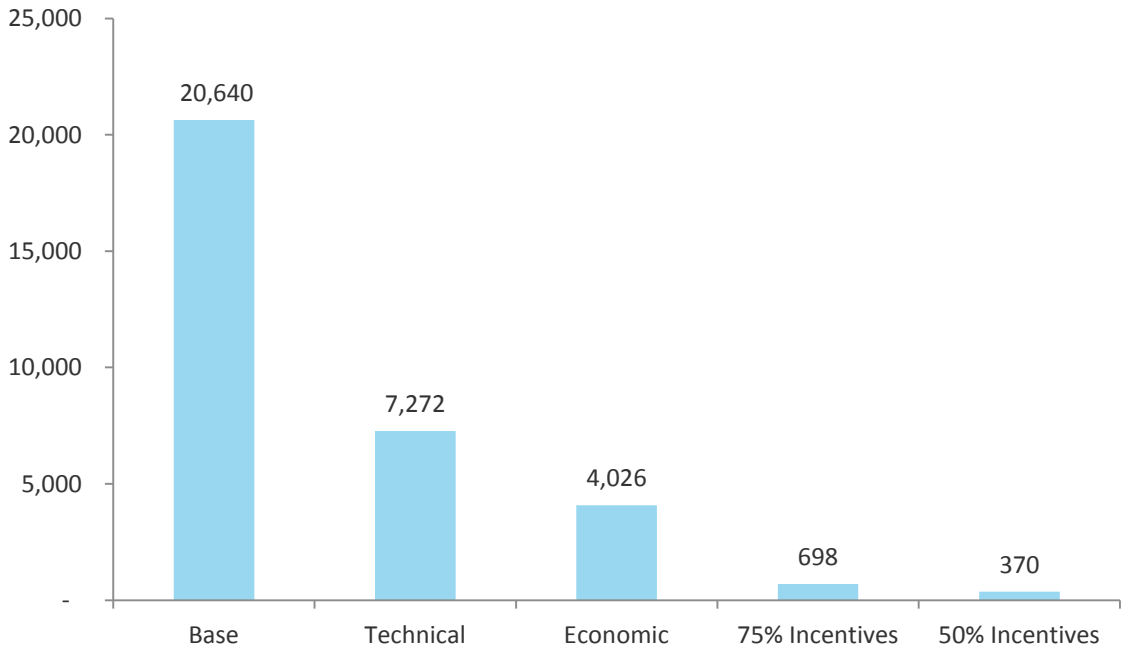


Figure 1-1: Estimated Electric Energy Efficiency Savings Potential, 2014-2023[4]

[3] Savings under the 75% incentive scenario are six percent of base non-residential and residential consumption (excluding base consumption from opt-out/exempt/non-jurisdictional customers). Savings from the 50% scenario are 3% of residential and non-residential base consumption.

[4] Note that base use includes 10,380 GWh associated with opt-out, exempt, and non-jurisdictional customers within Dominion's service territory. Technical and Economic Potential includes these customers but program potential does not.

Cumulative 10-year peak demand savings potential estimates are provided in 1-2.[5] Technical potential is estimated at 7,282 MW and economic potential is estimated at 4,026 MW. Achievable program potential ranges between 698 MW in the 75 percent incentive case down to 370 MW in the 50 percent case. Economic potential for peak demand savings is estimated to be 20 percent of base 2023 peak demand; achievable potentials range from two percent of base peak demand in the 50 percent incentive case to three percent of base peak demand in the 75 percent incentive case. All results include line losses.



1-2: Estimated Peak Demand Savings Potential, 2014-2023[6]

[5] The estimates of peak demand savings are from the installation of energy efficiency measures and do not include demand savings from demand response technologies such as direct load control or dynamic pricing.

[6] Base use also includes 3,361 MW associated with opt-out, exempt, and non-jurisdictional customers within Dominion's service territory. Technical and Economic Potential includes these customers but program potential does not.

Table 1-2 compares the results of potential studies recently conducted by DNV GL with the DSM ASSYST™ model.[7,8,9] Achievable energy savings potential as a percent of base consumption available in Dominion's territory is low compared to estimates from other jurisdictions that analysed savings from 50 percent and 75 percent scenarios.

Table 1-2: Comparison of Energy Savings Potential as a Percent of Base Consumption

Jurisdiction	Years of Analysis	Sectors	Economic Potential	Achievable Potential Scenario	
				50% Incentives	75% Incentives
Xcel Minnesota	2011-2020	Residential, Commercial, Industrial	20%	10%	11%
Xcel Colorado	2010-2020	Residential, Commercial	23%	5.50%	8.5%
Austin Energy	2012-2020	Residential, Commercial, Industrial	20%		9.8%
Dominion	2014-2023	Residential, Non-Residential	22%	3%	6%

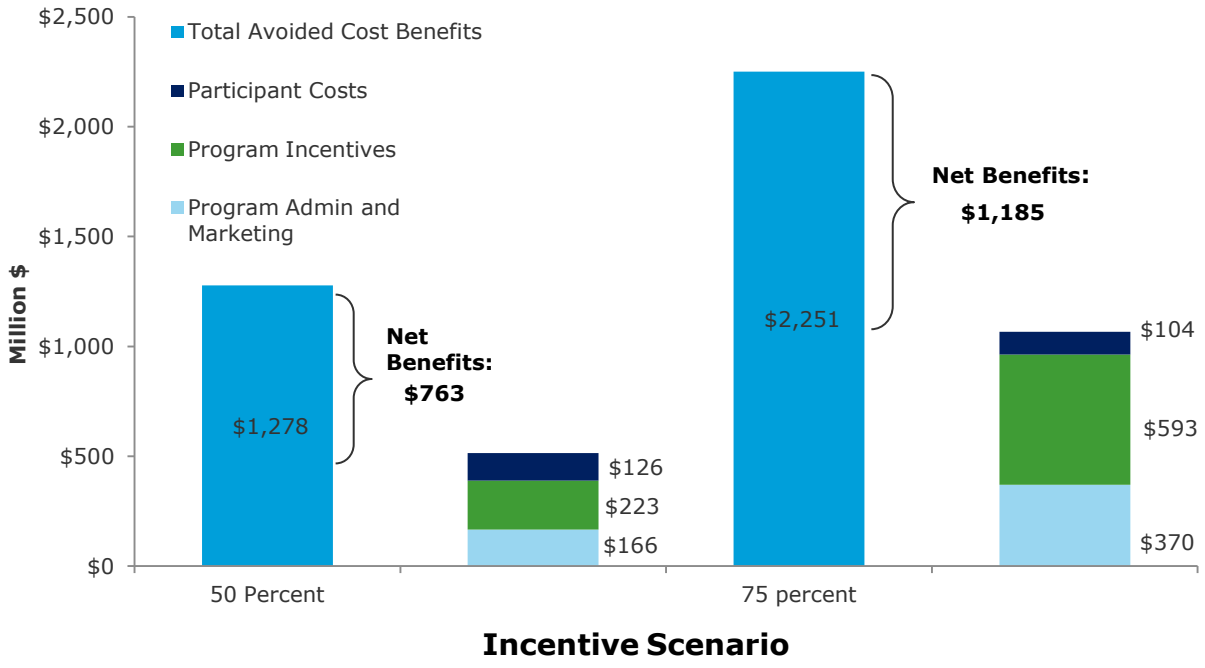
[7] Xcel Minnesota: http://www.xcelenergy.com/staticfiles/xe/Regulatory/Regulatory%20PDFs/MN-DSM/MN-DSM-Market-Potential-Assessment-Vol-1.pdf

[8] Xcel Colorado: https://www.xcelenergy.com/staticfiles/xe/Regulatory/Regulatory%20PDFs/CODSM-Report.pdf

[9] Austin Energy: https://austinenergy.com/wps/wcm/connect/15a83f48-4741-41f9-af6d-ff27a064bd03/2012DSMmarketPotentialAssessment.pdf?MOD=AJPERES

Error! Reference source not found. depicts the estimated costs and benefits under each funding scenario from 2014 to 2023. The present value of program costs (including program incentives and program admin and marketing) is $389 million under the 50 percent incentive scenario and $963 million under the 75 percent incentive scenario.

The present value of total avoided cost benefits is $1,278 million under 50 percent incentives and $2,251 million under 75 percent incentives. Finally, all scenarios have positive net benefits: the present value of net avoided cost benefits, i.e., the difference between total avoided cost benefits and total costs (which include participant costs in addition to program costs), is $763 million under 50 percent incentives and $1,185 million under 75 percent incentives. As a result of dramatically increasing incentive costs for higher incentive scenarios, increases in program costs outpace the increases in benefits as one moves to higher incentive scenarios. As modeled, all program participants receive the same incentives in a given scenario, even though some customers would have accepted lower incentives.



1-3: Benefits and Costs of Energy Efficiency Savings—2014-2023*

* Present value of benefits and costs over normalized 20-year measure lives; nominal discount rate is 7.45 percent, inflation rate is 1.87 percent.
* PV (present value) of benefits and costs is calculated for 2011-2020 program years using a nominal discount rate = 7.4 percent, and an assumed inflation rate = 1.9 percent.

Both of the funding scenarios are cost-effective based on the TRC test, which is the test used in this study to determine program cost-effectiveness. The TRC benefit-cost ratios for Dominion's service territory are 2.5 for the 50 percent scenario and 2.1 under the 75 percent scenario.[10] The high TRC in both scenarios is largely driven by LED installations, particularly in the residential sector. Key results of our efficiency scenario forecasts from 2014 to 2023 are summarized in Table 1-3.

Table 1-3: Summary of Achievable Potential Results—2014-2023*

Result - Programs	Program Scenario:	
	50 percent Incentives	75 percent Incentives
Total Market Energy Savings - GWh	4,195	5,809
Total Market Peak Demand Savings - MW	723	1,042
Program Energy Savings - GWh	2,111	3,782
Program Peak Demand Savings - MW	370	698
Program Costs - Real, $ Million		
Administration	$158	$397
Marketing	$54	$74
Incentives	$284	$754
Total	$495	$1,225
PV Avoided Costs	$1,278	$2,251
PV Annual Program Costs (Adm/Mkt)	$166	$370
PV Net Measure Costs	$349	$697
Net Benefits	$763	$1,185
TRC Ratio	2.5	2.1

*PV (present value) of benefits and costs is calculated over a 20-year normalized measure life for 2014-2023 program years, nominal discount rate = 7.45 percent, inflation rate = 1.87 percent; GWh and MW savings are cumulative through 2023.

[10] This report presents TRC as the cost-benefit test. Under Virginia Law, the RIM, UCT, and PCT are also considered for regulatory approval.

1.3.2 Achievable Savings Potentials over Time

Figure 1-4 shows our estimates of achievable program potential energy savings over time (peak demand savings follow a similar pattern but are not shown). Naturally occurring savings are also shown to provide a picture of total market potential. Savings continue to grow over time, again largely due to a large impact from LEDs in the analysis.

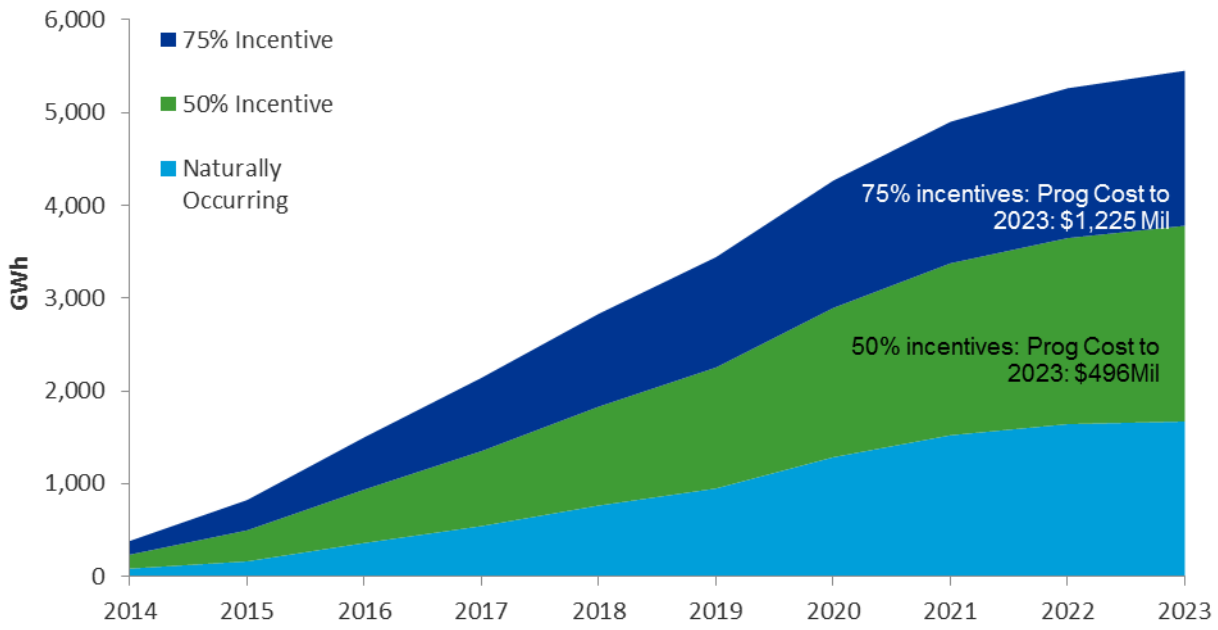


Figure 1-4: Achievable Electric Energy Savings: All Sectors

1.3.3 Base Energy Efficiency Results by Sector

Cumulative net achievable potential estimates by sector for the period of 2014-2023 are presented in Figure 1-5 and Figure 1-6. These figures compare the residential and non-residential sector results for each funding scenario. All opt-out, exempt, and non-jurisdictional customers were excluded from this analysis.

Under the program assumptions developed for this study, achievable energy and demand savings under the 50 percent and 75 percent scenarios are highest for the residential sector.

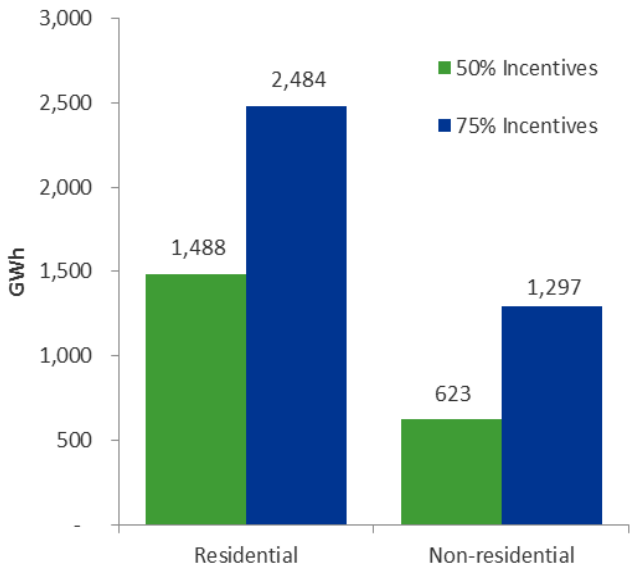


Figure 1-5: Net Achievable Energy Savings (2023) by Sector—GWh per Year

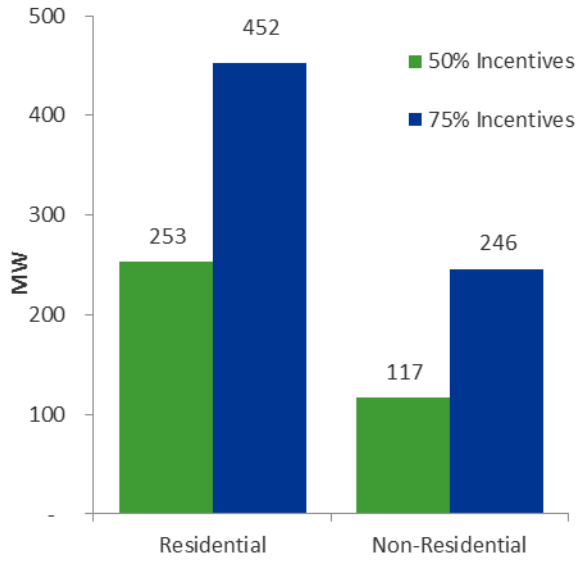


Figure 1-6: Net Achievable Peak-Demand Savings (2023) by Sector—MW

2. INTRODUCTION

Dominion retained DNV GL to conduct this demand side management (DSM) market potential study which was based on existing and proposed customer end-use energy efficiency measures and programs. The study provides estimates of potential electricity and peak demand savings from energy efficiency measures in Dominion's Virginia and North Carolina service territories, including technical, economic, and achievable program potential. The analysis also presents the technical and economic potential associated with opt-out, exempt, and non-jurisdictional customers in Dominion's service territory. These customers were not included in the estimation of program achievable potential as they do not participate in Dominion-sponsored programs. The study also does not address natural gas equipment usage or savings.

2.1 Overview

The scope of this study includes new and existing residential and non-residential buildings and covers a 10-year period spanning 2014–2023. Given the near- to mid-term focus, the base potential analysis was restricted to DSM measures that are presently commercially available, and only included codes and standards that are currently in place or will be effective within the next year. We did not make a prediction on the impact of future codes and standards.

Data for the study came from a number of different sources, including: data from the residential and commercial saturation studies conducted by DNV GL in 2013, a residential conditional demand analysis conducted by DNV GL in the spring of 2014, internal Dominion data, DNV GL's extensive energy efficiency database, residential and non-residential building equipment saturation surveys, and a variety of information from third parties.

2.2 Study Approach

2.2.1 Energy Efficiency Potential Approach

The energy efficiency potential portion of the study involved identifying and developing baseline end-use and measure data, and developing estimates of future energy efficiency impacts under varying levels of program effort.

We performed a baseline characterization that allowed us to identify the types and approximate sizes of the various market segments that are the most likely sources of DSM potential in Dominion's service territory. These characteristics then served as inputs to a modeling process that incorporated Dominion's energy-cost parameters and specific energy efficiency measure characteristics (such as costs, savings, and existing penetration estimates) to provide more detailed potential estimates.

To aid in the analysis, we utilized the DNV GL's DSM ASSYST™ model. This model provides a thorough, clear, and transparent documentation database and an extremely efficient data processing system for estimating technical, economic, and achievable potential. We estimated technical, economic, and achievable program potential for the residential and non-residential sectors, with a focus on energy efficiency impacts through 2023.

2.3 Organization of the Report

Section **Error! Reference source not found.** provides a brief overview of the data collection activities conducted for this study. Full results are provided in a separate report that presents the detailed results of surveys that were conducted to develop the key inputs used in the market potential models.

- Section 4 discusses the methodology and concepts used to develop the technical, economic, and achievable potential estimates.
- Section **Error! Reference source not found.** provides baseline results developed for the study.
- Sections 0 and 5.2.2.2 discuss the results of the electric energy efficiency potential analysis by sector and over time.

The full report contains the following appendices in a separate document from this report:

- Appendix A: Detailed Methodology and Model Description—Further detail on what was discussed in Section 4.
- Appendix B: Measure Descriptions—Describes the measures included in this study.
- Appendix C: Economic Inputs—Provides avoided cost, electric rate, discount rate, and inflation rate assumptions used for the study.
- Appendix D: Building and TOU Factor Inputs—Shows the base household counts, square footage estimates for non-residential building types, and base energy use by industrial segment. This appendix also includes time-of-use factors by sector and end-use.
- Appendix E: Measure Inputs—Lists the electric measures included in the analysis with the costs, estimated savings, applicability, and estimated current saturation factors.
- Appendix F: Non-Additive Measure Level Results—Shows energy efficiency potential for each measure independent of any other measure.
- Appendix G: Supply-Curve Data—Shows the data behind the energy supply curves provided in Section 0 of the report.
- Appendix H: Detailed technical and economic avoided cost scenario results.
- Appendix I: Measure-Level Ranking by Economic Energy Savings Potential.
- Appendix J: Achievable Program Potential—Provides the forecasts for the achievable potential scenarios.

3. DATA COLLECTION AND DEVELOPMENT

This section describes the efforts used by DNV GL to develop data inputs for this potential study. The main sources of this data were the residential/commercial saturation surveys, the residential conditional demand analysis (CDA), data provided by Dominion staff, and secondary data sources.

3.1 Dominion-Specific Data Collection Efforts

Dominion engaged DNV GL to collect end-use saturation and consumption data from residential and non-residential customers for use in load research and DSM planning operations. Data developed from the resulting studies were also used as direct inputs for the DSM Potential Study. The residential and commercial customer saturation surveys used for these efforts collected information on building characteristics, occupant characteristics, and the penetration and usage of various end uses throughout

Dominion's service territory. The residential saturation survey data was then fed into the residential CDA model, which produced estimates of annual electricity consumption for many end-use categories. The CDA estimates, along with data from the saturation studies, were then used as inputs in the DSM ASSYST™ model. These data were combined with other data from Dominion and secondary data sources to fully populate the data inputs required for the modeling effort. Figure 3-1 illustrates the relationship between the saturation studies, conditional demand analysis, additional data sources, and the DSM potential study.

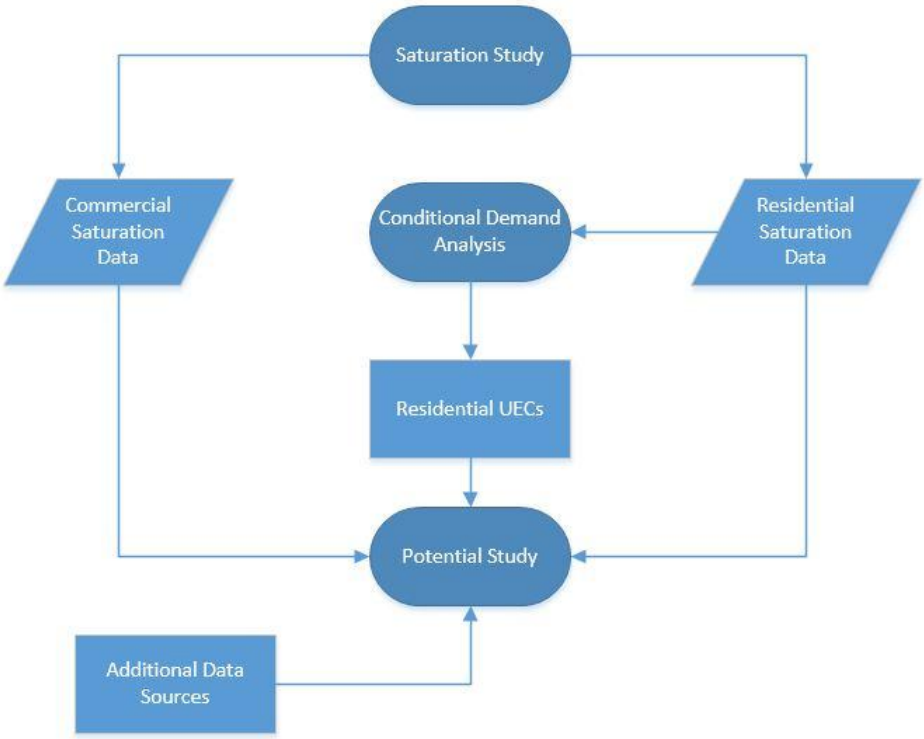


Figure 3-1: Summary Flow Chart for the DSM Potential Study Process

3.1.1 Residential and Commercial Saturation Studies

The residential and commercial saturation study data collection efforts were initiated between September and December, 2013. The goal of these studies were to estimate the saturation of end uses of electricity associated with appliances, as well as the usage patterns and related household/building characteristics. The data gathered from these saturation studies is fed into the conditional demand analysis which then provides unit energy consumption (UEC) estimates for a range of electric end uses and market segments for the DSM potential study.

The sections below describe the sample selection, data collection and response rates for the residential and commercial saturation studies.

3.1.2 Residential Sample Selection

The residential saturation study had a final frame of 1,984,601 accounts with 180 days or more billing data and annual consumption greater than or equal to 3,600 kWh. The frame was stratified across the following variables:

- Region: Seven levels to include North Carolina service territory
- Categorized average daily kWh (four Levels)
- Categorized kWh daily variability (three Levels)
- Sampled in 2008 residential appliance and saturation survey (RASS)
- Participated in Residential DSM II program as of 7/1/2013.

Accounts were selected with probability proportionate to their total annual kWh consumption.

3.1.3 Commercial Sample Selection

The commercial saturation study had a final frame of 184,430 accounts (represents 99.62% of total annual kWh) with 180 days or more billing data and annual consumption greater than or equal 4,800 kWh. The frame was stratified across the following variables:

- Region: Seven distinct geographic areas to include NC service territory
- Categorized average daily kWh (four Levels)
- Categorized kWh daily variability (three Levels).

Selected with certainty:

- Average daily kWh ≥ 15,000 kWh
- Any company enrolled in Commercial DSM II programs as of 7/1/2013.

Accounts were selected with probability proportionate to their total annual kWh consumption. Selection was done systematically; each stratum was sorted by Office ID, NAICS code and a random number. The sample distributed across the NAICS codes proportional to the population within each Office ID.

3.1.4 Data Collection

Data collections for these saturation studies were multimodal. They included an online web survey and a mailed print survey. There was a two phase sample outreach:

Phase 1

- Business letter mailed to commercial sample; link to Dominion website/online survey.
- Postcard mailed to residential sample; link to Dominion website/online survey.

Phase 2

- Printed survey package mailed to Phase 1 non-respondents.

Incentives delivered to respondents

- Residential $5 (thank you letter mailed with Visa gift card; or online gift card).
- Commercial $25 (online gift card).

3.1.5 Response Rates

Table 3-1 displays the response rates for the residential saturation survey. The overall response rate from residential respondents was 27%; 57% mailed in their survey, while 43% completed it online.

Table 3-1: Residential Saturation Survey Response Rates

Region	Mail responses	Online Responses	Total Responses	Final Response Rate
Total	**2,275**	**1,714**	**3,989**	**27.0%**
Northern Virginia	402	534	936	27.0%
Shenandoah Valley / Western Piedmont	278	172	450	30.7%
Richmond / Tri-Cities	339	293	632	28.2%
Southside	283	123	406	27.6%
Gloucester / Northern Neck	322	134	456	30.8%
Southeastern	447	336	783	25.6%
North Carolina	204	122	326	20.4%

Table 3-2 displays the response rates for the commercial saturation survey. The overall response rate from commercial respondents was 10.5%; 26% mailed in their survey, while 74% completed it online.

Table 3-2: Commercial Saturation Survey Response Rates

Region	Mail responses	Online Responses	Total Responses	Final Response Rate
Total	**404**	**1,123**	**1,527**	**10.5%**
Northern Virginia	62	239	301	7.5%
Shenandoah Valley / Western Piedmont	43	151	194	13.2%
Richmond / Tri-Cities	65	179	244	11.6%
Southside	50	138	188	13.1%
Gloucester / Northern Neck	49	89	138	9.7%
Southeastern	68	191	259	10.3%
North Carolina	67	136	203	12.7%

3.1.6 Residential Conditional Demand Analysis

The objective of a conditional demand analysis (CDA) is to estimate a breakdown of energy consumption into different end-use categories, such as water heaters or refrigerators, accounting for weather and a number of customer and end-use attributes such as square footage of the home and vintage of the electrical end-use device.

The key data sources for CDA models are:

- Customer survey data – In this study we utilized the RASS conducted by DNV GL in 2013.
- Customer billing data – We merged monthly electricity consumption data from recent years specific to each RASS respondent from Dominion's customer billing database.
- Weather data – We extracted hourly interval temperature data from the National Oceanic and Atmospheric Administration (NOAA) matched to the ZIP codes of RASS respondents.

The methodology develops statistical relationships between these data through regression models. The resulting model estimates are then calibrated to represent a typical meteorological year, rather than using actual weather data from the analysis period, which may have had more mild or extreme weather than normal.

Properly specified CDA models can account for major classes of end uses by residential customers, which include space heating, space cooling, and water heating, among other major end uses. Importantly, properly specified CDA models can also produce statistically significant data for end-use combinations.

There are some limiting factors for this CDA model that warrants further discussion, as noted below:

- Near-saturation of the end-use across households (e.g., refrigerators or lighting).

- Co-linearity among certain end uses across households (i.e., groups of two or more types of end uses which are found in those groups more often than individually). For example, set top boxes and TVs together, as opposed to TVs alone.
- Consumption that is not discernible in monthly billing consumption data among usage behavior variation across households (e.g., printers or toasters).

If some important end-use categories are not typically meaningful to estimate through a CDA alone, they are typically combined with relevant secondary source studies. CDA-based estimates on their own can give valuable insight into end-use consumption distributions across groups of customers, as is shown in several figures in this report.

3.2 Additional Data Sources

In addition to the saturation studies and CDA described above, DNV GL used additional data sources to inform certain inputs of the potential study model that could not be ascertained through the aforementioned data collection efforts. This section outlines those sources, and how they were used in the modeling process.

3.2.1 Measure Data

Several secondary data sources provided insight on measure-level energy usage and savings potential, measure costs and lifetimes, and the current penetration of various efficiency measures. DNV GL reviewed a variety of data sources for this information with the aim to find data that was specific to Dominion's service territory or geographic location as much as possible. The sources listed below provided information for these inputs:

- EIA Commercial Buildings Energy Consumption Survey (CBECS)
- EIA Residential Energy Consumption Survey (RECS)
- ENERGY STAR Calculators
- EIA Data for Mid-Atlantic
- Mid-Atlantic TRM
- Professional judgment of DNV GL engineers with experience in Dominion's service territory
- Dominion EM&V Results.

3.2.2 Economic Data

Economic inputs from Dominion's service territory were used to provide a more accurate picture of the monetary cost and benefits associated with energy efficiency. Dominion provided data to support the following model requirements:

- Customer Discount Rate
- Inflation Rate
- Utility Discount Rate
- Avoided Cost and Retail Rate Forecasts for low, base, and high avoided cost scenarios
- Line Loss Estimates.

3.2.3 Building Data

Information pertaining to which customers were considered opt-out, exempt, and non-jurisdictional, as well as system load data, was provided by Dominion:

- Billing data to identify consumption from opt-out, exempt, and non-jurisdictional customers
- System Load Data
- EIA data for Virginia Electric & Power Co., Virginia and North Carolina to determine number of customers.

3.2.4 Program Budgets

As part of the potential modeling process, past and projected program budgets are used to as a starting point for the achievable potential analysis which estimates the market penetration of measures as a function of marketing, incentive levels and other factors.[11] To help calibrate the achievable modeling efforts, current and past Dominion program budgets were used to gauge the range of program costs in the Dominion service territory. Specifically, marketing and administrative dollars were two inputs into the model that were derived from the indicator tables provided by DNV GL to Dominion. Table 3-3 outlines the indicator table data DNV GL reviewed for this effort.

Table 3-3: DSM II EM&V Summary Indicator Tables

Indicator Table Variable Name	Description	DNV GL Funding Designations for modelling efforts
Direct Rebate	Dollar value rebates given to participant	
Direct Implementation	Cost of Honeywell's/DOM PM Services	Marketing dollars
Direct EM&V	Cost of DNV KEMA's EM&V Services	
Indirect Other (Administrative)	Shared Dominion Services (Common Costs)	Admin dollars

[11] The methodology of calculation measure penetration is described in more detail in Section 4 and Appendix A

4. ENERGY EFFICIENCY METHODS

4.1 Energy Efficiency Potential Methods

This section provides a brief overview of the concepts, methods, and scenarios used to conduct this study. Additional methodological details are provided in Appendix A.

4.1.1 Characterizing the Energy Efficiency Resource

Energy efficiency has been characterized for some time now as an alternative to energy supply options, such as conventional power plants that produce electricity from fossil or nuclear fuels. In the early 1980s, researchers developed and popularized the use of a conservation supply-curve paradigm to characterize the potential costs and benefits of energy conservation and efficiency. Under this framework, technologies or practices that reduced energy use through efficiency were characterized as making the energy saved available to meet other demands, and could therefore be thought of as a resource and plotted on an energy supply curve. The energy efficiency resource paradigm argued simply that the more energy efficiency or "nega-watts"[12] produced, the fewer new plants would be needed to meet end-users' power demands.

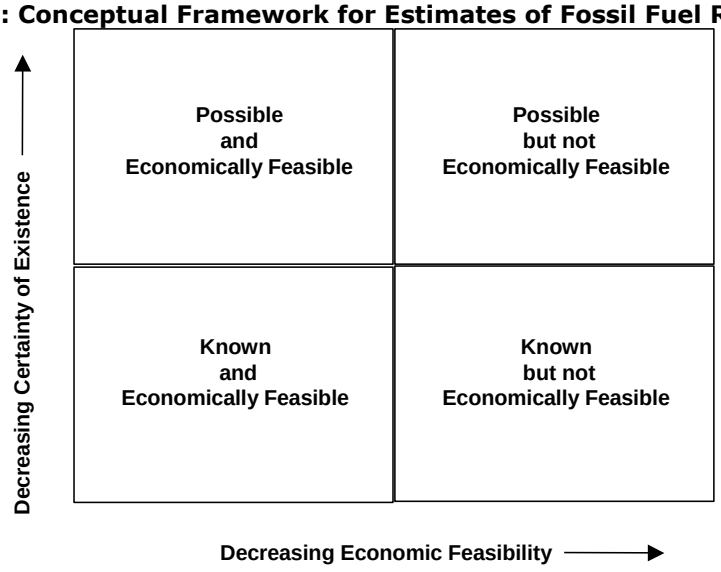
4.1.2 Defining Energy Efficiency Potential

Energy efficiency potential studies became popular throughout the utility industry from the late 1980s through the mid-1990s. This period coincided with the advent of what was called least-cost or integrated resource planning (IRP). Energy efficiency potential studies became one of the primary means of characterizing the resource availability and value of energy efficiency within the overall resource planning process.

[12] Term coined by environmental scientist Amory Lovins in 1989.

Like any resource, there are a number of ways in which the energy efficiency resource can be estimated and characterized. Definitions of energy efficiency potential are similar to definitions of potential developed for finite fossil fuel resources, like coal, oil, and natural gas. For example, fossil fuel resources are typically characterized along two primary dimensions: the degree of geological certainty with which resources may be found, and the likelihood that extraction of the resource will be economic. This relationship is shown conceptually in Table 4-1.

Table 4-1: Conceptual Framework for Estimates of Fossil Fuel Resources



Somewhat analogously, this energy efficiency potential study defines several different *types* of energy efficiency *potential*, namely technical, economic, achievable program, and naturally occurring. These potentials are shown conceptually in Figure 4-1 and described below.

- **Technical potential** is defined in this study as the *complete* penetration of all measures analyzed in applications where they were deemed *technically* feasible from an *engineering* perspective.
- **Economic potential** refers to the *technical potential* of those energy conservation measures that are cost effective when compared to supply-side alternatives.
- **Achievable program potential** refers to the amount of savings that would occur in response to specific program funding and measure incentive levels. Savings associated with program potential are savings that are projected beyond those that would occur naturally in the absence of any market intervention.
- **Naturally occurring potential** refers to the amount of savings estimated to occur as a result of normal market forces; that is, in the absence of any utility or governmental intervention.

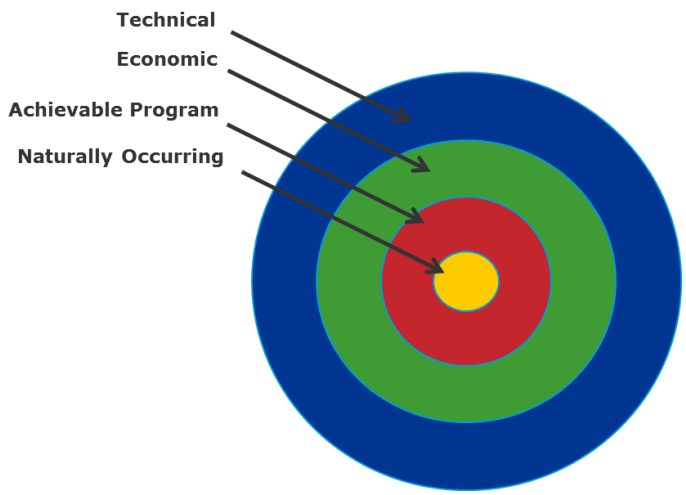


Figure 4-1: Conceptual Relationship among Energy Efficiency Potential Definitions

4.1.3 Summary of Analytical Steps Used for the Energy Efficiency Potential

The crux of this study involves carrying out a number of basic analytical steps to produce estimates of the energy efficiency potentials introduced above. The basic analytical steps for this study are shown in relation to one another in Figure 4-2. The bulk of the analytical process for this study was carried out in a model developed by DNV GL for conducting energy efficiency potential studies. Details on the steps employed and analyses conducted are described in Appendix A. The model used DSM ASSYST™, a Microsoft® Excel-based model that integrates technology-specific engineering and customer behavior data with utility market saturation data, load shapes, rate projections, and marginal costs into an easily updated data management system.

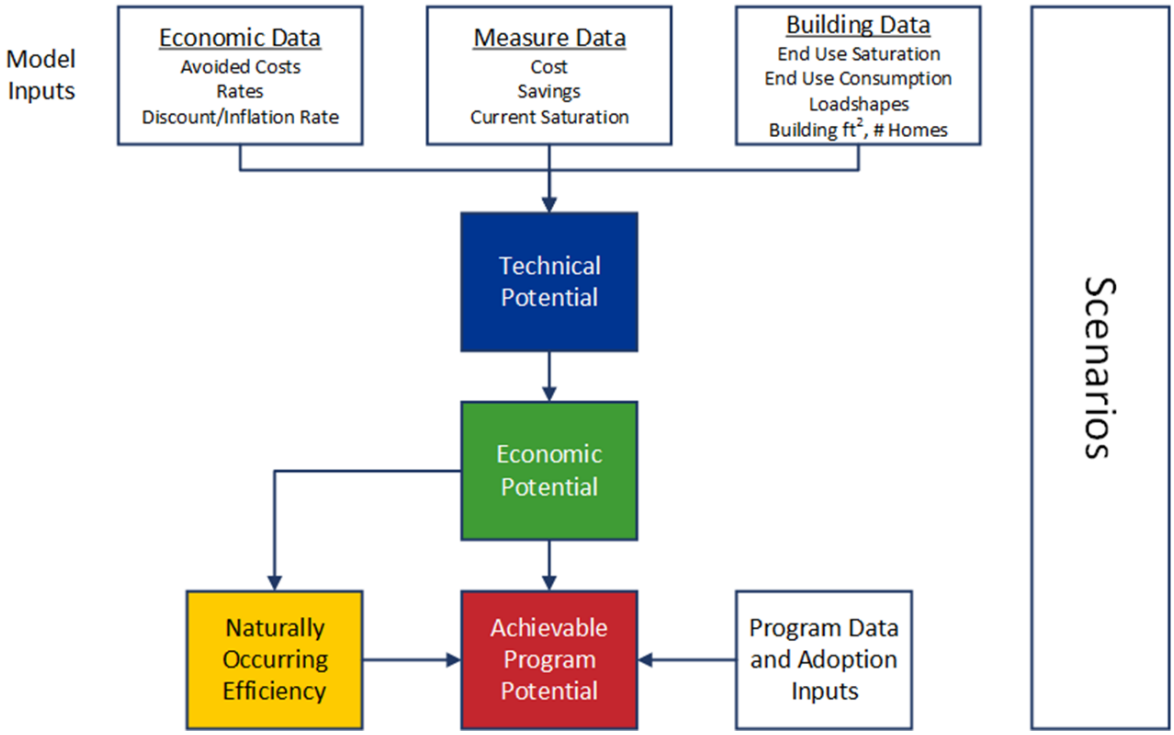


Figure 4-2: Conceptual Overview of Study Process

The key steps implemented in this study are:

Step 1: Develop Initial Input Data

- Develop a list of energy efficiency measure opportunities to include in scope. In this step, an initial draft measure list was developed and provided to Dominion. The final measure list was developed after incorporating comments.
- Gather and develop technical data (costs and savings) on efficient measure opportunities. Data on measures were gathered from a variety of sources. Measure descriptions are provided in Appendix B and detail on measure inputs is provided in Appendix E.
- Gather, analyze, and develop information on building characteristics, including total square footage or total number of households, energy consumption and intensity by end use, end-use consumption load patterns by time of day and year (i.e., load shapes), market shares

of key electric consuming equipment, and market shares of energy efficiency technologies and practices. Section **Error! Reference source not found.** of this report describes the baseline data developed for this study.

- Collect data on economic parameters: avoided costs, electricity rates, discount rates, and inflation rate. These inputs are provided in Appendix C of this report.

Step 2: Estimate Technical Potential and Develop Supply Curves

- Match and integrate data on efficient measures to data on existing building characteristics to produce estimates of technical potential and energy efficiency supply curves.

Step 3: Estimate Economic Potential

- Match and integrate measure and building data with economic assumptions to produce indicators of costs from different viewpoints (e.g., societal and consumer).

  Estimate total economic potential. (Note that at this stage of the analysis, program-related costs are not factored into the cost-effectiveness screening. Thus, the results reflect the theoretical estimate of the measure impacts, while disregarding the mode of delivery.)

Step 4: Estimate Achievable Program and Naturally Occurring Potentials

- Screen initial measures for inclusion in the program analysis. This screening may take into account factors such as cost effectiveness, potential market size, non-energy benefits, market barriers, and potentially adverse effects associated with a measure. For this study, measures were screened using the total-resource-cost test, with the exclusion of program costs and while considering only electric avoided-cost benefits.
- Gather and develop estimates of program costs (e.g., for administration and marketing) and historic program savings.
- Develop estimates of customer adoption of energy efficiency measures as a function of the economic attractiveness of the measures, barriers to their adoption, and the effects of program intervention.
- Estimate achievable program and naturally occurring potentials and associated program costs.

Step 5: Scenario Analyses

- Recalculate potentials under alternate program scenarios.

5. ENERGY EFFICIENCY RESULTS

5.1 Energy Efficiency Baseline Analysis

This section presents a baseline analysis of energy use in Dominion's Virginia and North Carolina service territory. The purpose of this analysis is to provide a breakout of energy use by sector, building type and end use to provide a foundation for estimating demand side management /energy efficiency potentials.

DNV GL completed a conditional demand analysis of the residential sector using the saturation survey results and billing data to develop energy consumption values for various end uses. That data was incorporated into this analysis.

The non-residential analysis was not affected by the conditional demand analysis and is based on the best data available; however, in some cases that data was regional (for example, South Atlantic Census Division data from the Department of Energy's Commercial Buildings Energy Consumption Survey) rather than specific to Dominion's service territory. It was necessary to rely on such sources for inputs that could not be determined from the commercial survey data or from other Dominion data sources.

5.2 Summary of Energy Use by Sector

Energy usage by sector and business type was developed from data reported by the Energy Information Administration (EIA). These data are presented in Table 5-1 and Figure 5-1.

Table 5-1: Summary of Dominion MWh and Customers by Sector and State

	Virginia		North Carolina		Dominion Total	
	MWh	**# of Customers**	**MWh**	**# of Customers**	**MWh**	**# of Customers**
Residential	27,671,894	2,086,647	1,502,310	101,024	29,174,204	2,187,671
Non-Residential	44,743,695	250,032	2,612,238	17,790	47,355,933	267,822
Total	72,415,589	2,336,679	4,114,548	118,814	76,530,137	2,455,493

Source: EIA, data for Virginia Electric & Power Co., Virginia and North Carolina, 2012

Note that these values include non-jurisdictional, exempt and opt-out customers, and industrial customers. Exempt and opt-out customers will be broken out later. Industrial customers are not part of the potential study and will be excluded from the rest of the analysis.

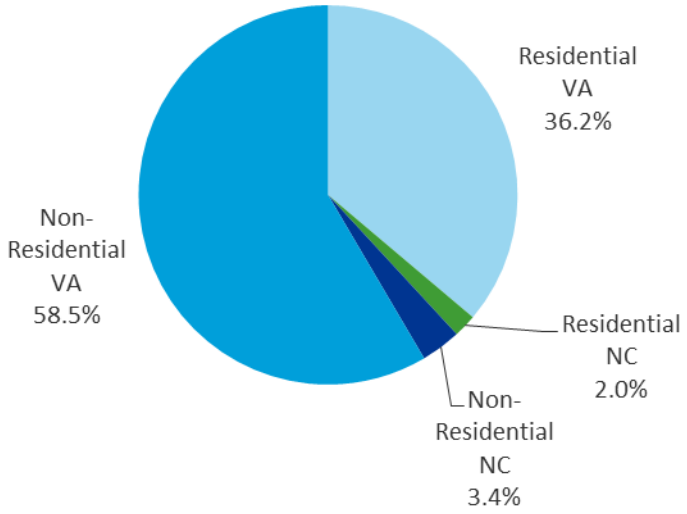


Figure 5-1: Breakout of Dominion Energy Use by Sector

5.2.1 Residential Baseline

EIA data[13] for Virginia was used to break out total residential customers into single family and multifamily customers, the two residential segments being examined in this study. Initially, the survey results were intended to be used for the single family/multifamily splits; however, the resulting

[13] EIA, 2009. Household Energy Use in Virginia. Summary of state level data from the 2009 Residential Energy Consumption Survey.

estimate of three percent multifamily seemed implausibly low. EIA data for North Carolina was not available, so the Virginia splits were applied to both states. Table 5-2 shows the results.

Table 5-2: Number of Residential Customers by Building Type

Building Type	Virginia	North Carolina	Total
Single Family	1,668,245	80,767	1,749,012
Multifamily	418,402	20,257	438,659
Total	2,086,647	101,024	2,187,671

5.2.1.1 Residential End-Use Saturations

The equipment saturations (percent of households having an end use) were calculated from the results of the residential saturation surveys.[14] These results are shown in Table 5-3. For lighting, the equipment saturations interact with the number of lamps per home by usage and type. For modeling simplicity, the assumption is 100 percent saturation for each of the lighting wattage/use breakouts, with all the variation between homes being captured through the number of lamps per home for each lighting category.

Table 5-3: Residential End-Use Saturations by Base Measure

	Virginia		North Carolina	
End-use Saturations	**Single Family**	**Multi-family**	**Single Family**	**Multi-family**
Base Split-System Air Conditioner (13 SEER)	41%	38%	23%	38%
Base Early Replacement Split-System Air Conditioner (11 SEER)	7%	7%	4%	7%
Base Heat Pump Cooling (13 SEER)	37%	42%	51%	41%
Base Early Replacement Heat Pump Cooling (11 SEER)	7%	7%	9%	7%
Base Room Air Conditioner - EER 10.6	5%	2%	9%	2%
Base Early Replacement Room Air Conditioner- EER 9.7	1%	0%	2%	0%
Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	29%	14%	29%	14%
Base Furnace Fans	90%	100%	90%	100%
Base Heat Pump Space Heating (7.7 HSPF)	31%	48%	53%	48%
Base Early Replacement Heat Pump Heating (11 SEER)	6%	8%	9%	8%
Base Resistance Space Heating (Primary)	13%	30%	22%	29%
Base High-Efficiency Incandescent Lighting, 0.5 hrs/day	100%	100%	100%	100%
Base High-Efficiency Incandescent Lighting, 2.5 hrs/day	100%	100%	100%	100%
Base High-Efficiency Incandescent Lighting, 6 hrs/day	100%	100%	100%	100%
Base Lighting 15 Watt CFL, 0.5 hrs/day	100%	100%	100%	100%
Base Lighting 15 Watt CFL, 2.5 hrs/day	100%	100%	100%	100%
Base Lighting 15 Watt CFL, 6 hrs/day	100%	100%	100%	100%

[14] There were only four North Carolina multifamily survey respondents, so the results for that segment were not reliable. Throughout the data analysis, the combined North Carolina and Virginia multifamily data were used to represent North Carolina.

	Virginia		North Carolina	
Base Specialty Incandescent Lighting, 0.5 hrs/day	100%	100%	100%	100%
Base Specialty Incandescent Lighting, 2.5 hrs/day	100%	100%	100%	100%
Base Specialty Incandescent Lighting, 6 hrs/day	100%	100%	100%	100%
Base Fluorescent Fixture 1.8 hrs/day	100%	100%	100%	100%
Base Refrigerator	85%	85%	85%	85%
Base Early Replacement Refrigerator	15%	15%	15%	15%
Base Second Refrigerator	38%	1%	31%	1%
Base Freezer	30%	6%	40%	6%
Base Early Replacement Freezer	5%	1%	7%	1%
Base Second Freezer	2%	0%	6%	0%
Base 40 gal. Water Heating (EF=0.88)	44%	65%	73%	63%
Base Early Replacement Water Heating to Heat Pump Water Heater	8%	11%	13%	11%
Base Clothes washer (MEF=1.26)	92%	68%	86%	68%
Base Clothes Dryer (EF=3.01)	86%	61%	76%	61%
Base Dishwasher (EF=0.65)	78%	73%	42%	73%
Base Pool Pump (RET)	7%	0%	7%	0%
Base Plasma TV	23%	15%	29%	15%
Base LCD TV	82%	78%	66%	78%
Base CRT TV	37%	27%	41%	27%
Base Set-Top Box	74%	62%	75%	62%
Base DVD Player	77%	75%	67%	75%
Base Desktop PC	56%	38%	55%	38%
Base Laptop PC	71%	66%	55%	66%
Base Cooking	75%	75%	81%	75%
Base Miscellaneous	100%	100%	100%	100%
Base House Practices	100%	100%	100%	100%

An initial estimate of the number of incandescent lamps, CFLs, and LEDs per home was made using the survey data. These self-reported data suggested a total of 25.5 lamps per single family home and 12.2 lamps per multifamily home in Virginia, and 19.9 lamps per single family home in North Carolina. These values seem low when compared to lighting studies from other regions and the reported size of the homes. Self-reported values tend to underestimate lamp counts compared to on-site studies, since residents tend to forget about lamps used infrequently. The results of the conditional demand analysis (CDA) also suggested that the number of lamps was likely understated, since the lighting energy use from the CDA combined with the reported number of lamps implied an extremely high kWh usage per lamp—either very high wattage or very high average usage (or both). As a result of these concerns, when the model was calibrated so that lighting energy use would match the CDA results, the number of lamps per home was increased above the values found in the survey.

Also, to align the lighting saturation information with the lighting methodology used in DSM ASSYST™, the number of lamps was broken out into usage bins, as available from internal DNV GL databases (gleaned from previous potential studies and on-site data collection). The resulting breakouts are shown in Table 5-4.

Table 5-4: Lamps per Home by Type and Usage

	Virginia		North Carolina	
Lamp Usage	**Single Family**	**Multi-family**	**Single Family**	**Multi-family**
Incandescent, 0.5 hrs/day	14.8	6.9	12.0	6.8
Incandescent, 2.5 hrs/day	12.2	5.7	9.8	5.7
Incandescent, 6 hrs/day	3.4	1.5	2.7	1.5
CFL, 0.5 hrs/day	7.3	3.3	7.9	3.3
CFL, 2.5 hrs/day	6.0	2.7	6.5	2.7
CFL, 6 hrs/day	1.6	0.8	1.8	0.8
Specialty Incandescent, 0.5 hrs/day	5.9	1.9	4.7	2.0
Specialty Incandescent, 2.5 hrs/day	4.9	1.6	3.9	1.6
Specialty Incandescent, 6 hrs/day	1.3	0.4	1.1	0.5
Fluorescent Fixture 1.8 hrs/day	7.2	2.2	10.314	2.178
Total	64.5	26.9	60.6	26.9

5.2.1.2 Residential End-Use Energy Intensities

Table 5-5 shows the end-use energy intensities for the residential sector by base measure. End-use energy intensities represent the energy use per household for households that have that end-use. Most of these energy intensity values were derived from the conditional demand analysis. The rest were derived or calculated from a variety of sources, including:

- The Department of Energy's Home Energy Saver model
- The Environmental Protection Agency's ENERGY STAR calculators
- Engineering calculations (for lighting).

Table 5-5: Residential End-Use Energy Intensities (kWh/household with end-use)

	Virginia		North Carolina	
kWh/household	**Single Family**	**Multi-family**	**Single Family**	**Multi-family**
Base Split-System Air Conditioner (13 SEER)	2,912	947	2,507	960
Base Early Replacement Split-System Air Conditioner (11 SEER)	2,713	1,623	2,380	1,628
Base Heat Pump Cooling (13 SEER)	2,778	1,339	2,884	1,339
Base Early Replacement Heat Pump Cooling (11 SEER)	2,394	1,369	2,844	1,371
Base Room Air Conditioner - EER 10.6	1,504	2,122	942	2,122
Base Early Replacement Room Air Conditioner- EER 9.7	1,619	853	1,442	853
Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	57	61	69	74
Base Furnace Fans	1,109	529	1,118	533
Base Heat Pump Space Heating (7.7 HSPF)	4,546	1,710	3,685	1,710
Base Early Replacement Heat Pump Heating (11 SEER)	4,338	2,326	4,079	2,334

	Virginia		North Carolina	
Base Resistance Space Heating (Primary)	5,323	2,842	4,096	2,843
Base High-Efficiency Incandescent Lighting, 0.5 hrs/day	149	69	120	68
Base High-Efficiency Incandescent Lighting, 2.5 hrs/day	610	286	492	284
Base High-Efficiency Incandescent Lighting, 6 hrs/day	403	179	325	177
Base Lighting 15 Watt CFL, 0.5 hrs/day	20	9	22	9
Base Lighting 15 Watt CFL, 2.5 hrs/day	82	37	89	37
Base Lighting 15 Watt CFL, 6 hrs/day	54	25	58	25
Base Specialty Incandescent Lighting, 0.5 hrs/day	64	21	52	21
Base Specialty Incandescent Lighting, 2.5 hrs/day	266	85	214	87
Base Specialty Incandescent Lighting, 6 hrs/day	176	58	142	59
Base Fluorescent Fixture 1.8 hrs/day	442	135	637	135
Base Refrigerator	663	581	661	580
Base Early Replacement Refrigerator	533	447	534	447
Base Second Refrigerator	927	530	895	530
Base Freezer	1,101	1,043	1,305	1,043
Base Early Replacement Freezer	1,105	1,043	1,098	1,043
Base Second Freezer	1,101	1,043	1,305	1,043
Base 40 gal. Water Heating (EF=0.88)	3,538	2,791	3,047	2,759
Base Early Replacement Water Heating to Heat Pump Water Heater	3,538	2,791	3,047	2,759
Base Clothes washer (MEF=1.26)	46	46	46	46
Base Clothes Dryer (EF=3.01)	697	963	789	962
Base Dishwasher (EF=0.65)	260	260	260	260
Base Pool Pump (RET)	2,165	2,165	2,165	2,165
Base Plasma TV	338	284	368	218
Base LCD TV	219	164	193	126
Base CRT TV	157	145	151	111
Base Set-Top Box	299	206	238	158
Base DVD Player	35	29	29	22
Base Desktop PC	427	421	378	420
Base Laptop PC	61	49	54	49
Base Cooking	700	600	685	600
Base Miscellaneous	322	270	797	740
Base House Practices	14,253	9,308	16,188	9,620

5.2.1.3 Water Heating End-Use Energy Intensities

Water heating energy use was broken into several components in the CDA. The first and largest component was base water heating, which did not include weather (heating degree day, or HDD), dependent water heating, or the water heating associated with clothes washers and dishwashers (which was included with the energy use for those appliances). The components produced by the CDA are shown in Table 5-6.

Table 5-6: Water-Heating-Related Outputs of the CDA Model

CDA Component	Description	Values
Base water heating	Water heating only. Corresponds to summer usage, excluding water heating associated with clothes washers and dishwashers	Ranged from 1,101 to 1,261 kWh, depending on which state (VA or NC) and the building type (single vs. multifamily)
Clothes Washers (including both machine energy and associated water heating)	Energy use attributable to clothes washers, including both the energy used by the machine and the associated water heating	Ranged from 248 to 286 kWh, depending on state and building type
Dishwashers (including both machine energy and associated water heating)	Energy use attributable to dishwashers, including both the energy used by the machine and the associated water heating	Ranged from 762 to 808 kWh, depending on state and building type
Water Heating -HDD-dependent	This includes the portion of water heating energy that increases as temperatures get colder, reflecting both increased storage losses and increased usage	Ranged from 1,187 to 1,678 kWh, depending on state and building type

For the baseline analysis, the water heating energy for the two appliances needed to be split apart from machine energy and included with the rest of water heating. To do this, data had to be pulled in from other sources. The HDD-dependent water heating needed to be included with the rest of water heating as well.

For its appliance standard setting process, the Department of Energy (DOE) performs detailed energy analyses, which are published in technical support documents.[15] Using the data from these analyses and calibrating between DOE's estimated total energy use for each appliance, and the total energy use for each from the CDA, produced estimates of 46 kWh of machine energy for clothes washers and 260 kWh of machine energy for dishwashers. The machine energy was netted out of the appliance totals to estimate the water heating portion of energy. The water heating shares were then weighted by appliance saturations by state and building type (since not all homes with electric water heating have clothes washers and dishwashers) and the result was added to the base water heating energy. The result represents the non-weather-sensitive portion of water heating energy use, including that associated with clothes washers and dishwashers.

[15] These are available online at http://energy.gov/eere/buildings/standards-and-test-procedures.

Table 5-7 shows the resulting appliance-related water heating energy, with the CDA estimates of base water heating and HDD-dependent water heating energy. Total water heating energy ranges from 2,759 to 3,538 kWh, depending on building type and state.

Table 5-7: Water Heating Household Energy Use (kWh) by Component

	Virginia SF	Virginia MF	North Carolina SF	North Carolina MF
Water heating base energy use	1,261	1,101	1,219	1,102
Saturation-weighted CW/DW water heating energy	599	503	439	466
HDD-dependent water heating	1,678	1,187	1,390	1,191
Total	3,538	2,791	3,047	2,759

5.2.1.4 Residential Energy Use

Energy use was calculated as the product of the number of households, equipment saturation, and the end-use energy intensity. Energy use by building type and end-use is shown in Table 5-8.

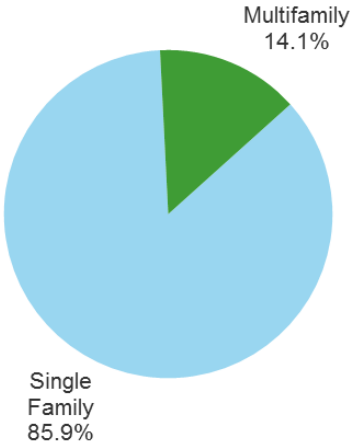
Table 5-8: Residential Energy Use by Building Type and End-Use

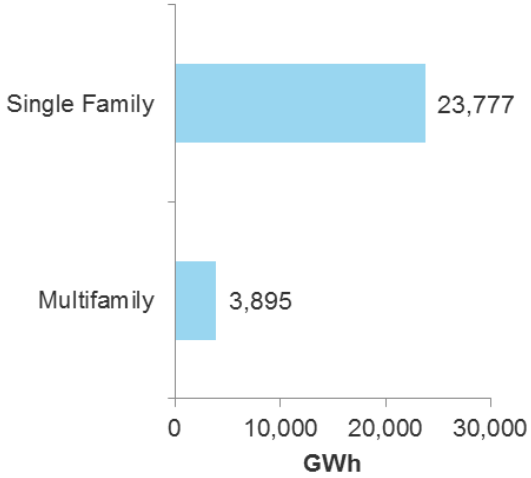
	Virginia			North Carolina			Total
MWh	Single Family	Multi-family	Virginia Total	Single Family	Multi-family	North Carolina Total	Total
Base Split-System Air Conditioner (13 SEER)	2,013,281	149,285	2,162,566	47,432	7,346	54,778	2,217,345
Base Early Replacement Split-System Air Conditioner (11 SEER)	331,027	45,162	376,189	7,947	2,199	10,146	386,335
Base Heat Pump Cooling (13 SEER)	1,708,907	232,645	1,941,552	119,757	11,246	131,003	2,072,554
Base Early Replacement Heat Pump Cooling (11 SEER)	259,869	41,980	301,849	20,840	2,032	22,872	324,721
Base Room Air Conditioner - EER 10.6	117,582	14,567	132,150	7,143	701	7,844	139,994
Base Early Replacement Room Air Conditioner- EER 9.7	22,340	1,033	23,373	1,930	50	1,980	25,352
Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	28,002	3,515	31,517	1,641	206	1,846	33,363
Base Furnace Fans	1,663,277	220,111	1,883,387	81,226	10,749	91,975	1,975,362
Base Heat Pump Space Heating (7.7 HSPF)	2,369,291	343,739	2,713,030	159,038	16,642	175,680	2,888,711
Base Early Replacement Heat Pump Heating (11 SEER)	398,968	82,492	481,460	31,064	4,009	35,073	516,533
Base Resistance Space Heating (Primary)	1,156,870	354,890	1,511,760	74,156	16,938	91,094	1,602,853
Base High-Efficiency Incandescent Lighting, 0.5 hrs/day	139,996	19,856	159,852	9,679	1,380	11,060	166,262
Base High-Efficiency Incandescent Lighting, 2.5 hrs/day	574,983	82,735	657,719	39,754	5,751	45,505	684,100
Base High-Efficiency Incandescent Lighting, 6 hrs/day	379,989	51,627	431,616	26,272	3,589	29,861	448,906
Base Lighting 15 Watt CFL, 0.5 hrs/day	33,253	3,749	37,001	1,742	181	1,923	38,925
Base Lighting 15 Watt CFL, 2.5 hrs/day	136,485	15,619	152,105	7,150	756	7,906	160,010
Base Lighting 15 Watt CFL, 6 hrs/day	89,336	10,309	99,645	4,680	499	5,179	104,823
Base Specialty Incandescent Lighting, 0.5 hrs/day	214,027	17,666	231,693	4,179	435	4,613	240,919
Base Specialty Incandescent Lighting, 2.5 hrs/day	886,683	71,343	958,026	17,311	1,755	19,066	996,158
Base Specialty Incandescent Lighting, 6 hrs/day	587,045	48,921	635,966	11,461	1,204	12,665	661,295
Base Fluorescent Fixture 1.8 hrs/day	738,089	56,279	794,368	51,446	2,725	54,171	848,539
Base Refrigerator	939,715	206,461	1,146,176	45,402	9,991	55,392	1,201,568
Base Early Replacement Refrigerator	133,345	28,080	161,426	6,465	1,359	7,825	169,250
Base Second Refrigerator	586,471	3,307	589,778	22,338	159	22,497	612,275

	Virginia			North Carolina			Total
Base Freezer	557,089	27,200	584,290	42,006	1,312	43,318	627,608
Base Early Replacement Freezer	98,605	4,777	103,381	6,238	231	6,470	109,851
Base Second Freezer	30,359	-	30,359	6,720	-	6,720	37,079
Base 40 gal. Water Heating (EF=0.88)	2,616,688	753,883	3,370,570	179,247	35,241	214,487	3,585,058
Base Early Replacement Water Heating to Heat Pump Water Heater	461,768	133,038	594,807	31,632	6,219	37,851	632,657
Base Clothes Washer (MEF=1.26)	71,249	13,161	84,411	3,231	637	3,868	88,279
Base Clothes Dryer (EF=3.01)	1,001,105	245,131	1,246,235	48,160	11,867	60,027	1,306,262
Base Dishwasher (EF=0.65)	337,538	79,486	417,024	8,923	3,846	12,769	429,793
Base Pool Pump (RET)	263,639	-	263,639	12,764	-	12,764	276,403
Base Plasma TV	128,600	17,986	146,586	8,711	666	9,377	155,963
Base LCD TV	300,583	53,733	354,317	10,344	1,998	12,342	366,659
Base CRT TV	97,674	16,109	113,783	5,055	599	5,654	119,437
Base Set-Top Box	369,231	53,581	422,812	14,402	1,988	16,390	439,203
Base DVD Player	44,155	9,047	53,202	1,567	337	1,904	55,106
Base Desktop PC	401,552	67,096	468,648	16,814	3,245	20,059	488,707
Base Laptop PC	71,684	13,526	85,210	2,390	654	3,044	88,254
Base Cooking	880,556	188,521	1,069,077	44,771	9,144	53,915	1,122,992
Base Miscellaneous	536,341	113,002	649,343	64,404	14,992	79,396	728,739
Base House Practices	23,777,246	3,894,648	27,671,894	1,307,432	194,878	1,502,310	29,174,204
Total	23,777,246	3,894,648	27,671,894	1,307,432	194,878	1,502,310	29,174,204

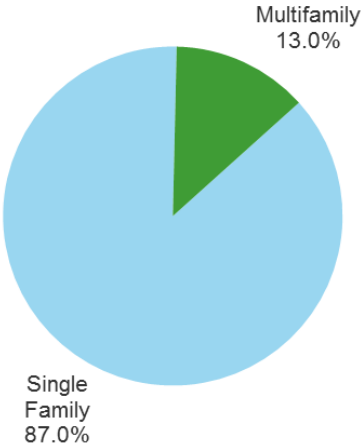
Figure 5-2 and Figure 5-3 show the breakout of residential energy use by building type and end use, respectively.

Virginia





North Carolina



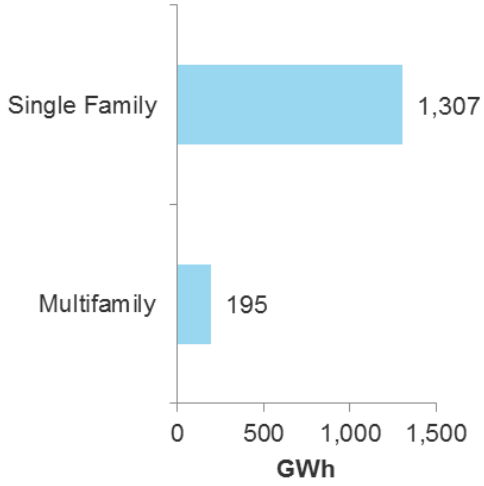
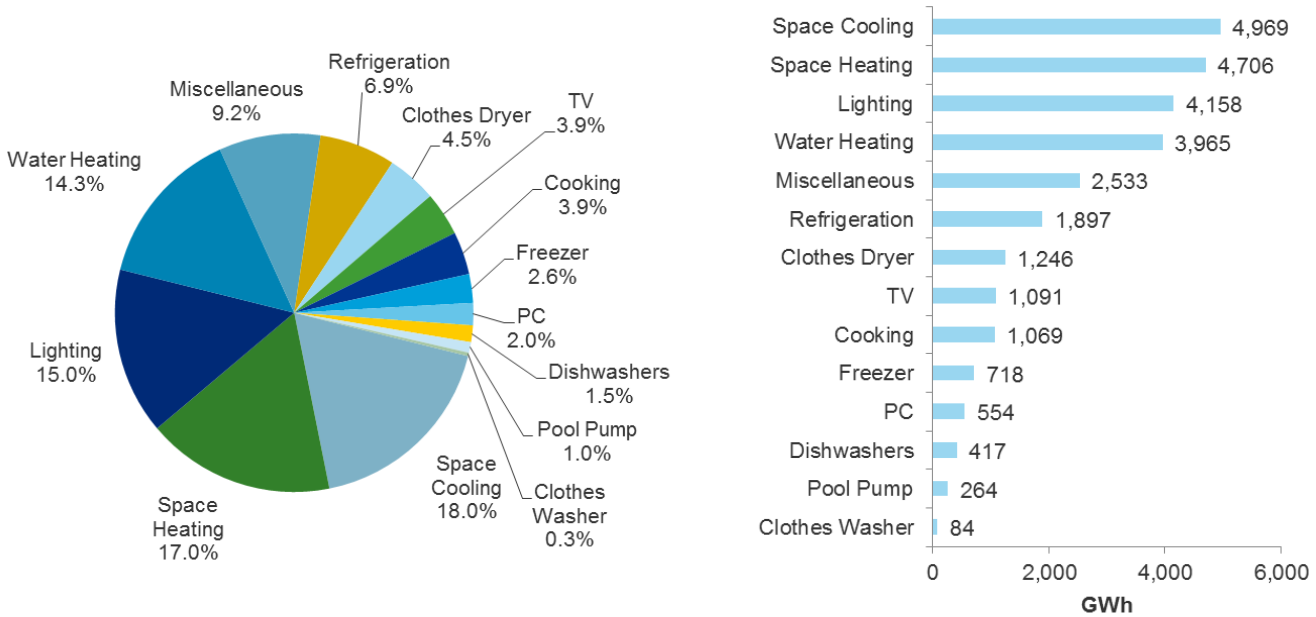


Figure 5-2: Residential Energy Use by Building Type

Virginia



North Carolina

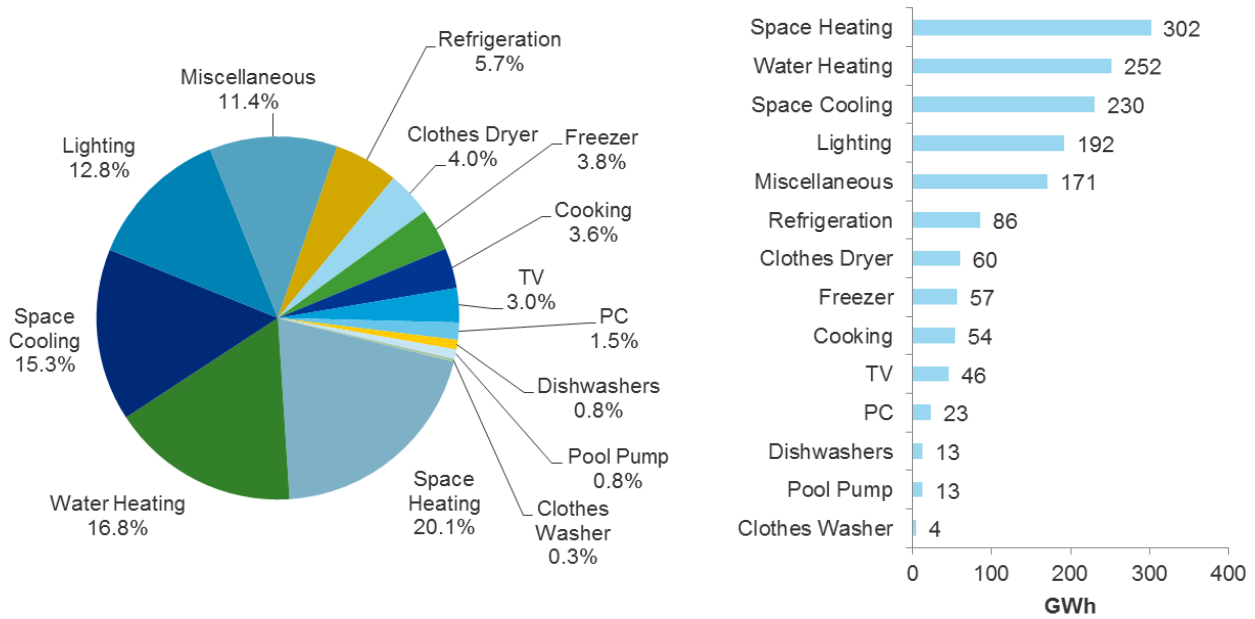


Figure 5-3: Residential Energy Use by End-Use

5.2.1.5 Residential Peak Demand

Annual 8,760 hourly data from Dominion was combined with end-use load shape data from DNV GL's end-use databases to allocate annual energy usage into time-of-use (TOU) periods. Peak period usage, developed on a sector-specific and end-use basis, was calibrated to equal the Dominion summer peak. Residential peak demand estimates by segment and end use are summarized in Table 5-9.

Table 5-9: Summary of Residential Electric Peak Demand by Segment and End Use – MW

	Virginia			North Carolina			Total
MWh	Single Family	Multi-family	Virginia Total	Single Family	Multi-family	North Carolina Total	Total
Base Split-System Air Conditioner (13 SEER)	1,087	81	1,168	26	4	30	1,198
Base Early Replacement Split-System Air Conditioner (11 SEER)	179	24	203	4	1	5	209
Base Heat Pump Cooling (13 SEER)	923	126	1,049	65	6	71	1,119
Base Early Replacement Heat Pump Cooling (11 SEER)	140	23	163	11	1	12	175
Base Room Air Conditioner - EER 10.6	64	8	71	4	0	4	76
Base Early Replacement Room Air Conditioner- EER 9.7	12	1	13	1	0	1	14
Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	3	0	4	0	0	0	4
Base Furnace Fans	803	106	909	39	5	44	953
Base Heat Pump Space Heating (7.7 HSPF)	256	37	293	17	2	19	312
Base Early Replacement Heat Pump Heating (11 SEER)	43	9	52	3	0	4	56
Base Resistance Space Heating (Primary)	125	38	163	8	2	10	173
Base High-Efficiency Incandescent Lighting, 0.5 hrs/day	25	3	28	1	0	1	29
Base High-Efficiency Incandescent Lighting, 2.5 hrs/day	104	12	116	4	1	5	120
Base High-Efficiency Incandescent Lighting, 6 hrs/day	68	8	76	3	0	3	79
Base Lighting 15 Watt CFL, 0.5 hrs/day	3	0	4	0	0	0	4
Base Lighting 15 Watt CFL, 2.5 hrs/day	14	2	15	1	0	1	16
Base Lighting 15 Watt CFL, 6 hrs/day	9	1	10	0	0	1	11
Base Specialty Incandescent Lighting, 0.5 hrs/day	11	1	12	0	0	0	12
Base Specialty Incandescent Lighting, 2.5 hrs/day	45	4	49	2	0	2	51
Base Specialty Incandescent Lighting, 6 hrs/day	30	2	32	1	0	1	34
Base Fluorescent Fixture 1.8 hrs/day	75	6	81	5	0	6	86
Base Refrigerator	138	30	169	7	1	8	177
Base Early Replacement Refrigerator	20	4	24	1	0	1	25
Base Second Refrigerator	86	0	87	3	0	3	90

	Virginia			North Carolina			Total
Base Freezer	80	4	84	6	0	6	90
Base Early Replacement Freezer	14	1	15	1	0	1	16
Base Second Freezer	4	0	4	1	0	1	5
Base 40 gal. Water Heating (EF=0.88)	293	84	377	20	4	24	401
Base Early Replacement Water Heating to Heat Pump Water Heater	52	15	67	4	1	4	71
Base Clothes Washer (MEF=1.26)	12	2	14	1	0	1	15
Base Clothes Dryer (EF=3.01)	154	38	192	7	2	9	201
Base Dishwasher (EF=0.65)	50	12	62	1	1	2	64
Base Pool Pump (RET)	28	0	28	1	0	1	30
Base Plasma TV	17	2	19	1	0	1	20
Base LCD TV	39	7	46	1	0	2	48
Base CRT TV	13	2	15	1	0	1	16
Base Set-Top Box	48	7	55	2	0	2	58
Base DVD Player	6	1	7	0	0	0	7
Base Desktop PC	48	8	56	2	0	2	59
Base Laptop PC	9	2	10	0	0	0	11
Base Cooking	256	55	310	13	3	16	326
Base Miscellaneous	64	14	78	8	2	10	87
Base House Practices	5,354	877	6,231	275	41	316	6,547
Total	5,451	779	6,231	278	39	316	6,547

Note: We calibrated the whole house load shape (used for house practices) so that peak demand for base house practices was equal to the sum of the peak demands across end uses by state. Due to modeling limitations (the whole-house load shape inputs are the same for both single family and multifamily); we could not calibrate these values at the building type level.

5.2.1.6 Residential Comparisons to RECS

In Table 5-10 below, we compare the results of the baseline analysis, seen above, to the Energy Information Administration's (EIA) Residential Energy Consumption Survey (RECS) from 2009.

EIA presents tabulated results for Virginia and for North Carolina/South Carolina. The comparisons below represent the Dominion's Virginia service territory versus all of Virginia, and Dominion's North Carolina service territory versus all of North and South Carolina. Some of the discrepancies in the values below may be a result of the differences in geography, particularly for North Carolina where Dominion's service territory is a small fraction of the two states.

For ease of comparison, the single- and multifamily values from the baseline analysis have been weighted together based on the housing stock to calculate a single value for each state.

Table 5-10: Comparison of the Residential Baseline Results to RECS

	Percent of Households with End use		Household Energy Consumption (kWh)		Percent of Total Annual Residential Electricity		Comments
	2009 RECS	Dominion RASS	2009 RECS	Dominion CDA/Baseline Analysis	2009 RECS	Dominion Baseline Analysis	
Space Heating	VA: 53% NC: 65%		VA : 3,910 NC : 2,850		VA: 14% NC: 13%	VA: 17% NC: 20%	The saturation survey showed overall higher penetrations of electric heating, resulting in a higher overall share of electricity use.
HP Space Heating	VA: 37% NC: 30%	VA: 41% NC: 62%		VA: 3,978 NC: 3,289			
Other Electric Space Heating	VA: 17% NC: 35%	VA: 16% NC: 24%		VA: 3,338 NC: 2,261			
Water Heating	VA: 57% NC: 78%	VA: 57% NC: 83%	VA: 2,943 NC: 2,654	VA: 3,388 NC: 2,990	VA: 12% NC: 15%	VA: 14% NC: 17%	The baseline analysis found higher household energy consumption for water heating than RECS, resulting in a higher overall share of energy consumption. Saturations were comparable
Space Cooling	VA: 97% NC: 96%		VA: 2,246 NC: 2,263		VA: 15% NC: 16%	VA: 18% NC: 15%	The Dominion saturation survey showed higher penetrations of central cooling (CAC + HP) than RECS, which is reflected in the higher percent of residential electricity.
Central AC	VA: 30% NC: 44%	VA: 48% NC: 31%		VA: 2,518 NC: 2,578			
HP Space Cooling	VA: 50% NC: 39%	VA: 44% NC: 58%		VA: 2,489 NC: 2,673			
Room AC	VA: 17% NC: 13%	VA: 5% NC: 9%		VA: 1,628 NC: 1,179			
Refrigerators			VA: 1,381 NC: 1,279		VA: 10% NC: 9%	VA: 7% NC: 6%	The 2001 federal minimum refrigerator standards have continued to penetrate the market since 2009, resulting in lower unit energy consumption.
First Refrigerator	VA: 100% NC: 100%	VA: 100% NC: 100%		VA: 646 NC: 640			
Second Refrigerator	VA: 30% NC: 11%	VA: 31% NC: 25%		VA: 847 NC: 822			
Other	VA: 100% NC: 100%	VA: 100% NC: 100%	VA: 7,105 NC: 6,701	VA: 5,815 NC: 6,255	VA: 49% NC: 48%	VA: 44% NC: 42%	

5.2.2 Non-Residential Baseline

For this potential study, exempt and opt-out customers were split apart from the non-exempt customers. The non-exempt customers were further broken down by state. All three groups were broken down into building types, with non-jurisdictional customers split out of the Virginia analysis:

Building Types:

- Office
- Restaurant (not applicable for exempt/opt-out customers)
- Retail
- Grocery
- Warehouse
- Education
- Health
- Lodging
- Data Center
- Non-Jurisdictional (Virginia only)
- Religious Worship
- Other.

5.2.2.1 Non-Residential Equipment Saturations

The equipment saturations (percent of non-residential square feet having an end use) were calculated primarily from the results of the commercial saturation surveys. For a few measures, such as linear fluorescent lighting, saturations were broken down into finer levels of detail than was provided by the survey data (for example, 2-lamp 4-foot fixtures versus 4-lamp 4-foot fixtures versus other configurations). In such cases, data from internal DNV GL databases (gleaned from previous potential studies and on-site data collection) was used for the breakouts. The resulting saturations are shown in **Error! Reference source not found.**,

Table 5-12: Non-Residential Sector Equipment Saturations—North Carolina

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Table 5-11: Non-Residential Sector Equipment Saturations—Virginia

End Use	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
Base Fluorescent Fixture, 4L4'T8	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
Base Fluorescent Fixture, 2L4'T8, 1 EB	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
Base Other Fluorescent Fixture	5%	0%	0%	0%	0%	2%	4%	1%	4%	3%	1%	1%
Base High-Efficiency Incandescent Reflector Lamp (100W)	7%	22%	10%	25%	3%	5%	9%	16%	5%	6%	11%	10%
Base High-Efficiency Incandescent A-line Lamp (72W)	4%	11%	5%	12%	1%	2%	4%	8%	2%	3%	5%	5%
Base High-Efficiency Incandescent A-line Lamp (53W)	4%	11%	5%	12%	1%	2%	4%	8%	2%	3%	5%	5%
Base CFL (18W)	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
Base CFL (23W)	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
Base HID, 465W	2%	3%	4%	1%	25%	5%	2%	6%	2%	9%	2%	6%
Base CFL Exit Sign	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Base Outdoor High Pressure Sodium 250W Lamp	43%	62%	41%	25%	72%	85%	64%	92%	93%	79%	89%	68%
Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	13%	15%	1%	3%	0%	40%	19%	27%	66%	44%	15%	8%
Base DX Packaged System, EER=10.3, 10 tons	58%	77%	50%	84%	37%	95%	65%	68%	38%	54%	47%	32%
Base Heat Pump (13 SEER, 7.7 HSPF)	40%	24%	18%	7%	20%	75%	41%	53%	5%	23%	39%	30%
Base PTAC, EER=8.3, 1 ton	6%	3%	3%	3%	1%	68%	9%	11%	0%	36%	38%	19%
Base Fan Motor, 5hp, 1800rpm, 87.5%	42%	50%	43%	97%	30%	33%	19%	65%	19%	48%	54%	54%
Base Fan Motor, 15hp, 1800rpm, 91.0%	7%	0%	2%	0%	0%	89%	65%	0%	65%	25%	43%	43%
Base Fan Motor, 40hp, 1800rpm, 93.0%	5%	0%	2%	96%	10%	37%	69%	11%	69%	19%	34%	34%
Base Built-Up Refrigeration System	9%	67%	17%	91%	37%	37%	26%	38%	2%	40%	43%	18%
Base Self-Contained Refrigeration	68%	91%	71%	94%	90%	83%	77%	78%	95%	85%	96%	62%

End Use	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
Base Desktop PC	98%	64%	80%	85%	98%	100%	95%	97%	98%	98%	95%	90%
Base Laptop PC	87%	44%	61%	66%	86%	98%	68%	87%	90%	83%	72%	71%
Base Monitor, CRT	60%	47%	42%	28%	68%	94%	64%	84%	79%	60%	45%	51%
Base Monitor, LCD	79%	42%	48%	92%	75%	93%	78%	87%	95%	96%	89%	78%
Base Copier	97%	45%	87%	29%	89%	99%	99%	94%	95%	97%	98%	86%
Base Multifunction	97%	78%	81%	84%	94%	98%	84%	93%	90%	97%	91%	86%
Base Printer	95%	30%	51%	17%	83%	99%	82%	43%	69%	92%	53%	71%
Base Data Center/Server Room	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%
Base Water Heating	89%	39%	63%	78%	83%	72%	55%	31%	89%	39%	71%	51%
Base Refrigerated Vending Machines	99%	100%	90%	98%	99%	100%	99%	96%	100%	98%	100%	97%
Base Non-Refrigerated Vending Machines	78%	88%	54%	11%	95%	71%	74%	32%	100%	68%	3%	47%
Base Convection Oven	2%	15%	3%	56%	15%	8%	5%	20%	0%	22%	49%	5%
Base Fryer	1%	19%	1%	49%	11%	11%	3%	19%	0%	13%	1%	4%
Base Steamer	1%	15%	1%	42%	11%	1%	5%	7%	0%	16%	3%	2%
Base Heating, Heat Pump (13 SEER 7.7 HSPF)	35%	8%	8%	3%	2%	17%	23%	25%	0%	6%	6%	22%
Base Heating, Other Electric	35%	21%	28%	76%	12%	0%	32%	20%	41%	14%	46%	21%
Base Miscellaneous	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 5-12: Non-Residential Sector Equipment Saturations—North Carolina

End Use	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
Base Fluorescent Fixture, 4L4'T8	80%	4%	51%	62%	86%	11%	54%	2%	46%	NA	13%	9%
Base Fluorescent Fixture, 2L4'T8, 1 EB	2%	51%	17%	0%	1%	1%	14%	11%	1%	NA	12%	9%
Base Other Fluorescent Fixture	6%	0%	0%	0%	0%	0%	5%	0%	4%	NA	1%	0%
Base High-Efficiency Incandescent Reflector Lamp (100W)	7%	13%	3%	10%	6%	20%	11%	13%	5%	NA	25%	35%
Base High-Efficiency Incandescent A-line Lamp (72W)	3%	7%	1%	5%	3%	10%	5%	7%	2%	NA	13%	17%
Base High-Efficiency Incandescent A-line Lamp (53W)	3%	7%	1%	5%	3%	10%	5%	7%	2%	NA	13%	17%
Base CFL (18W)	2%	7%	9%	13%	1%	24%	12%	29%	17%	NA	34%	6%
Base CFL (23W)	2%	7%	9%	13%	1%	24%	12%	29%	17%	NA	34%	6%
Base HID, 465W	0%	0%	1%	1%	0%	1%	0%	1%	2%	NA	44%	9%
Base CFL Exit Sign	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%
Base Outdoor High Pressure Sodium 250W Lamp	16%	42%	12%	91%	3%	93%	78%	93%	93%	NA	91%	42%
Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	2%	3%	0%	0%	0%	68%	0%	0%	66%	NA	0%	0%
Base DX Packaged System, EER=10.3, 10 tons	39%	45%	53%	45%	10%	107%	34%	77%	38%	NA	89%	12%
Base Heat Pump (13 SEER, 7.7 HSPF)	43%	22%	28%	31%	0%	77%	67%	71%	5%	NA	74%	63%
Base PTAC, EER=8.3, 1 ton	5%	8%	2%	5%	5%	106%	6%	65%	0%	NA	1%	16%
Base Fan Motor, 5hp, 1800rpm, 87.5%	42%	50%	43%	97%	30%	33%	19%	65%	19%	NA	54%	54%
Base Fan Motor, 15hp, 1800rpm, 91.0%	7%	0%	2%	0%	0%	89%	65%	0%	65%	NA	43%	43%
Base Fan Motor, 40hp, 1800rpm, 93.0%	5%	0%	2%	96%	10%	37%	69%	11%	69%	NA	34%	34%
Base Built-Up Refrigeration System	0%	66%	9%	84%	3%	60%	10%	32%	2%	NA	0%	3%
Base Self-Contained Refrigeration	84%	92%	34%	76%	35%	92%	100%	79%	95%	NA	100%	75%
Base Desktop PC	98%	59%	37%	100%	3%	99%	100%	87%	98%	NA	86%	95%

End Use	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
Base Laptop PC	64%	39%	13%	29%	3%	99%	64%	45%	90%	NA	23%	65%
Base Monitor, CRT	67%	24%	34%	62%	7%	98%	67%	80%	79%	NA	63%	67%
Base Monitor, LCD	91%	51%	21%	96%	3%	99%	100%	83%	95%	NA	33%	80%
Base Copier	92%	42%	37%	92%	3%	100%	100%	87%	95%	NA	99%	78%
Base Multifunction	91%	84%	37%	97%	3%	98%	91%	87%	90%	NA	23%	51%
Base Printer	99%	21%	11%	48%	7%	79%	77%	73%	69%	NA	14%	83%
Base Data Center/Server Room	0.07%	0.02%	0.00%	0.02%	0.03%	0.71%	1.13%	0.45%	100%	NA	0.02%	0.11%
Base Water Heating	84%	71%	83%	81%	35%	66%	88%	45%	89%	NA	45%	97%
Base Refrigerated Vending Machines	100%	100%	100%	100%	100%	94%	100%	94%	100%	NA	100%	96%
Base Non-Refrigerated Vending Machines	0%	0%	0%	6%	100%	89%	22%	29%	100%	NA	100%	52%
Base Convection Oven	0%	16%	0%	16%	0%	85%	5%	18%	0%	NA	0%	0%
Base Fryer	0%	12%	0%	2%	0%	20%	4%	8%	0%	NA	0%	0%
Base Steamer	0%	7%	0%	3%	0%	60%	4%	8%	0%	NA	0%	0%
Base Heating, Heat Pump (13 SEER 7.7HSPF)	40%	15%	27%	29%	0%	1%	74%	59%	0%	NA	14%	70%
Base Heating, Other Electric	37%	40%	7%	12%	22%	53%	0%	28%	41%	NA	0%	2%
Base Miscellaneous	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%

Table 5-13: Non-Residential Sector Equipment Saturations—Opt-Out/Exempt

End Use	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
Base Fluorescent Fixture, 4L4'T8	62%	NA	29%	42%	57%	44%	54%	3%	46%	48%	NA	8%
Base Fluorescent Fixture, 2L4'T8, 1 EB	2%	NA	10%	0%	0%	4%	14%	17%	1%	14%	NA	8%
Base Other Fluorescent Fixture	5%	NA	0%	0%	0%	2%	5%	1%	4%	3%	NA	0%
Base High-Efficiency Incandescent Reflector Lamp (100W)	7%	NA	10%	25%	3%	12%	11%	16%	5%	6%	NA	8%
Base High-Efficiency Incandescent A-line Lamp (72W)	4%	NA	5%	12%	1%	6%	6%	8%	2%	3%	NA	4%
Base High-Efficiency Incandescent A-line Lamp (53W)	4%	NA	5%	12%	1%	6%	6%	8%	2%	3%	NA	4%
Base CFL (18W)	8%	NA	17%	1%	6%	7%	3%	19%	17%	11%	NA	7%
Base CFL (23W)	8%	NA	17%	1%	6%	7%	3%	19%	17%	11%	NA	7%
Base HID, 465W	2%	NA	4%	1%	25%	10%	0%	6%	2%	9%	NA	6%
Base CFL Exit Sign	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%
Base Outdoor High Pressure Sodium 250W Lamp	43%	NA	41%	25%	72%	100%	100%	92%	93%	79%	NA	100%
Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	13%	NA	1%	3%	0%	93%	100%	27%	66%	44%	NA	4%
Base DX Packaged System, EER=10.3, 10 tons	58%	NA	50%	84%	37%	48%	100%	68%	38%	54%	NA	98%
Base Heat Pump (13 SEER, 7.7 HSPF)	40%	NA	18%	7%	20%	48%	56%	53%	5%	23%	NA	12%
Base PTAC, EER=8.3, 1 ton	6%	NA	3%	3%	1%	48%	56%	11%	0%	36%	NA	12%
Base Fan Motor, 5hp, 1800rpm, 87.5%	42%	NA	43%	97%	30%	33%	19%	65%	19%	48%	NA	54%
Base Fan Motor, 15hp, 1800rpm, 91.0%	7%	NA	2%	0%	0%	89%	65%	0%	65%	25%	NA	43%
Base Fan Motor, 40hp, 1800rpm, 93.0%	5%	NA	2%	96%	10%	37%	69%	11%	69%	19%	NA	34%
Base Built-Up Refrigeration System	9%	NA	17%	91%	37%	100%	100%	38%	2%	40%	NA	100%
Base Self-Contained Refrigeration	68%	NA	71%	94%	90%	100%	56%	78%	95%	85%	NA	50%
Base Desktop PC	98%	NA	80%	85%	98%	100%	100%	97%	98%	98%	NA	100%

End Use	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
Base Laptop PC	87%	NA	61%	66%	86%	100%	100%	87%	90%	83%	NA	60%
Base Monitor, CRT	60%	NA	42%	28%	68%	100%	0%	84%	79%	60%	NA	93%
Base Monitor, LCD	79%	NA	48%	92%	75%	100%	100%	87%	95%	96%	NA	58%
Base Copier	97%	NA	87%	29%	89%	100%	100%	94%	95%	97%	NA	100%
Base Multifunction	97%	NA	81%	84%	94%	100%	100%	93%	90%	97%	NA	100%
Base Printer	95%	NA	51%	17%	83%	100%	100%	43%	69%	92%	NA	60%
Base Data Center/Server Room	0.20%	NA	0.02 %	0.01%	0.13 %	0.41%	0.63 %	0.17%	100.0 0%	0.21%	NA	0.18 %
Base Water Heating	89%	NA	63%	78%	83%	100%	0%	31%	89%	39%	NA	8%
Base Refrigerated Vending Machines	99%	NA	90%	98%	99%	100%	100%	96%	100%	98%	NA	95%
Base Non-Refrigerated Vending Machines	78%	NA	54%	11%	95%	51%	44%	32%	100%	68%	NA	20%
Base Convection Oven	2%	NA	3%	56%	15%	49%	100%	20%	0%	22%	NA	29%
Base Fryer	1%	NA	1%	49%	11%	49%	100%	19%	0%	13%	NA	33%
Base Steamer	1%	NA	1%	42%	11%	100%	100%	7%	0%	16%	NA	4%
Base Heating, Heat Pump (13 SEER 7.7HSPF)	34.7%	NA	7.7%	3.1%	1.5%	0.0%	0.0%	25.4%	0.0%	6.2%	NA	0.0%
Base Heating, Other Electric	35%	NA	28%	76%	12%	48%	0%	20%	41%	14%	NA	49%
Base Miscellaneous	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%

5.2.2.2 Non-Residential End-Use Energy Intensities

Table 5-14,

Table 5-15, and

Table 5-16 show the end-use energy intensities (EUIs) for the non-Residential sector by base measure. End-use energy intensities represent the energy use per square feet for businesses that have that end-use (for example, chiller annual kWh for non-Residential square feet with chillers). EUIs were developed from a variety of sources. At the base measure level, lighting EUIs were developed from engineering calculations based on wattage and hours of use. For products covered by the ENERGY STAR program, the Environmental Protection Agency's calculators were used. In addition, California's Commercial End-Use Survey (CEUS) was used for other non-weather-sensitive end uses.[16]

At the end-use level, EUIs were obtained for the South Atlantic Census Division from the Department of Energy's 2003[17] Commercial Building Energy Consumption Survey (CBECS). This provided concrete, survey-based, regionally appropriate values to use to calibrate the base measure-level EUIs. The resulting EUIs, when combined with the saturation data, produced intensities at the building type level that are consistent with values estimated from the Dominion survey data.

Table 5-14: Non-Residential End-Use Energy Intensities (kWh per End-Use Square Foot)—Virginia

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
Base Fluorescent Fixture, 4L4'T8	7.8	7.8	5.2	7.4	2.1	3.4	3.1	1.6	6.1	4.9	1.57	4.9
Base Fluorescent Fixture, 2L4'T8, 1 EB	4.3	3.5	2.9	5.6	1.9	2.2	1.4	1.1	3.4	3.4	1.19	3.7
Base Other Fluorescent Fixture	3.5	0.0	1.5	0.0	3.0	0.4	1.1	0.5	2.8	1.3	0.31	1.0
Base High-Efficiency Incandescent Reflector Lamp (100W)	30.1	4.8	7.8	4.7	0.0	0.2	1.3	2.5	24.1	9.8	1.87	7.6
Base High-Efficiency Incandescent A-line Lamp (72W)	21.7	3.5	5.6	3.4	3.5	0.1	0.9	1.8	17.3	7.1	1.34	5.4
Base High-Efficiency Incandescent A-line Lamp (53W)	15.9	2.6	4.1	2.5	2.5	0.1	0.7	1.3	12.8	5.2	0.99	4.0
Base CFL (18W)	1.2	0.9	0.9	4.2	0.9	1.3	0.3	0.3	1.0	1.2	0.24	1.0
Base CFL (23W)	1.6	1.1	1.2	5.3	1.1	1.7	0.4	0.4	1.3	1.6	0.31	1.2
Base HID, 465W	0.0	0.1	0.0	14.4	2.8	5.1	0.0	2.6	0.0	3.5	0.93	2.9
Base CFL Exit Sign	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0
Base Outdoor High Pressure Sodium	0.8	1.6	0.7	0.2	0.4	0.5	0.2	0.2	0.7	0.5	0.14	0.3

[16] CEUS is the most comprehensive study available for which we can calculate EUIs right now. The CEUS is based on 2,500 DOE-2 surveys. DNV GL only relied on CEUS for non-weather sensitive measures.

[17] The most recent for which data is available.

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
250W Lamp												
Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	4.4	5.8	2.7	2.7	1.6	1.5	3.0	2.8	10.7	2.5	1.0	2.1
Base DX Packaged System, EER=10.3, 10 tons	4.4	5.8	2.7	2.7	1.6	1.5	3.0	2.8	10.7	2.5	1.0	2.1
Base Heat Pump (13 SEER, 7.7 HSPF)	4.4	5.8	2.7	2.7	1.6	1.5	3.0	2.8	10.7	2.5	1.0	2.1
Base PTAC, EER=8.3, 1 ton	4.4	5.8	2.7	2.7	1.6	1.5	3.0	2.8	10.7	2.5	1.0	2.1
Base Fan Motor, 5hp, 1800rpm, 87.5%	3.3	2.9	2.1	2.3	1.1	1.0	3.0	1.9	5.5	1.7	0.7	1.4
Base Fan Motor, 15hp, 1800rpm, 91.0%	3.3	2.9	2.1	2.3	1.1	1.0	3.0	1.9	5.5	1.7	0.7	1.4
Base Fan Motor, 40hp, 1800rpm, 93.0%	3.3	2.9	2.1	2.3	1.1	1.0	3.0	1.9	5.5	1.7	0.7	1.4
Base Built-Up Refrigeration System	0.0	0.0	0.0	10.1	2.1	0.0	0.0	0.0	0.0	0.0	0.00	0.0
Base Self-Contained Refrigeration	0.6	6.9	1.0	1.1	0.2	0.5	0.5	0.9	0.6	0.8	0.5	1.0
Base Desktop PC	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.05	0.1
Base Laptop PC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0
Base Monitor, CRT	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.02	0.0
Base Monitor, LCD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0
Base Copier	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0
Base Multifunction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.0
Base Printer	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0
Base Data Center/Server Room	149.0	104.3	119.2	119.2	119.2	119.2	119.2	119.2	119.2	119.2	81.97	119.2
Base Water Heating	0.4	1.6	0.2	0.3	0.1	0.2	0.3	1.0	0.1	0.3	0.2	0.4
Base Refrigerated Vending Machines	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.02	0.0
Base Non-Refrigerated Vending Machines	0.002	0.001	0.000	0.003	0.002	0.001	0.001	0.001	0.002	0.001	0.00	0.001
Base Convection Oven	1.1	1.9	0.6	0.4	0.1	0.6	1.9	0.1	0.0	0.6	0.28	0.3
Base Fryer	0.9	1.9	0.3	0.6	0.2	0.1	3.2	0.2	0.0	0.5	0.50	0.5
Base Steamer	2.5	2.9	1.3	1.0	0.1	0.2	1.6	0.1	0.0	0.8	0.23	0.2

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
Base Heating, Heat Pump (13 SEER 7.7HSPF)	0.7	0.2	0.3	0.3	0.4	0.2	0.7	0.5	0.2	0.4	0.2	0.4
Base Heating, Other Electric	0.7	0.2	0.3	0.3	0.4	0.2	0.7	0.5	0.2	0.4	0.2	0.4
Base Miscellaneous	2.2	2.6	2.2	2.4	0.9	0.6	3.3	1.4	0.6	1.5	1.7	1.7

Table 5-15: Non-Residential End-Use Energy Intensities (kWh per End-Use Square Foot)—North Carolina

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
Base Fluorescent Fixture, 4L4'T8	8.01	7.3	5.6	5.9	4.4	3.6	2.8	1.6	5.2	NA	1.2	4.7
Base Fluorescent Fixture, 2L4'T8, 1 EB	4.3	3.5	3.0	4.6	3.8	2.4	1.2	1.0	2.9	NA	1.0	3.6
Base Other Fluorescent Fixture	3.5	0.0	1.5	0.0	5.9	0.5	1.0	0.5	2.4	NA	0.3	1.0
Base High-Efficiency Incandescent Reflector Lamp (100W)	28.9	4.8	7.8	3.9	0.0	0.2	1.1	2.2	20.5	NA	1.5	7.6
Base High-Efficiency Incandescent A-line Lamp (72W)	20.8	3.5	5.6	2.8	6.2	0.2	0.8	1.6	14.7	NA	1.1	5.4
Base High-Efficiency Incandescent A-line Lamp (53W)	15.3	2.6	4.1	2.1	4.6	0.1	0.6	1.2	10.8	NA	0.8	4.0
Base CFL (18W)	1.2	0.9	0.9	3.5	1.5	1.4	0.3	0.3	0.8	NA	0.2	1.0
Base CFL (23W)	1.5	1.1	1.2	4.5	2.0	1.8	0.3	0.4	1.1	NA	0.3	1.2
Base HID, 465W	0.0	0.1	0.0	12.0	5.0	5.6	0.0	2.3	0.0	NA	0.8	2.9
Base CFL Exit Sign	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	0.0	0.0
Base Outdoor High Pressure Sodium 250W Lamp	0.8	1.6	0.7	0.1	0.6	0.6	0.1	0.2	0.6	NA	0.1	0.3
Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	4.2	5.8	2.7	2.3	2.9	1.7	2.6	2.5	7.0	NA	0.9	2.1
Base DX Packaged System, EER=10.3, 10 tons	4.2	5.8	2.7	2.3	2.9	1.7	2.6	2.5	7.0	NA	0.9	2.1
Base Heat Pump (13 SEER, 7.7 HSPF)	4.2	5.8	2.7	2.3	2.9	1.7	2.6	2.5	7.0	NA	0.9	2.1
Base PTAC, EER=8.3, 1 ton	4.2	5.8	2.7	2.3	2.9	1.7	2.6	2.5	7.0	NA	0.9	2.1
Base Fan Motor, 5hp, 1800rpm, 87.5%	3.1	2.9	2.1	1.9	2.0	1.1	2.5	1.7	3.6	NA	0.6	1.4
Base Fan Motor, 15hp, 1800rpm, 91.0%	3.1	2.9	2.1	1.9	2.0	1.1	2.5	1.7	3.6	NA	0.6	1.4
Base Fan Motor, 40hp, 1800rpm, 93.0%	3.1	2.9	2.1	1.9	2.0	1.1	2.5	1.7	3.6	NA	0.6	1.4
Base Built-Up Refrigeration System	0.0	0.0	0.0	10.1	3.8	0.0	0.0	0.0	0.0	NA	0.0	0.0
Base Self-Contained Refrigeration	0.6	6.9	1.0	1.1	0.4	0.6	0.4	0.8	0.5	NA	0.4	1.0
Base Desktop PC	0.8	0.2	0.1	0.0	0.1	0.2	0.2	0.1	0.2	NA	0.2	0.1

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
Base Laptop PC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	0.0	0.0
Base Monitor, CRT	0.4	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	NA	0.1	0.0
Base Monitor, LCD	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	0.0	0.0
Base Copier	0.4	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.2	NA	0.2	0.0
Base Multifunction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	0.0	0.0
Base Printer	0.4	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	NA	0.0	0.0
Base Data Center/Server Room	178.9	104.3	134.1	74.5	119.2	119.2	89.4	119.2	126.7	NA	68.6	119.2
Base Water Heating	0.4	1.6	0.2	0.3	0.1	0.2	0.2	0.9	0.1	NA	0.2	0.4
Base Refrigerated Vending Machines	0.2	0.1	0.1	0.5	0.0	0.1	0.2	0.1	0.0	NA	0.0	0.0
Base Non-Refrigerated Vending Machines	0.000	0.000	0.000	0.002	0.000	0.004	0.002	0.002	0.000	NA	0.000	0.001
Base Convection Oven	1.0	2.5	0.9	0.7	0.1	0.2	0.6	0.2	1.0	NA	0.0	0.3
Base Fryer	0.8	2.5	0.5	1.0	0.3	0.0	1.1	0.4	0.8	NA	0.0	0.5
Base Steamer	2.3	3.9	1.8	1.7	0.1	0.1	0.6	0.2	2.3	NA	0.0	0.2
Base Heating, Heat Pump (13 SEER 7.7HSPF)	0.7	0.2	0.3	0.3	0.7	0.2	0.6	0.4	0.2	NA	0.2	0.4
Base Heating, Other Electric	0.7	0.2	0.3	0.3	0.7	0.2	0.6	0.4	0.2	NA	0.2	0.4
Base Miscellaneous	2.2	2.6	2.2	2.4	0.9	0.6	3.3	1.4	0.6	NA	1.7	1.7

Table 5-16: Non-Residential End-Use Energy Intensities (kWh per End-Use Square Foot)—Opt-Out/Exempt

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
Base Fluorescent Fixture, 4L4'T8	7.8	NA	5.2	6.1	2.1	2.9	2.2	1.6	5.2	6.2	NA	4.4
Base Fluorescent Fixture, 2L4'T8, 1 EB	4.3	NA	2.9	4.7	1.9	2.0	1.0	1.1	2.9	4.1	NA	3.6
Base Other Fluorescent Fixture	3.5	NA	1.5	0.0	3.0	0.4	0.8	0.5	2.4	2.3	NA	0.9
Base High-Efficiency Incandescent Reflector Lamp (100W)	30.1	NA	7.8	3.9	0.0	0.2	0.9	2.5	20.5	20.0	NA	7.6
Base High-Efficiency Incandescent A-line Lamp (72W)	21.7	NA	5.6	2.8	3.5	0.1	0.6	1.8	14.7	14.4	NA	5.4
Base High-Efficiency Incandescent A-line Lamp (53W)	15.9	NA	4.1	2.1	2.5	0.1	0.5	1.3	10.8	10.6	NA	4.0
Base CFL (18W)	1.2	NA	0.9	3.5	0.9	1.2	0.2	0.3	0.8	1.2	NA	1.0
Base CFL (23W)	1.6	NA	1.2	4.5	1.1	1.5	0.3	0.4	1.1	1.5	NA	1.2
Base HID, 465W	0.0	NA	0.0	12.0	2.8	4.6	0.0	2.6	0.0	1.5	NA	2.9
Base CFL Exit Sign	0.1	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	0.0
Base Outdoor High Pressure Sodium 250W Lamp	0.8	NA	0.7	0.1	0.4	0.5	0.1	0.2	0.6	0.6	NA	0.3
Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	4.4	NA	2.7	2.3	1.6	1.4	2.1	2.8	7.0	2.5	NA	2.1
Base DX Packaged System, EER=10.3, 10 tons	4.4	NA	2.7	2.3	1.6	1.4	2.1	2.8	7.0	2.5	NA	2.1
Base Heat Pump (13 SEER, 7.7 HSPF)	4.4	NA	2.7	2.3	1.6	1.4	2.1	2.8	7.0	2.5	NA	2.1
Base PTAC, EER=8.3, 1 ton	4.4	NA	2.7	2.3	1.6	1.4	2.1	2.8	7.0	2.5	NA	2.1
Base Fan Motor, 5hp, 1800rpm, 87.5%	3.3	NA	2.1	1.9	1.1	0.9	2.1	1.9	3.6	1.7	NA	1.4
Base Fan Motor, 15hp, 1800rpm, 91.0%	3.3	NA	2.1	1.9	1.1	0.9	2.1	1.9	3.6	1.7	NA	1.4
Base Fan Motor, 40hp, 1800rpm, 93.0%	3.3	NA	2.1	1.9	1.1	0.9	2.1	1.9	3.6	1.7	NA	1.4
Base Built-Up Refrigeration System	0.0	NA	0.0	10.1	2.1	0.0	0.0	0.0	0.0	0.0	NA	0.0
Base Self-Contained Refrigeration	0.6	NA	1.0	1.1	0.2	0.5	0.4	0.9	0.5	0.8	NA	1.0

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other
Base Desktop PC	0.2	NA	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	NA	0.0
Base Laptop PC	0.02	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	NA	0.00
Base Monitor, CRT	0.06	NA	0.02	0.02	0.01	0.01	0.00	0.03	0.04	0.05	NA	0.00
Base Monitor, LCD	0.04	NA	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	NA	0.00
Base Copier	0.06	NA	0.02	0.03	0.01	0.01	0.01	0.01	0.01	0.04	NA	0.00
Base Multifunction	0.01	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	NA	0.00
Base Printer	0.06	NA	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.05	NA	0.00
Base Data Center/Server Room	186.3	NA	134.1	74.5	119.2	134.1	74.5	119.2	126.7	178.9	NA	119.2
Base Water Heating	0.4	NA	0.2	0.3	0.1	0.2	0.2	1.0	0.1	0.3	NA	0.4
Base Refrigerated Vending Machines	0.1	NA	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	NA	0.0
Base Non-Refrigerated Vending Machines	0.002	NA	0.000	0.003	0.002	0.001	0.002	0.001	0.0	0.001	NA	0.000
Base Convection Oven	1.1	NA	0.6	0.4	0.1	0.2	0.0	0.1	1.1	0.6	NA	0.1
Base Fryer	0.9	NA	0.3	0.6	0.2	0.0	0.0	0.2	0.9	0.5	NA	0.1
Base Steamer	2.5	NA	1.3	1.0	0.1	0.1	0.0	0.1	2.5	0.8	NA	0.1
Base Heating, Heat Pump (13 SEER 7.7HSPF)	0.7	NA	0.3	0.3	0.4	0.2	0.5	0.5	0.2	0.4	NA	0.4
Base Heating, Other Electric	0.7	NA	0.3	0.3	0.4	0.2	0.5	0.5	0.2	0.4	NA	0.4
Base Miscellaneous	2.2	NA	2.2	2.4	0.9	0.6	3.3	1.4	0.6	1.5	NA	1.7

5.2.2.3 Non-Residential Building Stock and Energy Use

2003 CBECS data from the South Atlantic Census Division was used to estimate the proportion of customers and the average floor space by building type. Energy use was then calculated as the product of the non-Residential floor space, equipment saturation, and the end-use energy intensity. Floor space and energy use by building type and end-use is shown in Table 5-17 through Table 5-19. Figure 5-4 shows the breakout of energy use by building type. For both Virginia and North Carolina non-exempt customers, offices represent the largest share of energy use followed by miscellaneous buildings.[18] Data centers represent the largest share of energy use among opt-out/exempt customers, followed by offices.

Figure 5-4: Non-Residential Energy Use by Building Type

Figure 5-5 shows the breakout of energy use by end-use. Among the non-exempt customers, indoor lighting, cooling, miscellaneous, and ventilation end uses represent the largest shares of energy use. Among opt-out customers, the high proportion of energy from office equipment reflects the computing load in data centers, with indoor lighting, cooling and ventilation rounding out the top four end-uses.

[18] Miscellaneous buildings include churches, public safety, services, community centers, recreation, entertainment, etc.

Table 5-17: Non-Residential Sector Floor space (1000 sf) and Energy Use (MWh) by End-Use and Building Type--Virginia

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other	Total
Floor Space (1000 sf)	229,033	95,960	598,719	51,850	368,656	148,316	108,863	189,431	6,064	557,616	186,136	448,255	2,988,901
Base Fluorescent Fixture, 4L4'T8	1,099,690	15,289	913,464	162,271	442,150	290,555	160,278	9,190	16,883	1,318,000	73,395	440,052	4,941,217
Base Fluorescent Fixture, 2L4'T8, 1 EB	17,833	86,468	174,452	516	2,912	17,492	18,179	36,117	278	256,454	52,523	314,912	978,135
Base Other Fluorescent Fixture	38,702	0	1,363	0	442	1,353	4,883	701	603	24,313	717	4,300	77,376
Base High-Efficiency Incandescent Reflector Lamp (100W)	499,137	99,529	458,746	60,062	0	1,413	12,095	75,855	7,144	319,549	37,606	353,596	1,924,732
Base High-Efficiency Incandescent A-line Lamp (72W)	179,689	35,830	165,149	21,622	18,249	509	4,354	27,308	2,572	115,038	13,538	127,295	711,152
Base High-Efficiency Incandescent A-line Lamp (53W)	132,271	26,375	121,568	15,916	13,433	375	3,205	20,102	1,893	84,680	9,966	93,703	523,487
Base CFL (18W)	22,831	11,898	94,025	3,013	17,750	19,749	2,841	11,064	1,011	73,989	3,926	46,775	308,872
Base CFL (23W)	29,173	15,203	120,143	3,850	22,680	25,235	3,630	14,137	1,292	94,541	5,017	59,768	394,670
Base HID, 465W	0	318	0	7,202	256,445	38,980	0	28,325	0	170,097	3,330	80,911	585,610
Base CFL Exit Sign	12,200	3,995	10,776	282	1,513	2,106	4,470	6,350	258	14,025	1,918	8,915	66,810

Base Outdoor High Pressure Sodium 250W Lamp	83,484	97,521	172,635	2,194	95,315	63,666	11,927	41,209	3,797	203,452	23,915	84,523	883,637
Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	129,056	80,383	22,981	3,806	0	88,503	63,204	142,370	42,651	606,522	28,518	76,915	1,284,910
Base DX Packaged System, EER=10.3, 10 tons	585,580	425,970	809,759	118,138	215,359	212,274	211,520	363,654	24,324	747,270	91,863	296,462	4,102,173
Base Heat Pump (13 SEER, 7.7 HSPF)	399,790	133,509	300,738	10,544	116,595	167,019	134,760	281,796	3,116	324,677	74,753	281,558	2,228,856
Base PTAC, EER=8.3, 1 ton	64,061	16,109	53,042	4,891	5,525	152,113	30,159	59,170	0	503,030	74,199	177,382	1,139,681
Base Fan Motor, 5hp, 1800rpm, 87.5%	316,908	142,557	548,684	114,870	121,413	50,063	60,633	237,937	6,243	463,196	69,127	332,945	2,464,575
Base Fan Motor, 15hp, 1800rpm, 91.0%	54,907	0	19,121	0	0	134,011	210,748	0	21,699	241,458	55,105	265,412	1,002,460
Base Fan Motor, 40hp, 1800rpm, 93.0%	34,615	0	19,121	113,575	40,270	55,860	223,932	41,135	23,056	185,818	43,728	210,615	991,726
Base Built-Up Refrigeration System	0	0	0	477,944	290,562	0	0	0	0	0	0	0	768,506
Base Self-Contained Refrigeration	92,975	604,643	441,780	54,463	77,652	62,946	41,479	134,300	3,453	374,598	93,384	290,806	2,272,480
Base Desktop PC	38,014	5,393	20,390	2,168	18,150	9,877	9,405	8,626	456	64,942	9,042	25,153	211,615

Base Laptop PC	3,459	221	842	66	1,288	1,102	487	414	33	5,744	621	1,437	15,715
Base Monitor, CRT	8,062	2,883	4,646	411	3,743	4,007	2,592	4,063	247	13,976	1,585	5,808	52,023
Base Monitor, LCD	7,214	1,204	2,903	646	2,989	2,069	1,663	1,799	119	15,007	1,883	5,276	42,773
Base Copier	13,205	2,244	10,066	521	4,610	2,638	2,622	2,508	102	18,100	3,667	9,315	69,598
Base Multifunction	2,242	855	1,540	208	1,035	325	423	387	13	2,597	479	1,386	11,490
Base Printer	13,077	974	4,405	174	4,626	2,756	2,128	1,094	40	21,329	1,480	7,253	59,337
Base Data Center/Server Room	68,369	5,371	15,850	422	54,061	64,306	37,394	38,146	723,051	136,349	7,637	54,882	1,205,837
Base Water Heating	78,368	58,556	84,251	12,359	20,545	22,579	15,206	59,191	364	72,919	25,612	87,612	537,563
Base Refrigerated Vending Machines	14,276	3,911	21,011	10,861	14,185	5,799	5,837	14,236	237	23,846	4,262	15,985	134,446
Base Non-Refrigerated Vending Machines	370	59	102	19	592	90	115	81	10	423	2	167	2,030
Base Convection Oven	4,199	26,995	13,370	12,228	4,684	6,337	9,210	2,818	0	68,315	25,588	5,636	179,380
Base Fryer	2,657	33,954	2,444	15,903	9,725	1,124	8,880	7,093	0	34,195	1,323	10,132	127,429
Base Steamer	5,516	43,153	9,592	22,211	4,087	308	7,972	1,171	0	68,914	1,170	2,508	166,602
Base Heating, Heat Pump (13 SEER 7.7HSPF)	58,086	1,747	13,260	535	2,031	4,080	17,011	23,533	0	14,765	2,268	42,979	180,295
Base Heating, Other Electric	58,677	4,827	48,442	13,042	16,000	0	23,941	18,872	399	33,064	18,515	39,917	275,696
Base Miscellaneous	503,873	249,497	1,317,183	124,439	331,791	88,990	359,248	265,203	3,638	847,698	316,430	762,034	5,170,025
Total	4,672,567	2,237,441	6,017,843	1,391,374	2,232,407	1,600,610	1,706,431	1,979,955	888,979	7,562,891	1,178,095	4,624,327	36,092,921

Table 5-18: Non-Residential Sector Floor space (1000 sf) and Energy Use (MWh) by End-Use and Building Type—North Carolina

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other	Total
Floor Space (1000 sf)	9,580	2,541	15,854	1,373	9,147	13,318	2,883	5,016	135	NA	4,929	12,480	77,872
Base Fluorescent Fixture, 4L4'T8	61,677	766	44,644	4,976	34,899	5,120	4,276	152	320	NA	800	5,338	162,970
Base Fluorescent Fixture, 2L4'T8, 1 EB	961	4,484	8,210	16	211	314	474	557	5	NA	590	3,934	19,758
Base Other Fluorescent Fixture	2,086	0	64	0	32	24	127	11	11	NA	8	54	2,418
Base High-Efficiency Incandescent Reflector Lamp (100W)	18,594	1,646	3,429	566	0	585	330	1,503	136	NA	1,907	32,853	61,548
Base High-Efficiency Incandescent A-line Lamp (72W)	6,694	593	1,235	204	1,844	210	119	541	49	NA	686	11,827	24,002
Base High-Efficiency Incandescent A-line Lamp (53W)	4,927	436	909	150	1,358	155	87	398	36	NA	505	8,706	17,668
Base CFL (18W)	235	151	1,240	634	184	4,532	87	409	19	NA	330	737	8,558
Base CFL (23W)	300	193	1,584	810	235	5,791	111	523	25	NA	421	942	10,935
Base HID, 465W	0	2	0	179	0	646	0	101	0	NA	1,679	3,355	5,961
Base CFL Exit Sign	490	106	285	6	68	208	101	151	5	NA	42	248	1,710
Base Outdoor High Pressure Sodium 250W Lamp	1,240	1,733	1,287	175	155	6,862	331	997	72	NA	530	1,454	14,836
Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	713	397	0	0	0	15,051	0	0	623	NA	0	0	16,784
Base DX Packaged System, EER=10.3, 10 tons	15,638	6,541	22,945	1,414	2,610	23,488	2,500	9,799	355	NA	3,794	3,071	92,155
Base Heat Pump (13 SEER, 7.7 HSPF)	17,641	3,245	12,284	966	0	16,838	4,994	9,034	45	NA	3,155	16,366	84,569
Base PTAC, EER=8.3, 1 ton	1,968	1,208	1,050	158	1,249	23,364	429	8,212	0	NA	54	4,042	41,735
Base Fan Motor, 5hp, 1800rpm, 87.5%	12,726	3,775	14,529	2,535	5,422	4,945	1,376	5,671	91	NA	1,531	9,270	61,871

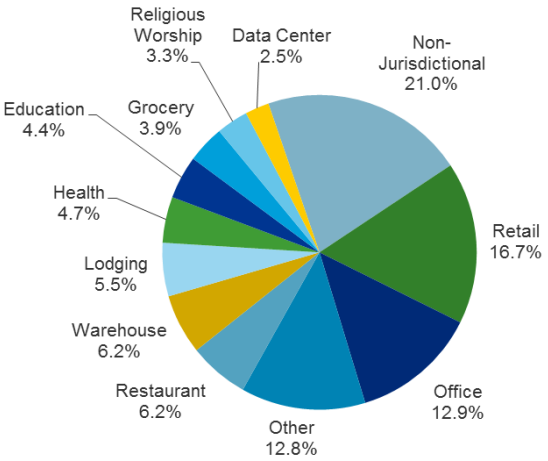
Base Fan Motor, 15hp, 1800rpm, 91.0%	2,205	0	506	0	0	13,237	4,783	0	317	NA	1,220	7,389	29,658
Base Fan Motor, 40hp, 1800rpm, 93.0%	1,390	0	506	2,506	1,798	5,517	5,083	980	337	NA	968	5,864	24,951
Base Built-Up Refrigeration System	0	0	0	11,697	913	0	0	0	0	NA	0	0	12,610
Base Self-Contained Refrigeration	4,646	16,239	5,571	1,164	1,353	6,868	1,228	3,252	63	NA	2,154	9,818	52,355
Base Desktop PC	7,712	228	779	61	14	2,074	600	399	24	NA	915	685	13,492
Base Laptop PC	188	13	10	1	2	285	17	7	3	NA	18	24	568
Base Monitor, CRT	2,762	51	241	21	30	1,209	175	227	14	NA	242	227	5,200
Base Monitor, LCD	1,138	61	75	11	3	297	106	102	5	NA	45	94	1,936
Base Copier	3,117	118	473	47	13	578	302	164	22	NA	965	219	6,018
Base Multifunction	429	40	71	8	2	66	57	22	3	NA	20	19	737
Base Printer	4,055	34	79	7	30	963	65	132	0	NA	33	152	5,551
Base Data Center/Server Room	1,271	50	76	21	419	6,962	3,024	2,790	17,158	NA	80	2,042	33,894
Base Water Heating	2,977	2,812	2,952	285	389	2,023	548	2,009	15	NA	353	4,680	19,043
Base Refrigerated Vending Machines	1,828	186	1,809	671	0	1,400	523	590	0	NA	0	571	7,577
Base Non-Refrigerated Vending Machines	0	0	0	0	0	46	1	3	0	NA	0	6	57
Base Convection Oven	0	1,001	6	156	0	2,096	81	143	0	NA	0	9	3,492
Base Fryer	0	781	2	33	0	58	119	170	0	NA	0	0	1,164
Base Steamer	0	710	5	64	0	459	70	83	0	NA	0	0	1,392
Base Heating, Heat Pump (13 SEER 7.7HSPF)	2,682	91	1,369	111	0	17	1,253	1,295	0	NA	125	3,751	10,694
Base Heating, Other Electric	2,515	243	366	46	1,316	1,559	0	628	12	NA	0	113	6,798
Base Miscellaneous	21,076	6,607	34,880	3,295	8,232	7,991	9,513	7,023	81	NA	8,379	21,216	128,293
Total	205,881	54,541	163,472	32,995	62,784	161,841	42,891	58,080	19,847	NA	31,549	159,076	992,958

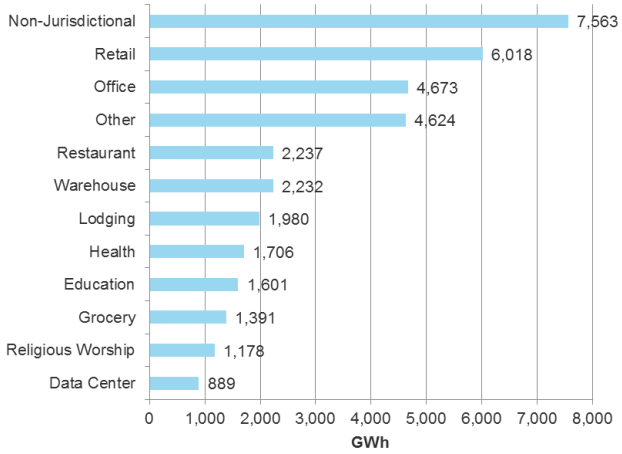
Table 5-19: Non-Residential Sector Floor space (1000 sf) and Energy Use (MWh) by End-Use and Building Type—Opt-Out/Exempt

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other	Total
Floor Space (1000 sf)	32,010	NA	11,835	144	2,362	2,707	14,418	536	7,426	2,670	NA	24,846	98,954
Base Fluorescent Fixture, 4L4'T8	153,696	NA	18,056	375	2,832	3,525	17,049	26	17,573	7,986	NA	9,139	230,257
Base Fluorescent Fixture, 2L4'T8, 1 EB	2,492	NA	3,448	1	19	218	1,941	102	289	1,481	NA	6,997	16,989
Base Other Fluorescent Fixture	5,409	NA	27	0	3	17	521	2	627	205	NA	96	6,906
Base High-Efficiency Incandescent Reflector Lamp (100W)	69,761	NA	9,068	139	0	62	1,443	215	7,435	3,128	NA	15,910	107,160
Base High-Efficiency Incandescent A-line Lamp (72W)	25,114	NA	3,264	50	117	22	519	77	2,677	1,126	NA	5,728	38,694
Base High-Efficiency Incandescent A-line Lamp (53W)	18,487	NA	2,403	37	86	16	382	57	1,970	829	NA	4,216	28,483
Base CFL (18W)	3,191	NA	1,859	7	114	235	84	31	1,052	329	NA	1,805	8,707
Base CFL (23W)	4,077	NA	2,375	9	145	300	108	40	1,344	421	NA	2,306	11,125
Base HID, 465W	0	NA	0	17	1,643	1,243	0	80	0	346	NA	4,167	7,495
Base CFL Exit Sign	1,705	NA	213	1	10	35	423	18	269	97	NA	494	3,264
Base Outdoor High Pressure Sodium 250W Lamp	11,668	NA	3,412	5	611	1,232	1,764	117	3,953	1,167	NA	6,934	30,862
Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	18,037	NA	454	9	0	3,412	30,927	403	34,149	2,904	NA	2,163	92,459
Base DX Packaged System, EER=10.3, 10 tons	81,842	NA	16,006	273	1,380	1,739	30,927	1,029	19,475	3,578	NA	50,820	207,070
Base Heat Pump (13 SEER, 7.7 HSPF)	55,876	NA	5,945	24	747	1,739	17,325	798	2,495	1,555	NA	6,267	92,769
Base PTAC, EER=8.3, 1 ton	8,953	NA	1,048	11	35	1,739	17,325	167	0	2,409	NA	6,267	37,955

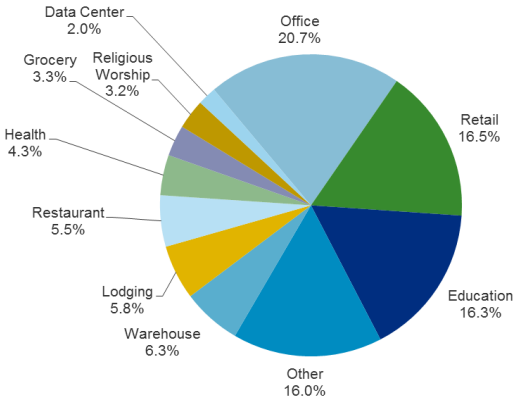
Base Fan Motor, 5hp, 1800rpm, 87.5%	44,292	NA	10,846	265	778	822	5,736	673	4,998	2,099	NA	18,455	88,965
Base Fan Motor, 15hp, 1800rpm, 91.0%	7,674	NA	378	0	0	2,201	19,937	0	17,374	2,170	NA	14,712	64,446
Base Fan Motor, 40hp, 1800rpm, 93.0%	4,838	NA	378	262	258	918	21,185	116	18,460	1,286	NA	11,674	59,376
Base Built-Up Refrigeration System	0	NA	0	1,325	1,861	0	0	0	0	0	NA	0	3,186
Base Self-Contained Refrigeration	12,995	NA	8,733	151	497	1,242	2,867	380	3,594	1,794	NA	13,056	45,309
Base Desktop PC	5,313	NA	403	5	116	31	420	24	474	339	NA	452	7,578
Base Laptop PC	483	NA	17	0	8	7	45	1	34	30	NA	8	635
Base Monitor, CRT	1,127	NA	92	1	24	37	0	11	257	73	NA	63	1,685
Base Monitor, LCD	1,008	NA	57	1	19	14	118	5	124	78	NA	61	1,487
Base Copier	1,846	NA	199	1	30	35	209	7	106	95	NA	106	2,632
Base Multifunction	313	NA	30	0	7	5	43	1	13	14	NA	16	443
Base Printer	1,828	NA	87	0	30	25	166	3	41	111	NA	42	2,334
Base Data Center/Server Room	11,944	NA	352	1	346	1,465	6,641	108	940,750	979	NA	5,046	967,633
Base Water Heating	10,953	NA	1,665	29	132	512	0	168	445	349	NA	730	14,982
Base Refrigerated Vending Machines	1,995	NA	415	30	91	114	706	40	290	114	NA	111	3,908
Base Non-Refrigerated Vending Machines	52	NA	2	0	4	1	13	0	13	2	NA	1	88
Base Convection Oven	587	NA	264	34	30	325	369	8	5	327	NA	528	2,478
Base Fryer	371	NA	48	44	62	39	629	20	4	164	NA	1,098	2,480
Base Steamer	771	NA	190	62	26	250	444	3	12	330	NA	65	2,152
Base Heating, Heat Pump (13 SEER 7.7HSPF)	8,118	NA	295	1	13	0	0	67	0	71	NA	0	8,565
Base Heating, Other Electric	8,201	NA	1,077	30	102	232	0	53	550	158	NA	5,217	15,621
Base Miscellaneous	70,423	NA	26,037	345	2,125	1,624	47,580	751	4,455	4,059	NA	42,239	199,638
Total	655,441	NA	119,145	3,545	14,301	25,433	227,848	5,604	1,085,309	42,204	NA	236,987	2,415,818

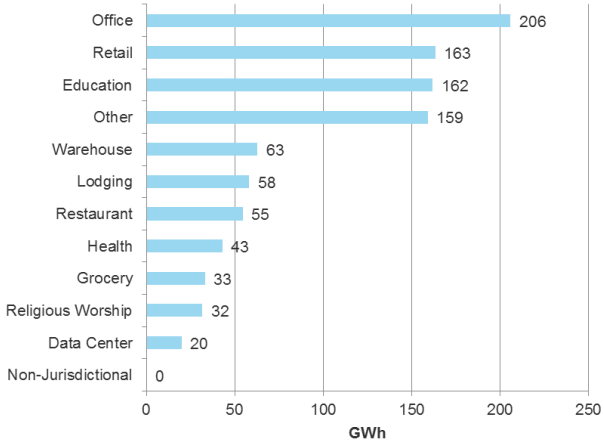
Virginia



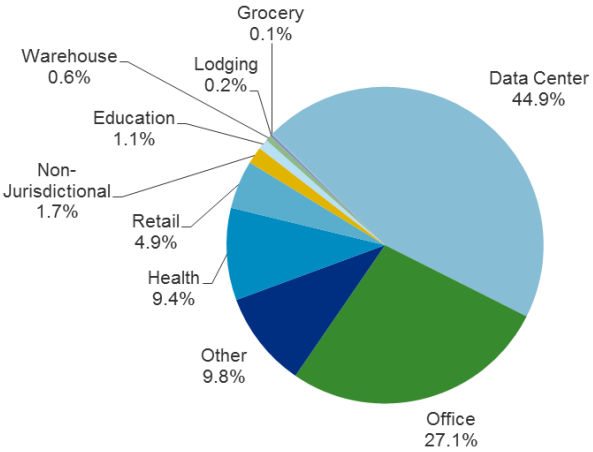


North Carolina





Opt-Out/Exempt



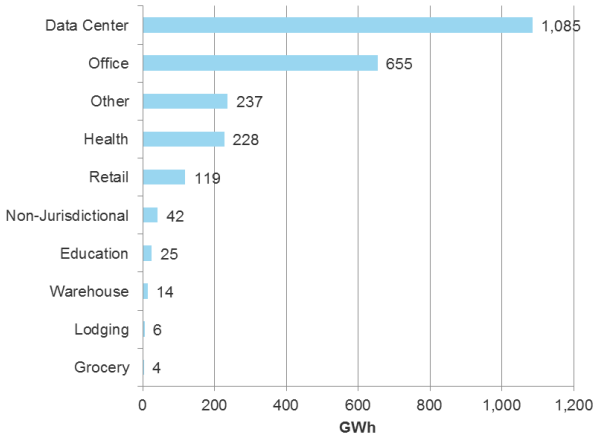
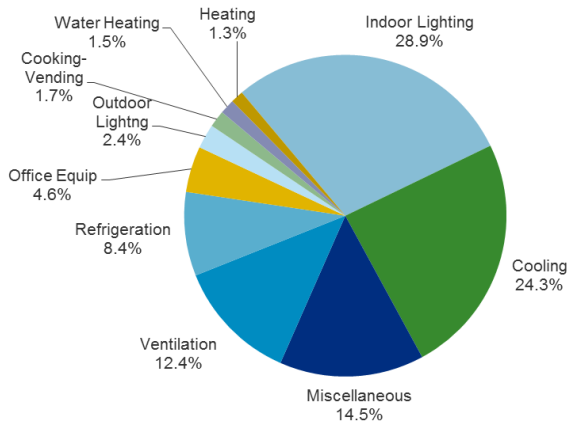
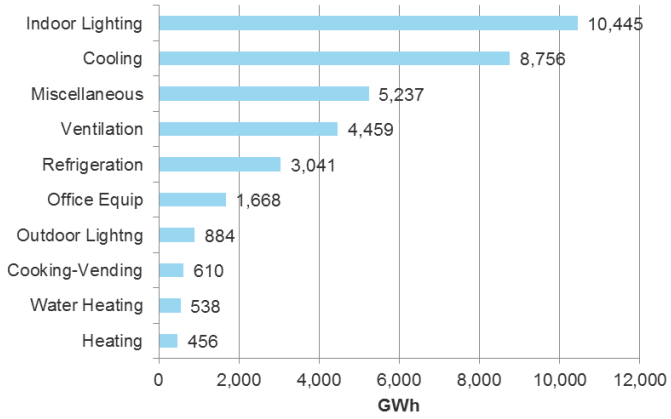


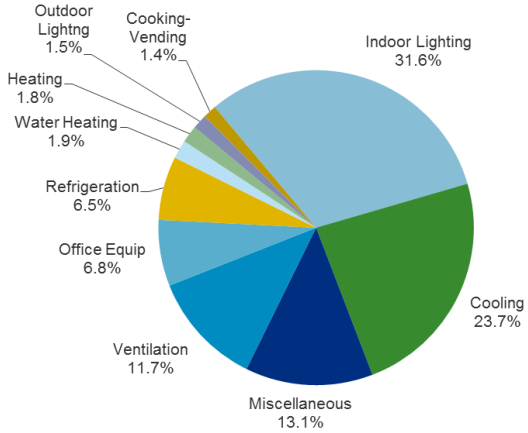
Figure 5-4: Non-Residential Energy Use by Building Type

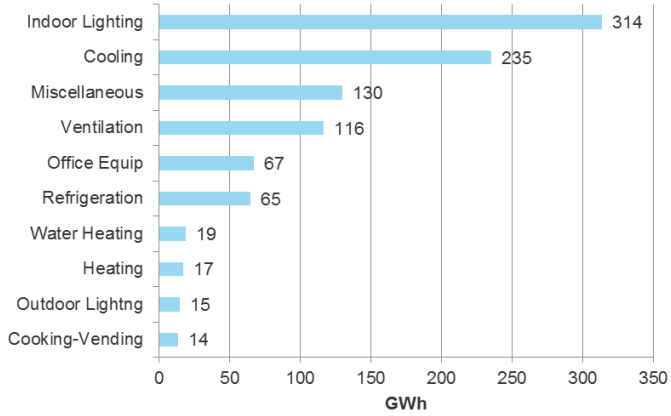
Virginia



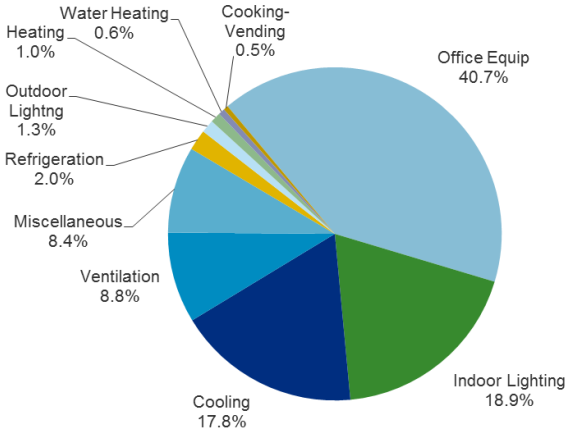


North Carolina





Opt-Out/Exempt



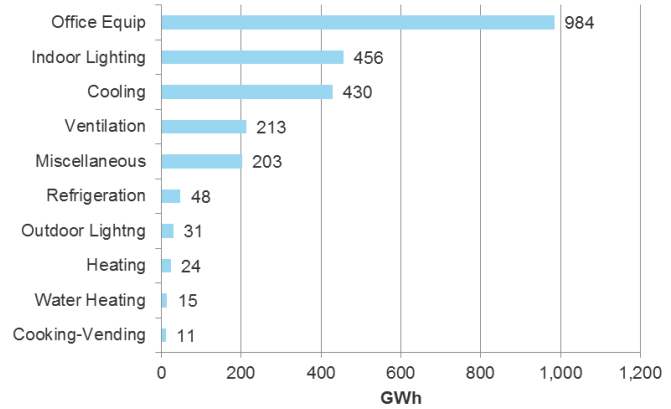


Figure 5-5: Non-Residential Energy Use by End-Use

5.2.2.4 Non-Residential Peak Demand

Similar to the residential sector, Dominion's annual hourly 8,760 load data was combined with non-residential end-use load shapes from DNV GL's end-use databases to allocate annual energy usage to time-of-use (TOU) periods. Peak period usage, developed on a sector-specific and end-use basis, was calibrated to equal the Dominion summer peak. Non-residential peak demand estimates by segment and end use are summarized in Table 5-20, Table 5-21, and Table 5-22, for Virginia, North Carolina and opt-out/exempt customers, respectively.

Table 5-20: Non-Residential Peak Demand (MW) by End-Use and Building Type--Virginia

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other	Total
Base Fluorescent Fixture, 4L4'T8	186.1	2.7	150.3	22.5	71.4	35.7	22.2	1.2	2.7	213.1	11.3	67.9	787.1
Base Fluorescent Fixture, 2L4'T8, 1 EB	3.0	15.5	28.7	0.1	0.5	2.1	2.5	4.6	0.0	41.5	8.1	48.6	155.3
Base Other Fluorescent Fixture	6.5	0.0	0.2	0.0	0.1	0.2	0.7	0.1	0.1	3.9	0.1	0.7	12.6
Base High-Efficiency Incandescent Reflector Lamp (100W)	84.5	17.9	75.5	8.3	0.0	0.2	1.7	9.8	1.1	51.7	5.8	54.6	310.9
Base High-Efficiency Incandescent A-line Lamp (72W)	30.4	6.4	27.2	3.0	2.9	0.1	0.6	3.5	0.4	18.6	2.1	19.6	114.9
Base High-Efficiency Incandescent A-line Lamp (53W)	22.4	4.7	20.0	2.2	2.2	0.0	0.4	2.6	0.3	13.7	1.5	14.5	84.6
Base CFL (18W)	3.9	2.1	15.5	0.4	2.9	2.4	0.4	1.4	0.2	12.0	0.6	7.2	48.9
Base CFL (23W)	4.9	2.7	19.8	0.5	3.7	3.1	0.5	1.8	0.2	15.3	0.8	9.2	62.5
Base HID, 465W	0.0	0.1	0.0	1.0	41.4	4.8	0.0	3.6	0.0	27.5	0.5	12.5	91.4
Base CFL Exit Sign	1.6	0.7	1.8	0.0	0.3	0.2	0.6	0.9	0.0	2.0	0.3	1.3	9.7
Base Outdoor High Pressure Sodium 250W Lamp	1.0	5.9	10.3	0.0	1.2	2.3	0.1	0.3	0.0	7.7	1.7	5.9	36.5
Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	82.1	45.7	17.3	2.3	0.0	41.3	31.6	77.9	9.5	406.4	20.0	54.1	788.3
Base DX Packaged System, EER=10.3, 10 tons	372.4	242.4	608.4	70.1	186.2	99.1	105.7	199.1	5.4	500.7	64.6	208.4	2,662.6
Base Heat Pump (13 SEER, 7.7 HSPF)	254.3	76.0	225.9	6.3	100.8	78.0	67.3	154.3	0.7	217.6	52.6	197.9	1,431.6
Base PTAC, EER=8.3, 1 ton	40.7	9.2	39.9	2.9	4.8	71.0	15.1	32.4	0.0	337.1	52.2	124.7	729.8
Base Fan Motor, 5hp, 1800rpm, 87.5%	87.0	33.4	139.7	22.4	34.1	8.9	11.2	45.7	1.4	123.4	17.9	86.0	611.1
Base Fan Motor, 15hp, 1800rpm, 91.0%	15.1	0.0	4.9	0.0	0.0	23.8	38.9	0.0	4.9	64.3	14.2	68.6	234.6
Base Fan Motor, 40hp, 1800rpm, 93.0%	9.5	0.0	4.9	22.1	11.3	9.9	41.3	7.9	5.2	49.5	11.3	54.4	227.3
Base Built-Up Refrigeration System	0.0	0.0	0.0	69.9	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	120.0
Base Self-Contained Refrigeration	11.9	82.3	61.0	8.0	13.4	7.9	5.5	17.8	0.6	49.5	12.8	39.8	310.5
Base Desktop PC	4.8	1.0	3.3	0.4	2.8	0.8	1.2	1.2	0.1	8.6	1.2	3.5	28.7

Table 5-20: Non-Residential Peak Demand (MW) by End-Use and Building Type--Virginia

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other	Total
Base Laptop PC	0.4	0.0	0.1	0.0	0.2	0.1	0.1	0.1	0.0	0.8	0.1	0.2	2.1
Base Monitor, CRT	1.0	0.5	0.8	0.1	0.6	0.3	0.3	0.5	0.0	1.8	0.2	0.8	7.0
Base Monitor, LCD	0.9	0.2	0.5	0.1	0.5	0.2	0.2	0.2	0.0	2.0	0.3	0.7	5.8
Base Copier	1.7	0.4	1.6	0.1	0.7	0.2	0.3	0.3	0.0	2.4	0.5	1.3	9.6
Base Multifunction	0.3	0.2	0.2	0.0	0.2	0.0	0.1	0.1	0.0	0.3	0.1	0.2	1.6
Base Printer	1.6	0.2	0.7	0.0	0.7	0.2	0.3	0.1	0.0	2.8	0.2	1.0	7.9
Base Data Center/Server Room	8.6	1.0	2.6	0.1	8.2	5.0	4.8	5.2	114.4	18.0	1.1	7.6	176.4
Base Water Heating	9.6	9.0	12.3	1.8	2.9	1.6	1.8	7.3	0.1	9.4	3.4	11.8	70.9
Base Refrigerated Vending Machines	1.9	0.7	3.4	1.6	2.4	0.5	0.7	2.1	0.0	3.4	0.6	2.4	19.8
Base Non-Refrigerated Vending Machines	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3
Base Convection Oven	0.6	5.0	2.2	1.5	0.7	0.4	1.6	0.5	0.0	9.8	3.8	0.8	27.0
Base Fryer	0.4	6.3	0.4	2.0	1.5	0.1	1.5	1.3	0.0	4.9	0.2	1.5	20.1
Base Steamer	0.7	8.0	1.6	2.8	0.6	0.0	1.4	0.2	0.0	9.9	0.2	0.4	25.9
Base Heating, Heat Pump (13 SEER 7.7HSPF)	3.9	0.0	0.1	0.0	0.0	0.1	0.9	0.6	0.0	0.6	0.1	1.0	7.2
Base Heating, Other Electric	3.9	0.0	0.3	0.0	0.0	0.0	1.2	0.5	0.0	1.4	0.4	0.9	8.8
Base Miscellaneous	66.7	44.5	214.2	18.0	56.9	7.1	45.5	39.3	0.6	120.1	47.8	115.2	775.6
Total	1,324	625	1,695	271	606	407	408	625	148	2,352	339	1,225	10,025

Table 5-21: Non-Residential Peak Demand (MW) by End-Use and Building Type—North Carolina

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other	Total
Base Fluorescent Fixture, 4L4'T8	10.4	0.1	7.3	0.7	5.6	0.6	0.6	0.0	0.1	0.0	0.1	0.8	26.5
Base Fluorescent Fixture, 2L4'T8, 1 EB	0.2	0.8	1.4	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.6	3.2
Base Other Fluorescent Fixture	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Base High-Efficiency Incandescent Reflector Lamp (100W)	3.1	0.3	0.6	0.1	0.0	0.1	0.0	0.2	0.0	0.0	0.3	5.1	9.8
Base High-Efficiency Incandescent A-line Lamp (72W)	1.1	0.1	0.2	0.0	0.3	0.0	0.0	0.1	0.0	0.0	0.1	1.8	3.8
Base High-Efficiency Incandescent A-line Lamp (53W)	0.8	0.1	0.1	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.1	1.3	2.8
Base CFL (18W)	0.0	0.0	0.2	0.1	0.0	0.6	0.0	0.1	0.0	0.0	0.1	0.1	1.2
Base CFL (23W)	0.1	0.0	0.3	0.1	0.0	0.7	0.0	0.1	0.0	0.0	0.1	0.1	1.5
Base HID, 465W	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.5	0.9
Base CFL Exit Sign	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Base Outdoor High Pressure Sodium 250W Lamp	0.0	0.1	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.6
Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	0.5	0.2	0.0	0.0	0.0	7.0	0.0	0.0	0.1	0.0	0.0	0.0	7.8
Base DX Packaged System, EER=10.3, 10 tons	9.9	3.7	17.2	0.8	2.3	11.0	1.2	5.4	0.1	0.0	2.7	2.2	56.5
Base Heat Pump (13 SEER, 7.7 HSPF)	11.2	1.8	9.2	0.6	0.0	7.9	2.5	4.9	0.0	0.0	2.2	11.5	51.9
Base PTAC, EER=8.3, 1 ton	1.3	0.7	0.8	0.1	1.1	10.9	0.2	4.5	0.0	0.0	0.0	2.8	22.4
Base Fan Motor, 5hp, 1800rpm, 87.5%	3.5	0.9	3.7	0.5	1.5	0.9	0.3	1.1	0.0	0.0	0.4	2.4	15.1
Base Fan Motor, 15hp, 1800rpm, 91.0%	0.6	0.0	0.1	0.0	0.0	2.3	0.9	0.0	0.1	0.0	0.3	1.9	6.3
Base Fan Motor, 40hp, 1800rpm, 93.0%	0.4	0.0	0.1	0.5	0.5	1.0	0.9	0.2	0.1	0.0	0.3	1.5	5.4
Base Built-Up Refrigeration System	0.0	0.0	0.0	1.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9
Base Self-Contained Refrigeration	0.6	2.2	0.8	0.2	0.2	0.9	0.2	0.4	0.0	0.0	0.3	1.3	7.1
Base Desktop PC	1.0	0.0	0.1	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.1	0.1	1.7

Table 5-21: Non-Residential Peak Demand (MW) by End-Use and Building Type—North Carolina

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other	Total
Base Laptop PC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Base Monitor, CRT	0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Base Monitor, LCD	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Base Copier	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.8
Base Multifunction	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Base Printer	0.5	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Base Data Center/Server Room	0.2	0.0	0.0	0.0	0.1	0.5	0.4	0.4	2.7	0.0	0.0	0.3	4.6
Base Water Heating	0.4	0.4	0.4	0.0	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.6	2.5
Base Refrigerated Vending Machines	0.2	0.0	0.3	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1	1.0
Base Non-Refrigerated Vending Machines	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Base Convection Oven	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Base Fryer	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Base Steamer	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Base Heating, Heat Pump (13 SEER 7.7HSPF)	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.4
Base Heating, Other Electric	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Base Miscellaneous	2.8	1.2	5.7	0.5	1.4	0.6	1.2	1.0	0.0	0.0	1.3	3.2	18.9
Total	50.5	13.4	48.9	6.1	13.6	46.3	9.0	19.1	3.2	0.0	8.9	38.7	257.8

Table 5-22: Non-Residential Peak Demand (MW) by End-Use and Building Type—Opt-Out/Exempt

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other	Total
Base Fluorescent Fixture, 4L4'T8	26.0	0.0	3.0	0.1	0.5	0.4	2.4	0.0	2.8	1.3	0.0	1.4	37.8
Base Fluorescent Fixture, 2L4'T8, 1 EB	0.4	0.0	0.6	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0	1.1	2.7
Base Other Fluorescent Fixture	0.9	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	1.1
Base High-Efficiency Incandescent Reflector Lamp (100W)	11.8	0.0	1.5	0.0	0.0	0.0	0.2	0.0	1.2	0.5	0.0	2.5	17.7
Base High-Efficiency Incandescent A-line Lamp (72W)	4.2	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.4	0.2	0.0	0.9	6.4
Base High-Efficiency Incandescent A-line Lamp (53W)	3.1	0.0	0.4	0.0	0.0	0.0	0.1	0.0	0.3	0.1	0.0	0.7	4.7
Base CFL (18W)	0.5	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.3	1.4
Base CFL (23W)	0.7	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.4	1.8
Base HID, 465W	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.1	0.0	0.6	1.1
Base CFL Exit Sign	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.5
Base Outdoor High Pressure Sodium 250W Lamp	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.0
Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	11.5	0.0	0.3	0.0	0.0	1.6	15.5	0.2	7.6	1.9	0.0	1.5	40.2
Base DX Packaged System, EER=10.3, 10 tons	52.1	0.0	12.0	0.2	1.2	0.8	15.5	0.6	4.4	2.4	0.0	35.7	124.7
Base Heat Pump (13 SEER, 7.7 HSPF)	35.5	0.0	4.5	0.0	0.6	0.8	8.7	0.4	0.6	1.0	0.0	4.4	56.6
Base PTAC, EER=8.3, 1 ton	5.7	0.0	0.8	0.0	0.0	0.8	8.7	0.1	0.0	1.6	0.0	4.4	22.1
Base Fan Motor, 5hp, 1800rpm, 87.5%	12.2	0.0	2.8	0.1	0.2	0.1	1.1	0.1	1.1	0.6	0.0	4.8	23.0
Base Fan Motor, 15hp, 1800rpm, 91.0%	2.1	0.0	0.1	0.0	0.0	0.4	3.7	0.0	3.9	0.6	0.0	3.8	14.5
Base Fan Motor, 40hp, 1800rpm, 93.0%	1.3	0.0	0.1	0.1	0.1	0.2	3.9	0.0	4.1	0.3	0.0	3.0	13.1
Base Built-Up Refrigeration System	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Base Self-Contained Refrigeration	1.7	0.0	1.2	0.0	0.1	0.2	0.4	0.1	0.6	0.2	0.0	1.8	6.2
Base Desktop PC	0.7	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	1.0

Table 5-22: Non-Residential Peak Demand (MW) by End-Use and Building Type—Opt-Out/Exempt

	Office	Restau-rant	Retail	Grocery	Ware-house	Education	Health	Lodging	Data Center	Non-Juris-dictional	Religious Worship	Other	Total
Base Laptop PC	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Base Monitor, CRT	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Base Monitor, LCD	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Base Copier	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Base Multifunction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Base Printer	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Base Data Center/Server Room	1.5	0.0	0.1	0.0	0.1	0.1	0.9	0.0	148.8	0.1	0.0	0.7	152.2
Base Water Heating	1.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	1.9
Base Refrigerated Vending Machines	0.3	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.5
Base Non-Refrigerated Vending Machines	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Base Convection Oven	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.3
Base Fryer	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.4
Base Steamer	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3
Base Heating, Heat Pump (13 SEER 7.7HSPF)	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Base Heating, Other Electric	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7
Base Miscellaneous	9.3	0.0	4.2	0.0	0.4	0.1	6.0	0.1	0.7	0.6	0.0	6.4	27.9
Total	185.4	0.0	33.5	0.7	3.9	6.0	67.7	1.8	177.4	12.3	0.0	75.4	564.1

5.2.2.5 Non-Residential Comparisons to CBECS

The table below compares the results of the non-residential baseline analysis to EIA's Commercial Buildings Energy Consumption Survey (CBECS).

The most recent CBECS for which data is available was conducted in 2003, and therefore does not reflect efficiency improvements, particularly in lighting, that have occurred over the last decade. The geographical resolution is also not as great for CBECS as for RECS. We therefore compare the Dominion baseline results as a whole to the South Atlantic Census division (the finest granularity available), which includes Delaware, Maryland, West Virginia, Virginia, North Carolina, South Carolina, Georgia, and Florida.

Figure 5-6 and Figure 5-7, below, compare the distribution of energy use by building type and end use, respectively. As a result of the age of the CBECS data, geographical differences, and differences in the way buildings are classified, it is difficult to assess differences between the two analyses and attribute them to Dominion-specific patterns of non-residential activity or energy use. For example, we classified non-jurisdictional buildings as "other" for this comparison, but non-jurisdictional encompasses a large share of Virginia's education buildings. However, the charts show that the breakouts found in the baseline analysis are broadly similar to CBECS.

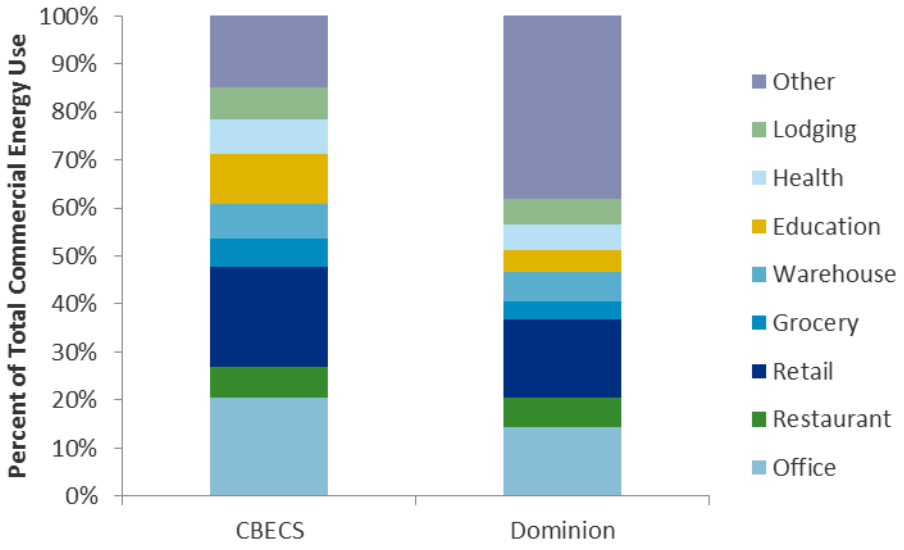


Figure 5-6: Comparison of Non-Residential Baseline Energy Use by Building Type to CBECS

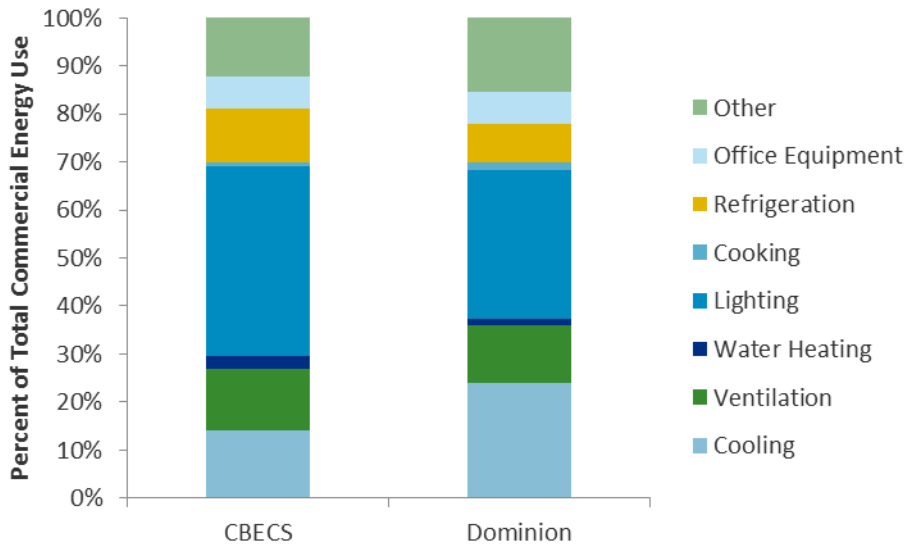


Figure 5-7: Comparison of Non-Residential Baseline Energy Use by End-Use to CBECS

5.3 Technical and Economic Potential Results

This section contains a summary of findings from the analysis of technical and economic savings potential of electric energy efficiency efforts in Dominion's service territory. Technical potential is defined as the complete penetration of all measures analyzed in applications where they were deemed technically feasible from an engineering perspective. Economic potential is defined as the technical potential of those energy conservation measures that are cost-effective when compared to supply-side alternatives. All measures with a total resource cost (TRC) greater than one are considered to have economic potential.

In our bottom-up modeling approach, we first estimate technical potential for energy savings by integrating key measure and market segment parameters using the following equation:

Equation 1: Technical Potential of an Efficient Measure

$$\text{Technical Potential of Efficient Measure} = \text{Total sq. ft. or \# of Dwellings} \times \text{Base Case Equipment EUI or UEC} \times \text{Applicability Factor} \times \text{Not Complete Factor} \times \text{Feasibility Factor} \times \text{Savings Factor}$$

Where:

- Square feet is the total floor space for all buildings in the market segment. For the residential analysis, the number of dwelling units is substituted for square feet.
- Base case equipment Energy Use Intensity (EUI) is the energy used per square foot by each base case technology in each market segment. This is the consumption of the energy-using equipment that the efficient technology replaces or affects. For example, if the efficient measure were a CFL, the base EUI would be the annual kWh per square foot of an equivalent incandescent lamp. For the residential analysis, unit energy consumption (UECs), energy used per dwelling, are substituted for EUIs and were developed as part of the Conditional Demand Analysis.
- Applicability factor is the fraction of the floor space (or dwelling units) that is applicable for the efficient technology in a given market segment; for the example above, the percentage of floor space lit by incandescent bulbs. This input was developed through results of the 2013 residential and commercial saturation surveys and the Conditional Demand Analysis and Baseline Analysis.
- Not complete factor is the fraction of applicable floor space (or dwelling units) that has not yet been converted to the efficient measure; that is, one minus the fraction of floor space that already has the EE measure installed. DNV GL relied on the results of Dominion's saturation surveys to estimate this value when possible and utilized other recent saturation surveys and internal databases for other measures not included in the saturation surveys.
- Feasibility factor is the fraction of the applicable floor space (or dwelling units) that is technically feasible for conversion to the efficient technology from an engineering perspective. DNV GL engineers familiar with Dominion's service territory reviewed these values to ensure they were consistent with Dominion's building stock.

- Savings factor is the reduction in energy consumption resulting from application of the efficient technology. DNV GL estimated energy savings through the use of sources including the STEP manual, LBNL Home Energy Savers Model, and other engineering calculations.

Technical potential for peak demand reduction is calculated analogously.

Economic potential is then assessed by first developing a supply-curve analysis. This analysis eliminates double counting of measure savings. On a market segment and end-use/technology basis, measures are stacked in order of cost-effectiveness, and the energy consumption of the system being affected by the efficiency measures reduces as each measure is applied. As a result, the savings attributable to each subsequent measure decrease if the measures are interactive. After eliminating double counting of savings, the benefits and costs associated with a given measure and market segment are compared using the Total Resource Cost (TRC) test or other cost relevant cost effectiveness test. Measures with a TRC ratio greater than 1.0 will be passed on to our achievable potential analysis.

5.3.1 Avoided Cost Scenario Results

DNV GL analyzed technical and economic potential under three different avoided costs scenarios. The three cost scenarios used avoided costs and rates as provided to DNV GL by Dominion in November 2013. The difference between the high and low avoided cost scenarios and the expected avoided costs varied by year, but on average the costs were six percent lower and seven percent higher than the expected avoided costs. When compared to the economic energy savings potential from the expected avoided cost scenario, the high avoided cost scenario increased economic energy savings potential by about one percent (0.2 percentage points higher), and the low avoided cost scenario decreased economic energy savings potential by about three percent (0.7 percentage points lower).

It is not unusual for a large change in avoided costs to cause a smaller change in energy savings potential. A measure will only drop in or out of economic potential if its TRC ratio increases from less than one to greater than one, or vice versa. Thus, measures with high or low cost effectiveness are typically not affected. Only measures with TRCs near one will shift. The magnitude of the effect of a change to avoided costs depends on how many measures are near the margin and how much savings potential they represent. In previous studies where we have looked at avoided cost scenarios, we have often found that the effect on economic potential is relatively small across scenarios. In a recent study for Xcel Minnesota,[19] avoided cost changes of plus 57 percent and minus five percent led to economic savings that were plus 10 percent and minus four percent compared to base avoided costs.

We reran the Dominion analysis using avoided costs that were 50 percent higher than the expected avoided costs in order to see how that would impact the potential. Using these avoided costs, economic energy savings potential and demand savings were 18 percent higher than the expected avoided cost scenario.

[19] http://www.xcelenergy.com/staticfiles/xe/Regulatory/Regulatory%20PDFs/MN-DSM/MN-DSM-Market-Potential-Assessment-Vol-1.pdf

Table 5-23 summarizes both the findings and the differences between the avoided cost scenarios. Overall, there was little variation in energy or demand savings in the three analyses.

Table 5-23: Summary of Three Avoided Cost Scenarios

	Base (2023)	Technical Potential	Economic - High	Economic - Base	Economic - Low
GWh	74,805	28,308	16,711	16,599	16,033
MW	20,640	7,282	4,069	4,026	3,955

5.3.2 Electric Energy Efficiency Potential Results

In this section, we present the technical and economic potential results for all electric measures considered in the study. Economic potential shown in the majority of this report is for the base avoided cost scenario. We briefly present a comparison of the economic potential under the High and Low scenarios in Section 0.

Overall Technical and Economic Potential**Error! Reference source not found.**Figure 5-8 presents our overall estimates of total technical and economic potential for electrical energy and peak demand savings for Dominion.

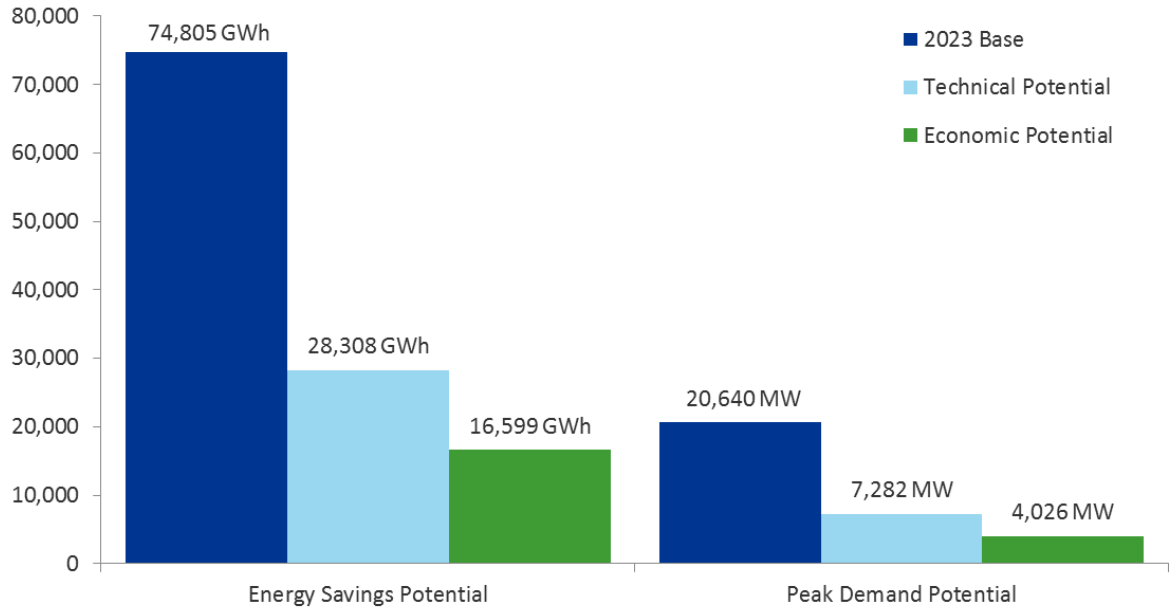


Figure 5-8: Estimated Electric Technical and Economic Potential, 2023

Error! Not a valid bookmark self-reference. shows technical and economic potential for energy and demand, respectively. The values of both energy savings and peak-demand reductions are incorporated into the measure TRC test.

- **Energy Savings:** Technical potential is estimated at 28,308 GWH per year, and economic potential at 16,599 GWH per year by 2023 (about 38 and 22 percent of base 2023 usage, respectively).
- **Peak-Demand Savings:** Technical potential is estimated at 7,272 MW and economic potential at 4,016 MW by 2023 (about 35 and 20 percent of base 2023 demand, respectively).

Table 5-24: Estimated Electric Technical and Economic Potential, 2023

	2023 Base Usage (GWh)	Technical GWh	Economic GWh	2023 Base Demand (MW)	Technical MW	Economic MW
Total	74,805	28,308	16,599	20,640	7,282	4,026
Savings % of Base		38%	22%		35%	20%

5.3.3 Base Case Technical and Economic Potential Detail

In this section, we describe technical and economic potential in more detail for the base avoided cost case, and further describe potentials by sector, state, building type, and by end use.

5.3.4 Potentials by Sector

Figure 5-9 through Figure 5-12 show estimates of technical and economic energy and demand savings potential by sector. We include opt-out, exempt, and non-jurisdictional customers in this section as a separate sector to show the potential savings from these customers. The pie charts seen in these figures graphically show how technical and economic potential relates to total base consumption and demand as well as the breakout of the potential savings by sector type. Overall, each sector (residential and commercial) accounts for roughly half of the potential energy and demand savings. The residential sector is 54 percent of technical energy savings, and 46 percent of economic energy savings. The commercial sector is 35 percent of technical demand potential, as well as 41 percent of the corresponding economic potential.

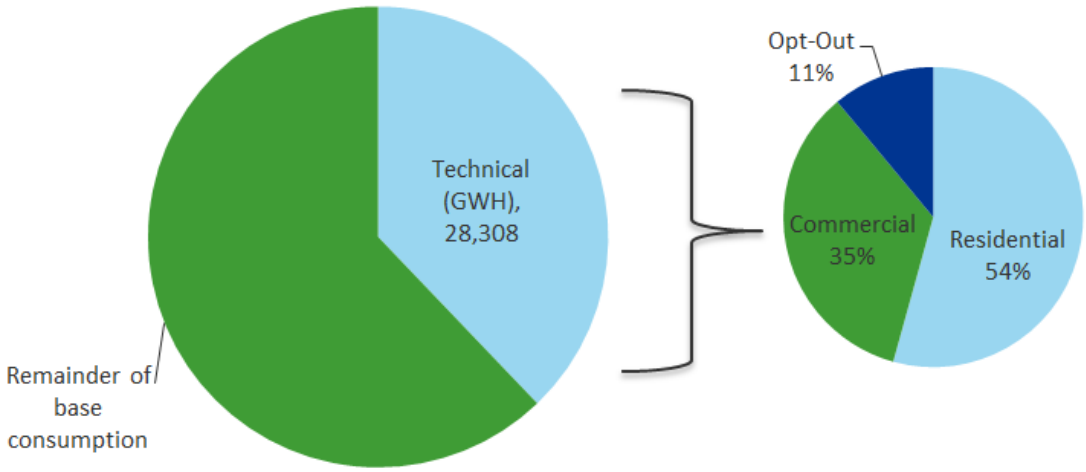


Figure 5-9: Technical Energy Savings by Sector

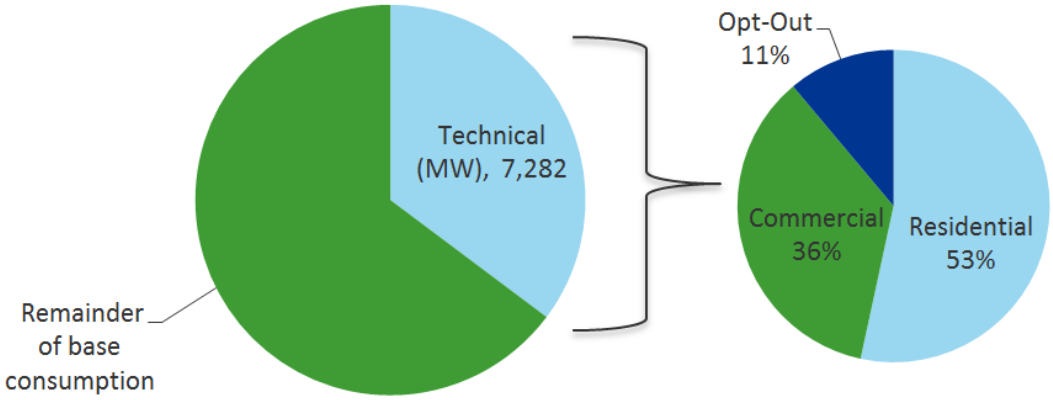


Figure 5-10: Technical Demand Savings by Sector

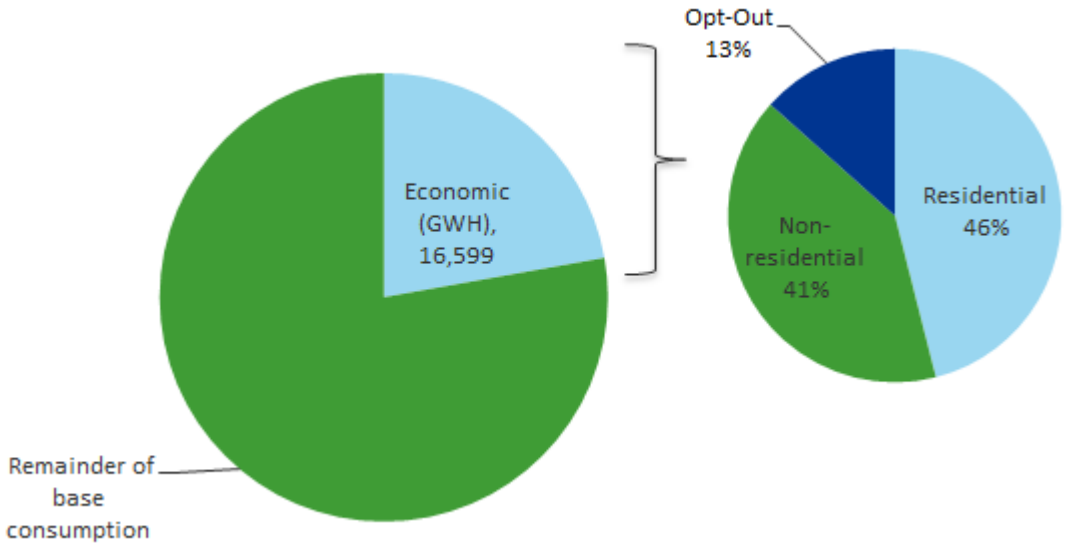


Figure 5-11: Economic Energy Savings Potential by Sector

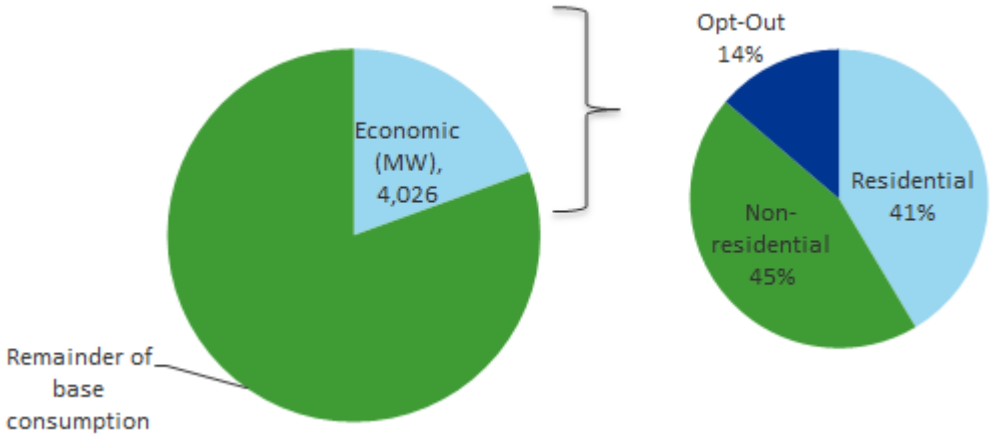


Figure 5-12: Economic Demand Savings Potential by Sector

Figure 5-13 and Figure 5-14 present the same data in a different format. These figures show the breakdown of technical and economic potential as compared to the total base consumption and demand in 2023.

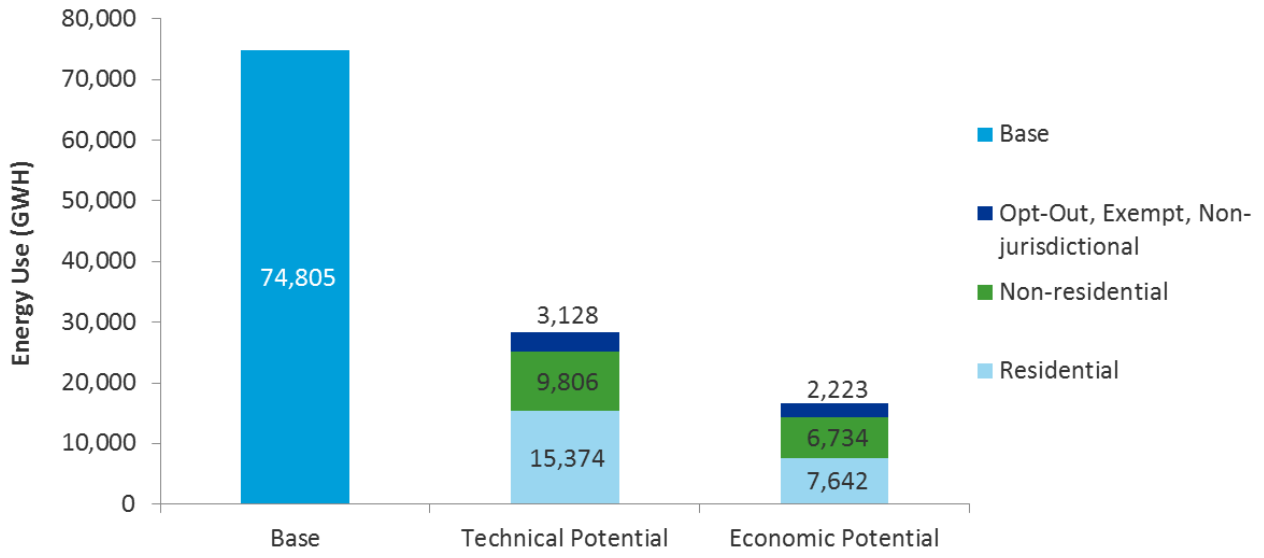


Figure 5-13: Technical and Economic Energy Savings by Sector (GWH)

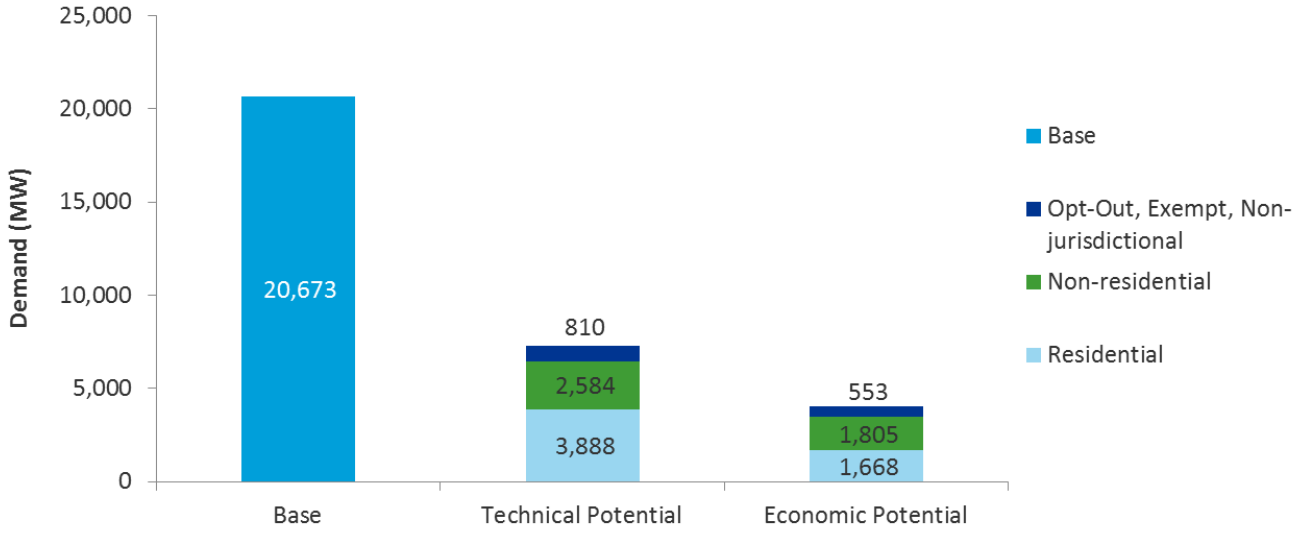


Figure 5-14: Technical and Economic Peak Demand Savings by Sector (MW)

Finally, **Error! Not a valid bookmark self-reference.** and

Table 5-26 show the contribution of technical and economic potential from each sector. These tables also compare the potential savings of each sector to base consumption and demand. The residential sector has higher technical and economic energy savings potential in relation to base energy use than does the commercial sector or non-jurisdictional and opt-outs. In technical and economic peak demand savings, residential is also higher than commercial as a percent of base demand, but the commercial sector does have a larger amount of total MW economic potential.

Table 5-25: Technical and Economic Potential (2023) Energy Savings by Sector

Sector	2023 Base Energy Use (GWH)	Ten Year Cumulative Potential - GWh			
		Technical Potential	Economic Potential (High)	Economic Potential	Economic Potential (Low)
Residential Existing	28,285	14,720	7,044	6,988	6,593
Residential New	2,970	655	655	655	655
Residential Subtotal	31,255	15,374	7,698	7,642	7,247
Savings % of Base		**49.2%**	**24.6%**	**24.5%**	**23.2%**
Non-residential Existing	28,474	8,630	5,918	5,901	5,777
Non-residential New	4,697	1,176	896	833	821
Non-Residential Subtotal	33,170	9,806	6,814	6,734	6,598
Savings % of Base		**29.6%**	**20.5%**	**20.3%**	**19.9%**
Opt-Out, Exempt, Non-jurisdictional Existing	10,235	3,091	2,199	2,188	2,187
Opt-Out, Exempt, Non-jurisdictional New	145	37	36	35	35
Opt-Out, Exempt, Non-jurisdictional Subtotal	10,380	3,128	2,235	2,223	2,223
Savings % of Base		**30.1%**	**21.5%**	**21.4%**	**21.4%**
Total	74,805	28,308	16,711	16,599	16,033
Savings % of Base	**100%**	**37.8%**	**22.4%**	**22.2%**	**21.5%**

Table 5-26: Technical and Economic Potential (2023) Demand Savings by Sector

Sector	2023 Base Energy Use (MW)	Ten Year Cumulative Potential - MW			
		Technical Potential	Economic Potential (High)	Economic Potential	Economic Potential (Low)
Residential Existing	7,073	3,829	1,642	1,609	1,560
Residential New	735	59	59	59	59
Residential Subtotal	7,809	3,888	1,701	1,668	1,619
Savings % of Base		**49.8%**	**21.8%**	**21.4%**	**20.7%**
Non-residential Existing	8,535	2,274	1,582	1,580	1,570
Non-residential New	968	311	244	225	222
Non-Residential Subtotal	9,503	2,584	1,826	1,805	1,793
Savings % of Base		**27.2%**	**19.2%**	**19.0%**	**18.9%**
Opt-Out, Exempt, Non-jurisdictional Existing	3,328	799	542	543	543
Opt-Out, Exempt, Non-jurisdictional New	33	11	11	10	10
Opt-Out, Exempt, Non-jurisdictional Subtotal	3,361	810	552	553	553
Savings % of Base		**24.1%**	**16.5%**	**16.5%**	**16.5%**
Total	20,640	7,282	4,069	4,026	3,955
Savings % of Base		**35.3%**	**19.7%**	**19.5%**	**19.2%**

5.3.5 Potential within Dominion's Virginia and North Carolina Service Territories

This section compares the energy and demand savings potential within Dominion's Virginia and North Carolina service territories. Potential savings from opt-out and non-jurisdictional customers are not included in this section.

Figure 5-15 below shows the technical and economic energy savings potential for Dominion's service territory in Virginia and North Carolina. Virginia's 24,072 GWh of technical potential compared to North Carolina's 1,109 GWh illustrates the magnitude of difference between these two states. Virginia has a 43 percent drop between technical and economic potential for a total economic energy potential of 13,736 GWh, while North Carolina has a 42 percent drop between technical and economic potential for a total economic energy potential of 640 GWh.

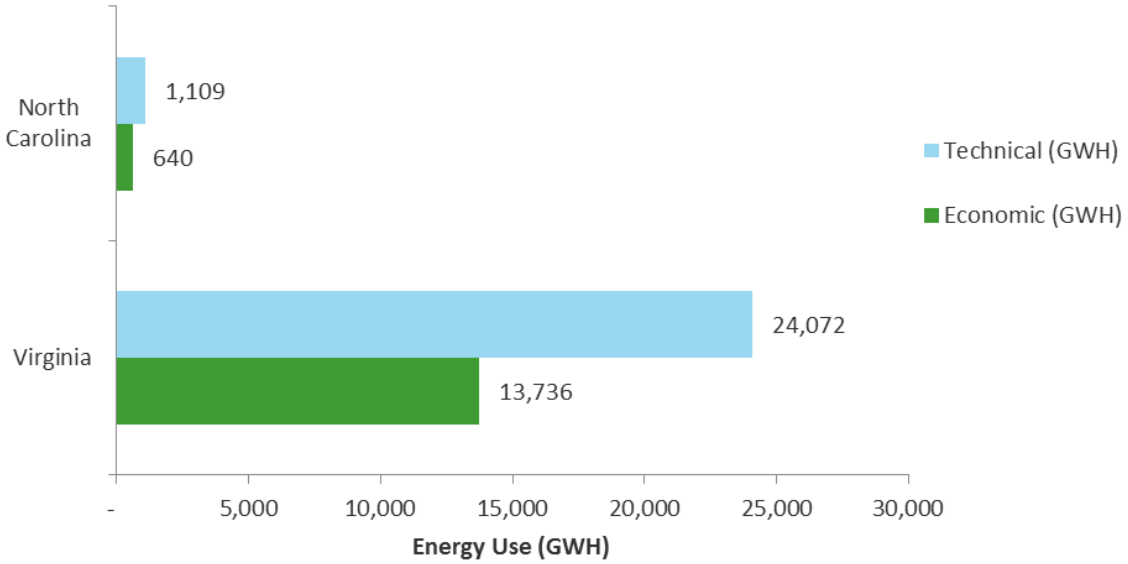


Figure 5-15: Technical and Economic Energy Savings by State

Figure 5-16 and Figure 5-17 break out the residential and commercial sector energy savings potential across each state. In each case, the residential sector has a slightly higher potential for technical and economic energy savings.

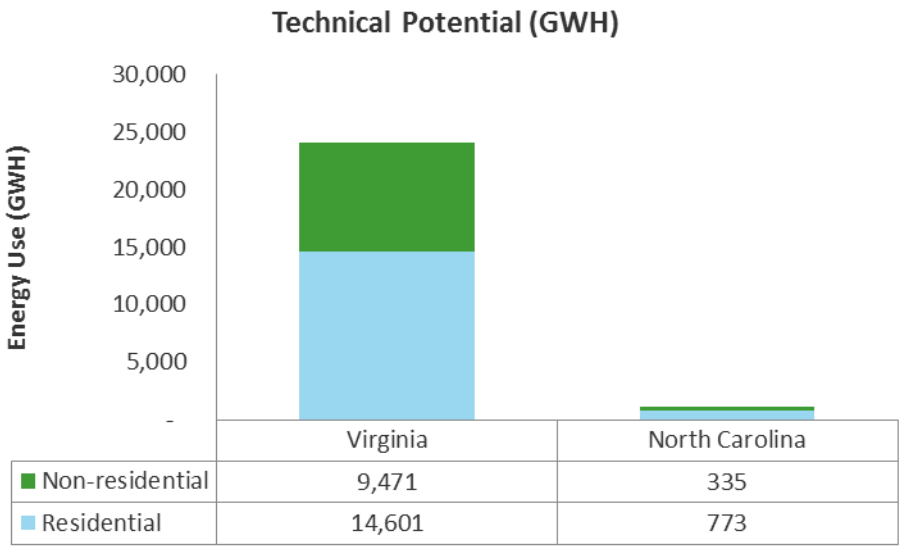


Figure 5-16: Technical Energy Savings Potential by State and Sector

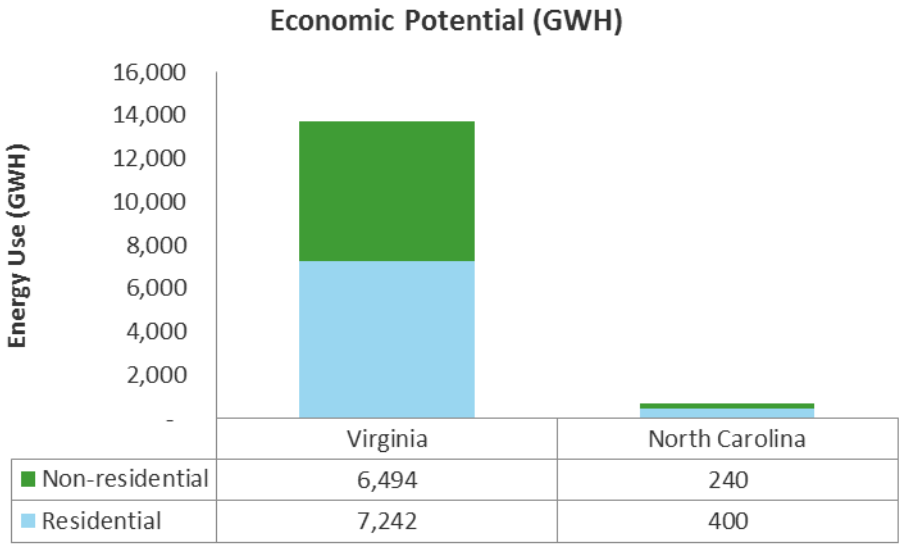


Figure 5-17: Economic Energy Savings Potential by State and Sector

Figure 5-18 illustrates the technical and economic demand savings for Dominion's service territory in Virginia and North Carolina.

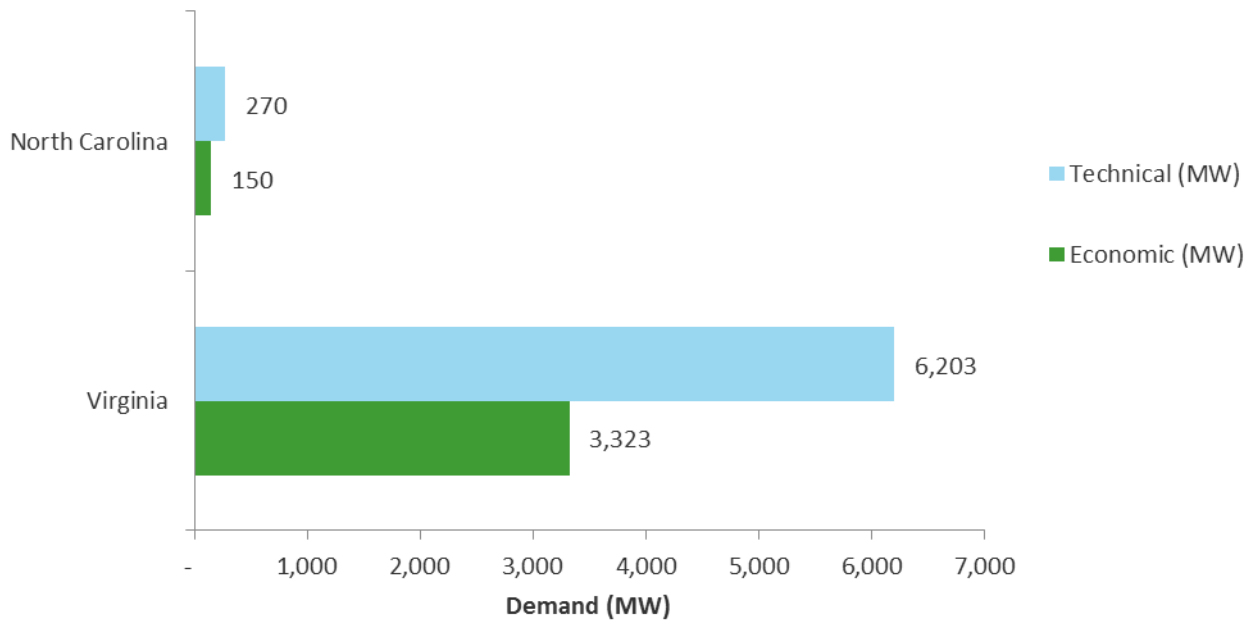


Figure 5-18: Technical and Economic Demand Savings by State

Figure 5-19 and Figure 5-20 break out the residential and commercial sector demand savings potential across each state. Technical demand savings follows a similar pattern of technical energy savings, with residential having the highest potential. However, economic demand savings for Virginia shows that the commercial sector has a higher amount of demand energy savings with 1,746 MW, compared with the Virginia residential sector, which has an economic demand-energy savings of 1,577 MW.

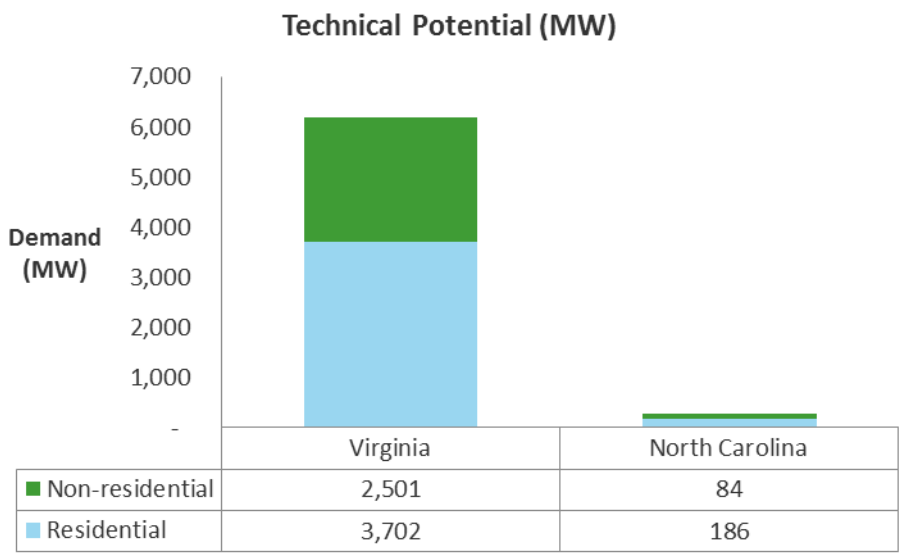


Figure 5-19: Technical Demand Savings Potential by State and Sector

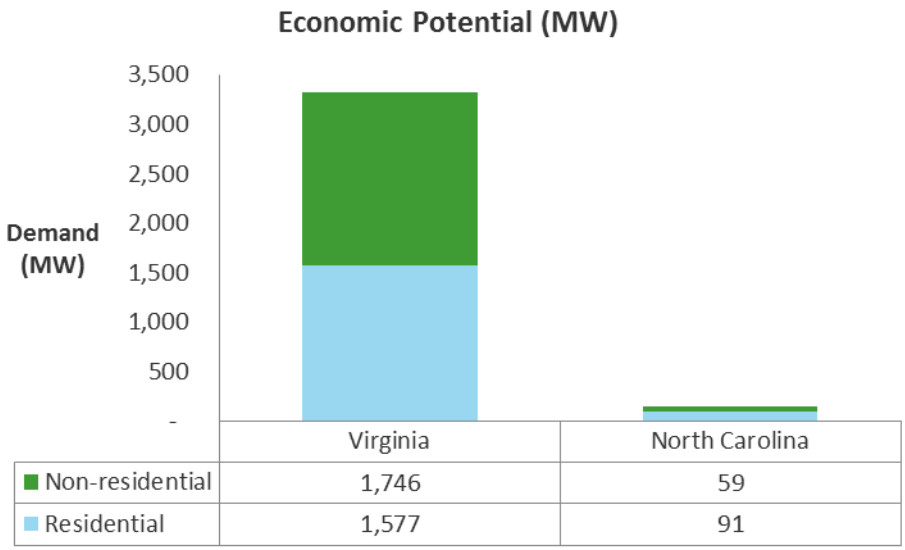


Figure 5-20: Economic Demand Savings Potential by State and Sector

5.3.6 Potentials by Building Type

This section presents technical and economic potential by residential and commercial building type to provide more detail about where potential savings exist in Dominion's service territory. Potential savings from opt-out and non-jurisdictional customers are not included in this section.

5.3.6.1 Residential

Figure 5-21 and Figure 5-22 show the potentials in the residential sector by building type. Single family homes account for 88 percent of the economic energy potential and demand potential.

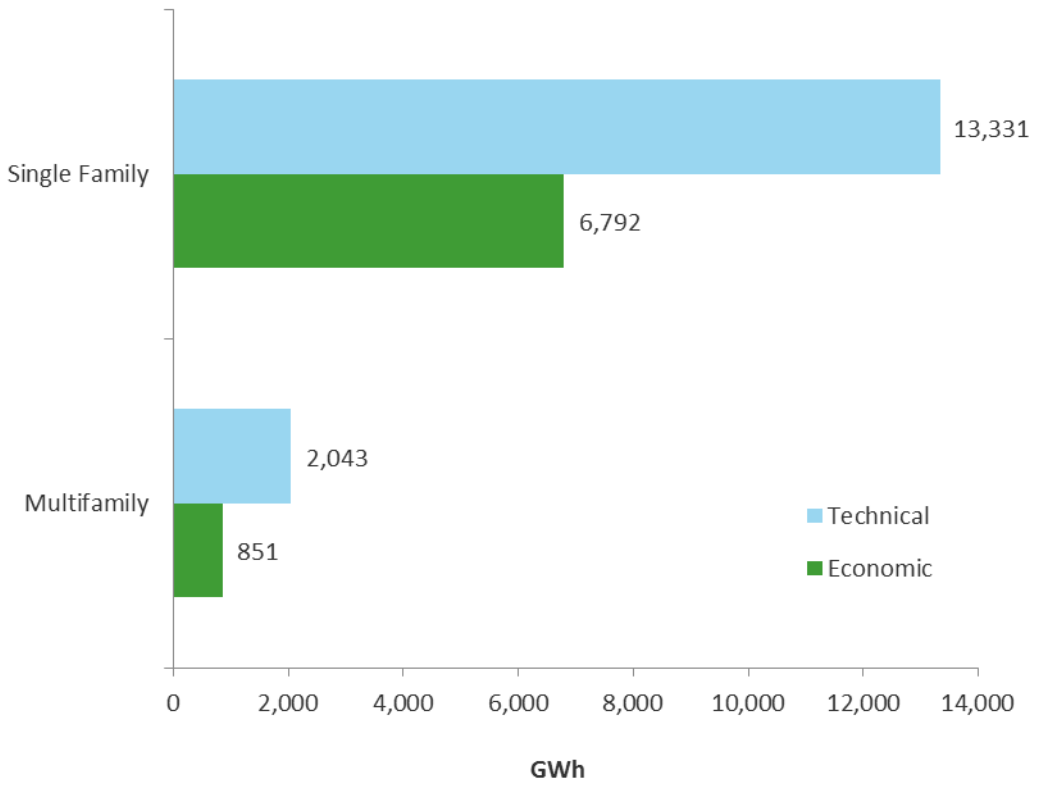


Figure 5-21: Energy Savings Potential by Residential Building Type

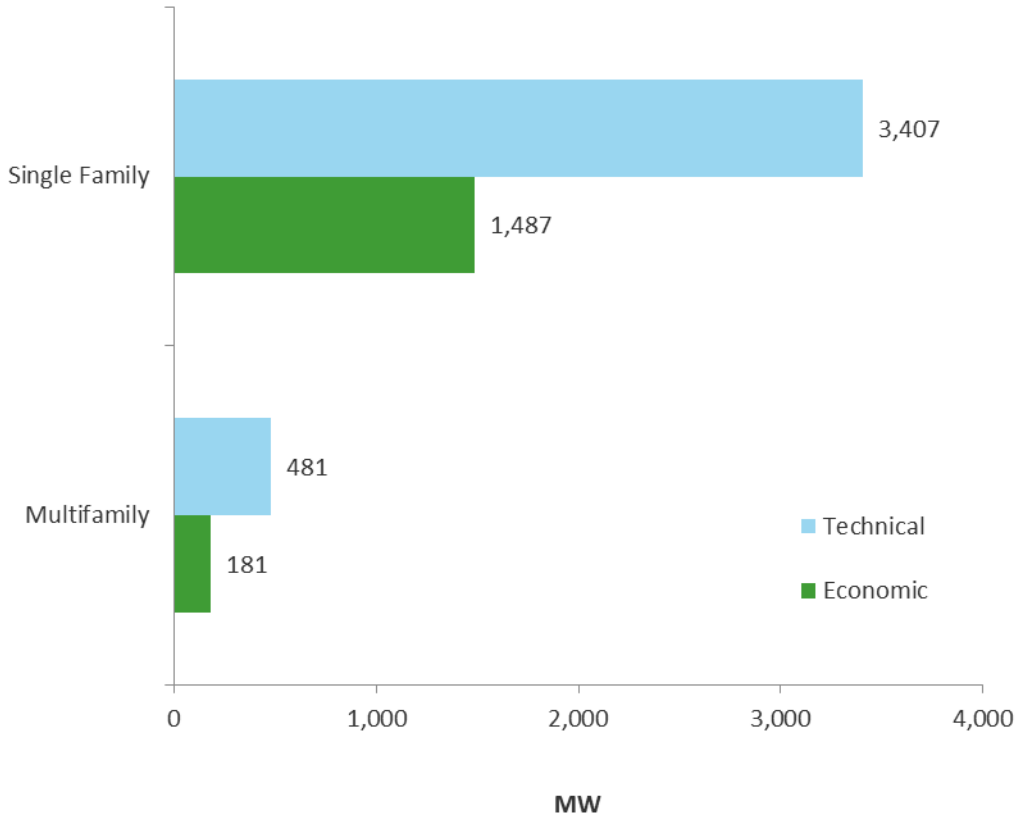


Figure 5-22: **Demand Savings Potential by Residential Building Type**

Error! Not a valid bookmark self-reference. shows the contribution from each building type toward the various types of potential.

Table 5-27: Energy and Demand Savings Potential by Residential Building Type

Residential Building Type	Energy (GWh)		Demand (MW)	
	Technical	Economic	Technical	Economic
Single Family	13,331	6,792	3,407	1,487
Multifamily	2,043	851	481	181
Total	**15,374**	**7,642**	**3,888**	**1,668**

5.3.6.2 Non-Residential

Figure 5-23 and Figure 5-24 show the building type breakdown of non-residential potential. Offices account for about 23 percent of the economic energy and 22 percent of the economic demand potential, followed by retail (21 percent of energy and 25 percent of demand potential) and restaurants (8 percent of energy and 10 percent of demand potential). Miscellaneous building types also account for a large share of total potential as well.

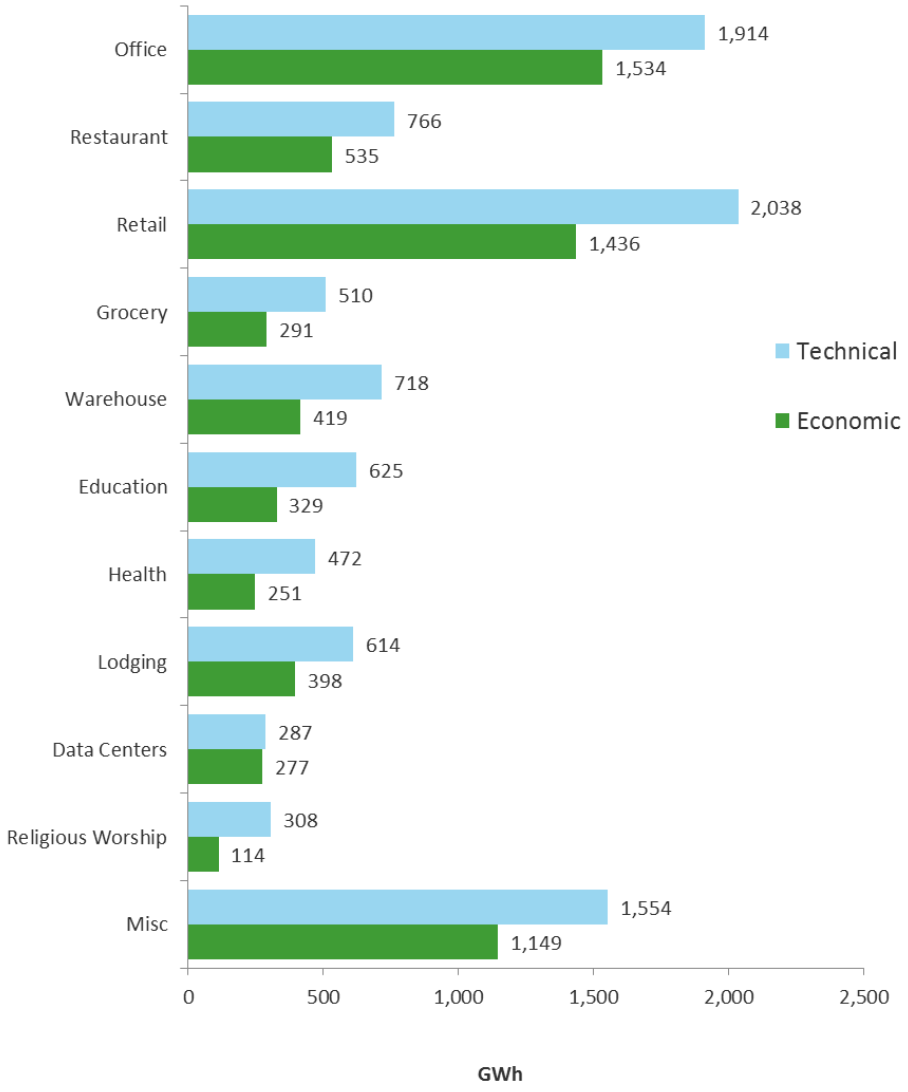


Figure 5-23: Energy Savings Potential by Non-Residential Building Type

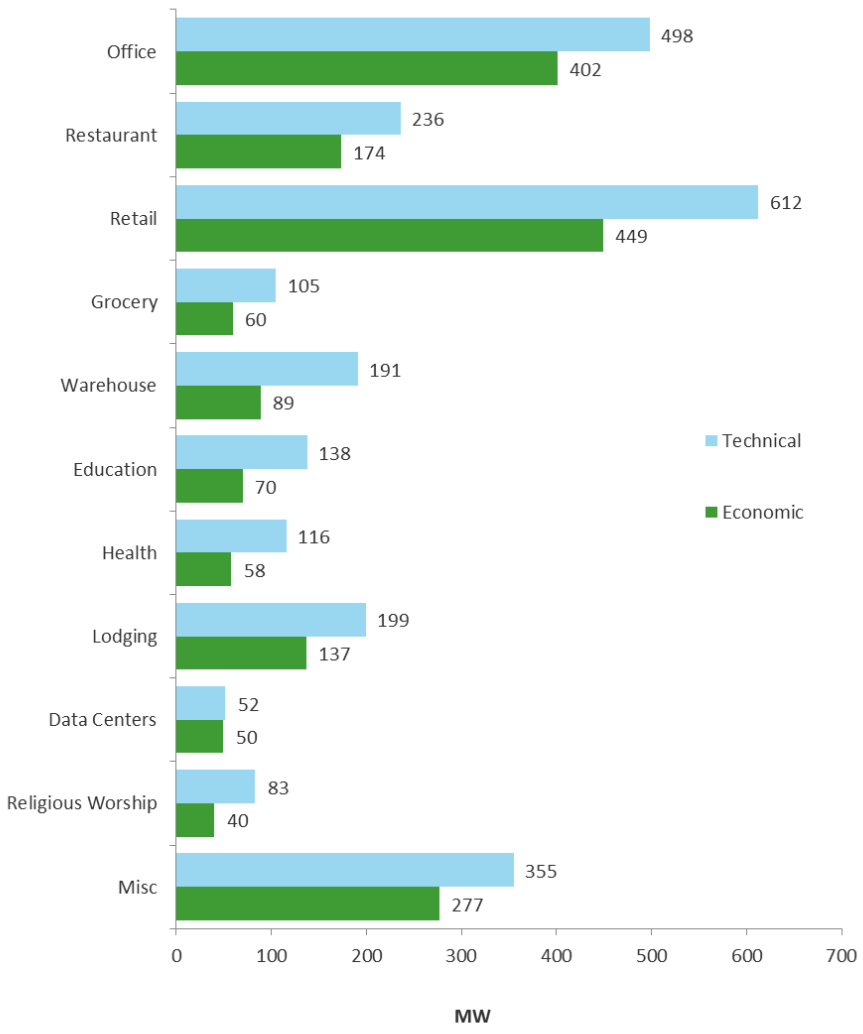


Figure 5-24: Demand Savings Potential by Non-Residential Building Type

Error! Not a valid bookmark self-reference. also presents energy and demand savings potential by building type.

Table 5-28: Energy and Demand Savings Potential by Non-Residential Building Type

Non-Residential Building Type	Energy (GWh)		Demand (MW)	
	Technical	Economic	Technical	Economic
Office	1,914	1,534	498	402
Restaurant	766	535	236	174
Retail	2,038	1,436	612	449
Grocery	510	291	105	60
Warehouse	718	419	191	89
Education	625	329	138	70
Health	472	251	116	58
Lodging	614	398	199	137
Data Centers	287	277	52	50

Religious Worship	308	114	83	40
Misc.	1,554	1,149	355	277

5.3.7 Potentials by End Use

5.3.7.1 Residential

Figure 5-25 and Figure 5-26 show the end-use breakdown of residential potential.

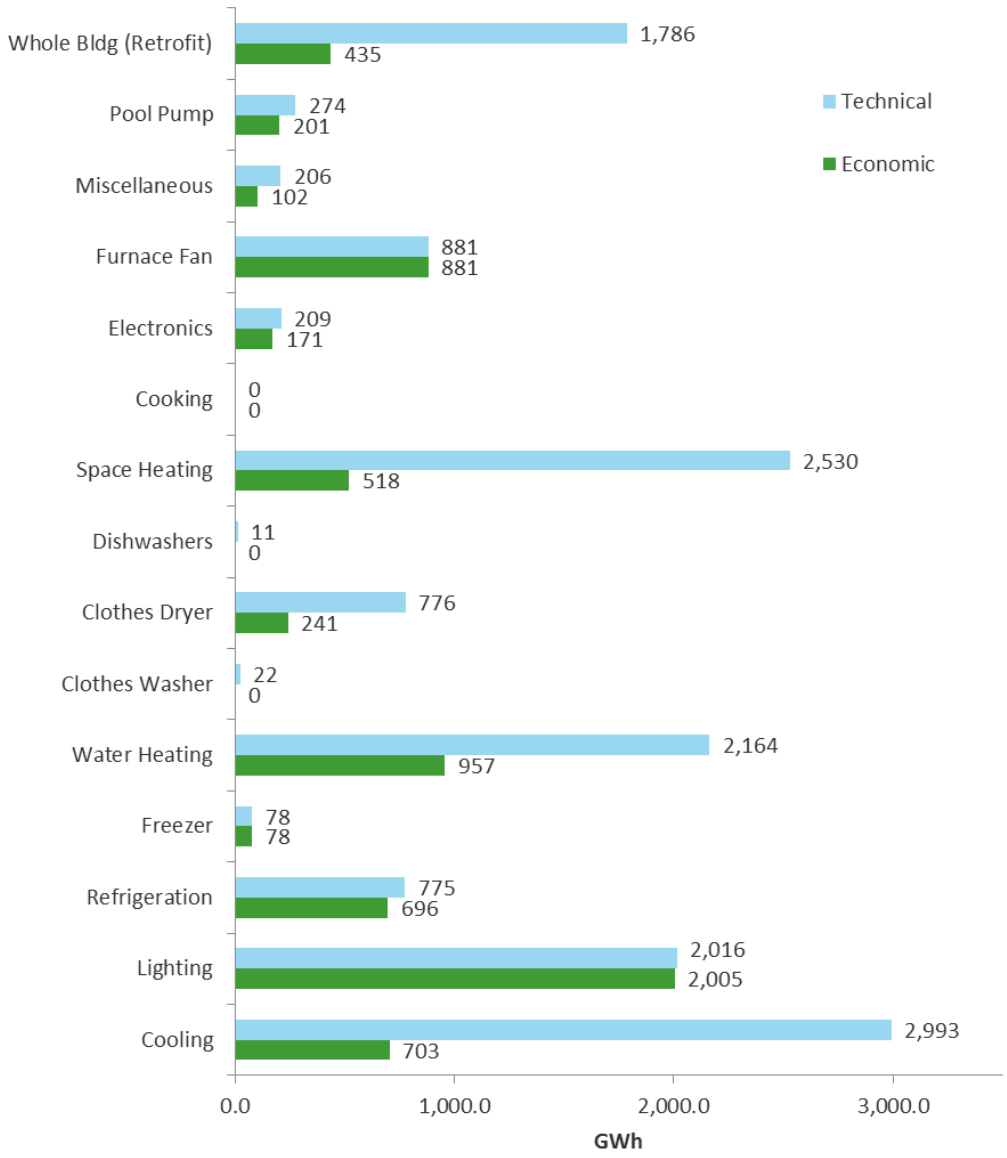


Figure 5-25: Energy Savings Potential by Residential End Use

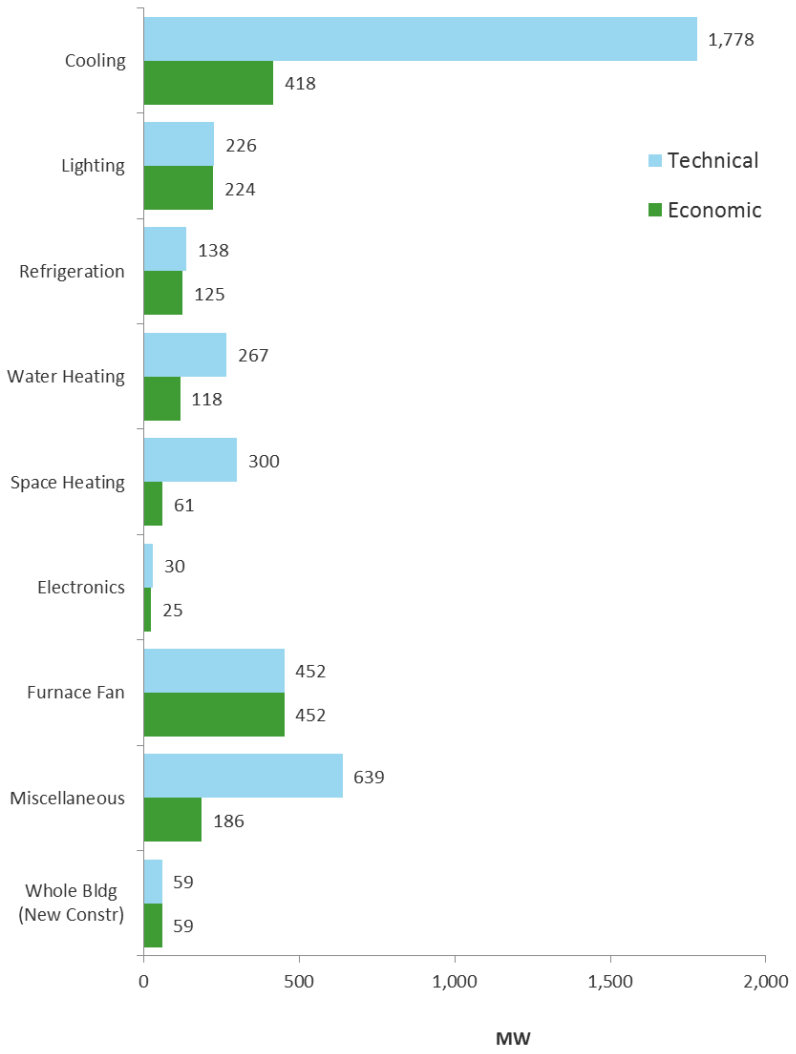


Figure 5-26: Demand Savings Potential by Residential End Use

Error! Not a valid bookmark self-reference. shows the share each end use contributes to the economic potential for both energy and demand savings. Cooling is the largest contributor to both energy savings and peak demand technical savings potential. Space heating and water heating also have large technical energy savings potential, but lighting has the largest economic energy savings potential of all the residential end-uses. For residential peak demand, cooling and furnace fans have the largest economic peak demand potential.

Table 5-29: Energy and Demand Savings Potential by Residential End Use

Residential End Use	Energy (GWh)		Demand (MW)	
	Technical	Economic	Technical	Economic
Cooling	2,993	703	1,778	418
Lighting	2,016	2,005	226	224
Refrigeration	853	774	138	125
Water Heating	2,164	957	267	118
Space Heating	2,530	518	300	61
Electronics	209	171	30	25
Furnace Fan	881	881	452	452
Miscellaneous	3,075	978	639	186
Whole Bldg (New Constr)	655	655	59	59

5.3.7.2 Non-Residential

Figure 5-27 and Figure 5-28 show energy and demand savings by non-residential end use.

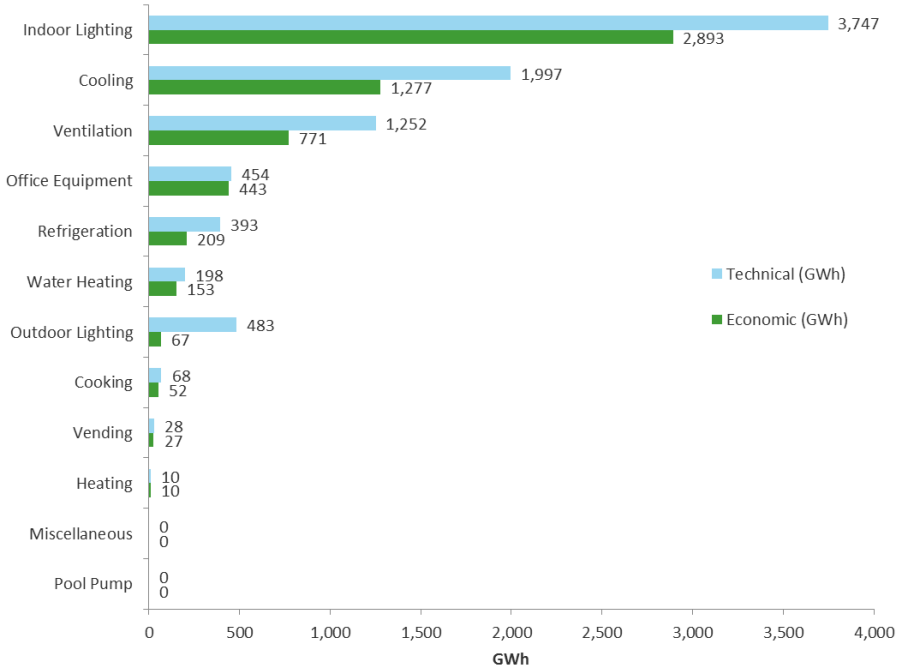


Figure 5-27: Energy Savings Potential by Non-Residential End Use

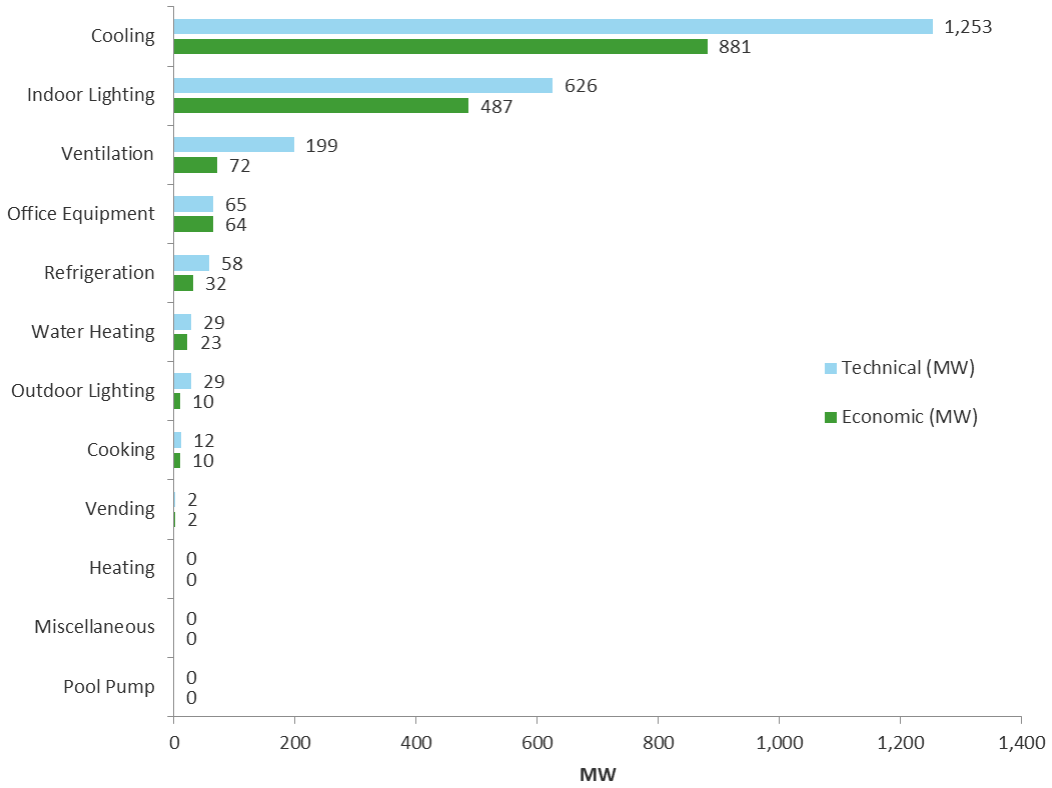


Figure 5-28: Demand Savings Potential by Non-Residential End Use

Similarly, Error! Not a valid bookmark self-reference. **shows the contribution to savings from each end use. Energy savings potential is greatest in lighting, followed by cooling.[20] Cooling accounts for most of the peak demand savings potential, since less lighting is used on hot summer afternoons.**

Table 5-30: Energy and Demand Savings Potential by Non-Residential End Use

Non-Residential End Use	Energy (GWh)		Demand (MW)	
	Technical	Economic	Technical	Economic
Indoor Lighting	3,747	2,893	626	487
Outdoor Lighting	483	67	29	10
Cooling	1,997	1,277	1,253	881
Ventilation	1,252	771	199	72
Refrigeration	393	209	58	32
Office Equipment	454	443	65	64
Miscellaneous	304	242	43	34
Whole Bldg (New Constr)	1,176	833	311	225

[20] It should be noted that that Dominion already has programs in place that target non-residential lighting, HVAC and ventilation but this study finds that additional potential remains in these end uses.

5.3.8 Avoided Cost Scenarios

Figure 5-29 shows technical and economic potential for the three scenarios (technical potential is the same for all three scenarios). In

Table 5-31, we compare the three scenarios in terms of percent of sales, percent of technical energy savings, and relative to the economic potential of the base avoided cost scenario. The low avoided cost scenario results in economic savings that are three percent lower for energy and two percent lower for peak demand compared to the base avoided cost scenario. The high avoided cost scenario results in savings that are one percent higher for both energy savings and peak demand.

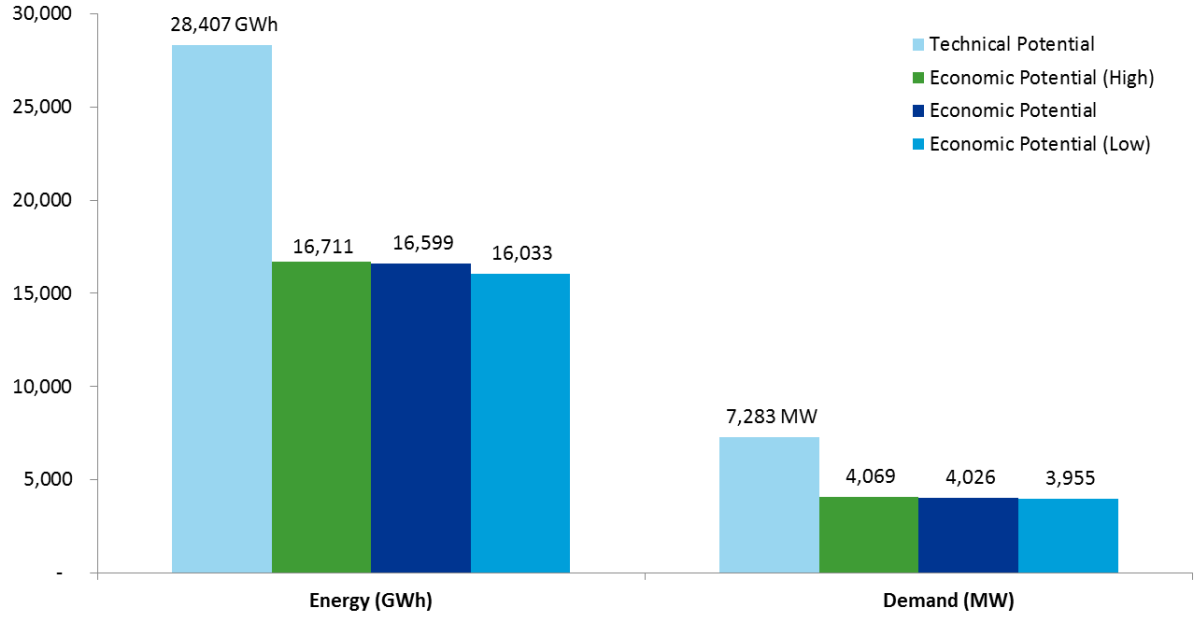


Figure 5-29: Estimated Technical and Economic Energy Savings/Demand Potential for Alternative Avoided Cost Scenarios, 2023

Table 5-31: Summary of Potential at Three Avoided Cost Scenarios

Summary of Potential at Three Avoided Cost Scenarios					
		Technical Potential	Economic - High	Economic - Base	Economic - Low
GWh	% of Base Consumption	38%	22%	22%	21%
	% of Economic - Base Avoided Cost	--	101%	100%	97%
MW	% of Base Consumption	35%	20%	20%	19%
	% of Economic - Base Avoided Cost	--	101%	100%	98%

5.3.9 Energy Efficiency Supply Curves

A common way to illustrate the amount of energy savings per dollar spent is to construct an energy efficiency supply curve. A supply curve is typically depicted on two axes: one captures the cost per unit of saved energy (e.g., levelized $/kWh saved), and the other shows energy savings at each level of cost. Measures are sorted on a least-cost basis, and total savings are calculated incrementally with respect to measures that precede them. The costs of the measures are levelized over the life of the savings achieved. In this portion of the analysis, these costs are only referring to measure costs, and not the full cost of implementing these measures through a Dominion program.Error! Reference source not found.

Figure 5-30 presents two supply curves constructed for this study for electric energy efficiency. One curve (in dark blue) represents the ordered set of efficiency measures in terms of their savings as a percentage of total energy sales.[21] The second curve (in light blue) represents the same ordered set of measures at a 50 percent higher cost rate to illustrate the effect of adding program dollars for each measure on the curve.[22]

The purpose of these curves is to show how much potential (as a percent of base usage) can be realized (on the horizontal axis) compared to a scale of levelized costs (on the vertical axis), including measures that are not cost-effective. Historically, Dominion's levelized cost is estimated as approximately 6.8 cents per kWh and is specified in red. The economic potential of measures which can deliver savings at that levelized cost of energy represent approximately 23% of total energy sales. At 50 percent higher measure costs, those measures represent approximately 16% of total energy sales.

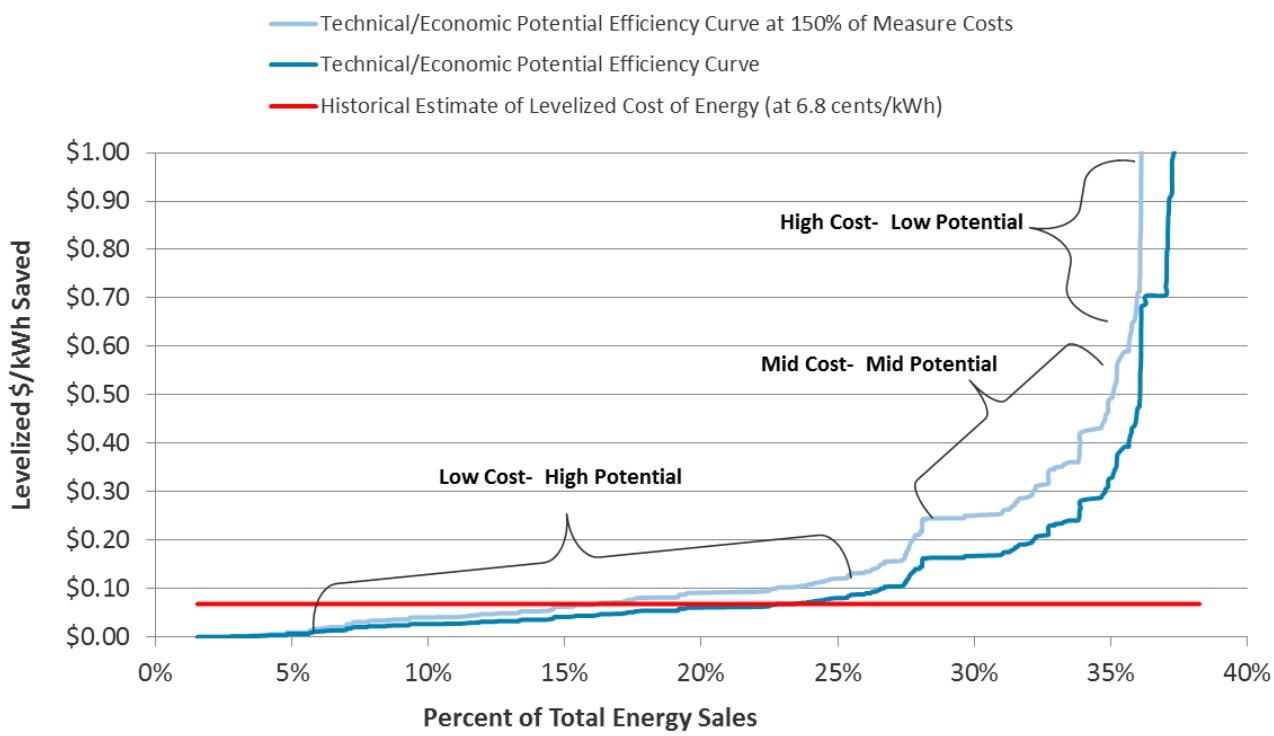


Figure 5-30: Energy Savings Potential as a Percent of Total Sales

[21] For readability, this graph only presents measures with a savings potential of less than $1 per kWh.

[22] Because these curves are an ordered set of measures, the second curve with the 50% cost increment should not be viewed as an assessment of achievable potential, which is estimated through a separate modelling process in Section 6, since programs are composed of bundled groups of measures rather than an ordered set of individual measures. The separate modelling process to estimate achievable potential takes into consideration consumer awareness and decision making.

5.3.10 Top 20 Saving Measures

Table 5-32 through Table 5-39 show the top 20 measures for energy and demand savings potential in the residential and non-residential sectors. For each section, the first table shows the top 20 measures as ranked by technical potential savings. The following table then shows the top 20 measures ranked by economic savings. All measures with a TRC less than one are not considered as part of the economic potential and thus were not carried over to the top 20 economic measures tables.

In both sectors, LEDs are prevalent in the top energy saving measures while cooling based measures, such as furnace fans, heat pumps, and DX packaged systems, provide a large contribution to potential demand savings.

5.3.10.1 Residential

Table 5-32: Top 20 Measures Contributing to Residential Technical Energy Savings Potential

Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh
Direct Feedback	Single Family	1164.81	0.96	0.00
Solar Domestic Water Heating	Single Family	913.38	0.45	0.00
ECM Furnace Fan (variable speed motor) - Cooling	Single Family	779.92	3.60	779.92
LEDs (base Halogen 2.5 hrs/day) 2020	Single Family	554.81	12.40	554.81
2nd Refrigerator Recycling	Single Family	459.50	2.13	459.50
Heat Recovery Ventilators (HP heating)	Single Family	454.58	0.53	0.00
Heat Pump Dryer	Single Family	430.98	0.08	0.00
Indirect Feedback	Single Family	372.52	1.17	372.52
LEDs (base Halogen 6 hrs/day) 2020	Single Family	338.04	17.01	338.04
Heat Pump Water Heater - Energy Star	Single Family	325.48	1.03	325.48
Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Single Family	295.05	1.23	295.05
LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Single Family	282.84	34.46	282.84
Air Source Heat Pump (resistance heating)	Single Family	248.28	4.77	248.28
Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Single Family	222.45	0.80	0.00
Whole House Fans (HP cooling)	Single Family	216.68	0.52	0.00
ROB 2L4'T8, 1EB	Single Family	209.84	2.29	209.84
Variable-Speed Pool Pump (<1 hp)	Single Family	201.08	1.90	201.08
Heat Recovery Ventilators (resistance heating)	Single Family	195.75	0.55	0.00
High Efficiency CD (EF=3.01 w/moisture sensor)	Single Family	193.94	1.40	193.94
LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Single Family	187.26	51.26	187.26

Table 5-33: Top 20 Measures Contributing to Residential Economic Energy Savings Potential

Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh
ECM Furnace Fan (variable speed motor) - Cooling	Single Family	779.92	3.60	779.92
LEDs (base Halogen 2.5 hrs/day) 2020	Single Family	554.81	12.40	554.81
2nd Refrigerator Recycling	Single Family	459.50	2.13	459.50
Indirect Feedback	Single Family	372.52	1.17	372.52
LEDs (base Halogen 6 hrs/day) 2020	Single Family	338.04	17.01	338.04
Heat Pump Water Heater - Energy Star	Single Family	325.48	1.03	325.48
Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Single Family	295.05	1.23	295.05
LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Single Family	282.84	34.46	282.84
Air Source Heat Pump (resistance heating)	Single Family	248.28	4.77	248.28
ROB 2L4'T8, 1EB	Single Family	209.84	2.29	209.84
Variable-Speed Pool Pump (<1 hp)	Single Family	201.08	1.90	201.08
High Efficiency CD (EF=3.01 w/moisture sensor)	Single Family	193.94	1.40	193.94
LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Single Family	187.26	51.26	187.26
Refrigerator (Energy Star)	Single Family	156.08	1.81	156.08
Proper Refrigerant Charging and Air Flow (CAC)	Single Family	148.83	1.10	148.83
DHW Tank Wrap	Single Family	141.00	1.09	141.00
LEDs (base Halogen 0.5 hrs/day) 2020	Single Family	124.54	2.29	124.54
Energy Star LCD TV	Single Family	109.45	15.36	109.45
ECM Furnace Fan (variable speed motor) - Cooling	Multi-Family	103.26	3.60	103.26
Drain Water Heat Recovery (GFX)	Single Family	96.60	1.43	96.60

Table 5-34: Top 20 Measures Contributing to Residential Technical Demand Savings Potential

Measure Name	Building Type	Technical MW	Measure TRC	Economic MW
ECM Furnace Fan (variable speed motor) - Cooling	Single Family	779.92	3.60	779.92
Direct Feedback	Single Family	1537.33	0.96	0.00
Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Single Family	356.24	1.23	295.05
Whole House Fans (HP cooling)	Single Family	836.53	0.52	0.00
Solar Domestic Water Heating	Single Family	1718.98	0.45	0.00
Proper Sizing and Quality Install (CAC)	Single Family	608.96	0.62	0.00
Indirect Feedback	Single Family	372.52	1.17	372.52
17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Single Family	761.51	0.47	0.00
Proper Refrigerant Charging and Air Flow (CAC)	Single Family	199.16	1.10	148.83
Cool Roof (HP cooling)	Single Family	619.84	0.63	0.00
2nd Refrigerator Recycling	Single Family	459.50	2.13	459.50
WINDOWS - Default With Sunscreen (CAC)	Single Family	991.72	0.23	0.00
Heat Pump Dryer	Single Family	624.92	0.08	0.00
14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Single Family	345.38	0.81	0.00
LEDs (base Halogen 2.5 hrs/day) 2020	Single Family	554.81	12.40	554.81
Proper Refrigerant Charging and Air Flow (HP cooling)	Single Family	460.08	0.86	0.00
15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Single Family	446.02	0.68	0.00
Proper Sizing and Quality Install (HP cooling)	Single Family	930.36	0.36	0.00
Heat Recovery Ventilators (HP heating)	Single Family	858.85	0.53	0.00
ECM Furnace Fan (variable speed motor) - Cooling	Multi-Family	103.26	3.60	103.26

Table 5-35: Top 20 Measures Contributing to Residential Economic Demand Savings Potential

Measure Name	Building Type	Technical MW	Measure TRC	Economic MW
ECM Furnace Fan (variable speed motor) - Cooling	Single Family	400.06	3.60	400.06
Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Single Family	175.29	1.23	175.29
Indirect Feedback	Single Family	92.24	1.17	92.24
Proper Refrigerant Charging and Air Flow (CAC)	Single Family	88.42	1.10	88.42
2nd Refrigerator Recycling	Single Family	74.48	2.13	74.48
LEDs (base Halogen 2.5 hrs/day) 2020	Single Family	62.12	12.40	62.12
ECM Furnace Fan (variable speed motor) - Cooling	Multi-Family	52.97	3.60	52.97
Heat Pump Water Heater - Energy Star	Single Family	40.09	1.03	40.09
LEDs (base Halogen 6 hrs/day) 2020	Single Family	37.85	17.01	37.85
High Efficiency CD (EF=3.01 w/moisture sensor)	Single Family	32.82	1.40	32.82
LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Single Family	31.67	34.46	31.67
Air Source Heat Pump (resistance heating)	Single Family	29.46	4.77	29.46
Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Early Replacement)	Single Family	27.06	1.08	27.06
Refrigerator (Energy Star)	Single Family	25.30	1.81	25.30
Variable-Speed Pool Pump (<1 hp)	Single Family	23.91	1.90	23.91
ROB 2L4'T8, 1EB	Single Family	23.49	2.29	23.49
Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Multi-Family	22.95	1.19	22.95
LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Single Family	20.97	51.26	20.97
ECM Furnace Fan (variable speed motor) - Cooling	Single Family	19.53	3.62	19.53
DHW Tank Wrap	Single Family	17.37	1.09	17.37

5.3.10.2 Non-Residential

Table 5-36: Top 20 Measures Contributing to Non-Residential Technical Energy Savings Potential

Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh
LEDs (base incandescent flood) 2020	Office	279.76	16.11	279.76
LEDs (base incandescent flood) 2020	Retail	279.42	9.05	279.42
LEDs (base incandescent flood) 2020	Misc	203.64	13.89	203.64
DX Packaged System, EER=13.4, 10 tons	Retail	196.46	3.06	196.46
Variable Speed Drive Control, 5 HP	Retail	165.73	3.41	165.73
DX Packaged System, EER=13.4, 10 tons	Office	142.07	4.57	142.07
ROB 4L4' LED Tube, 2020	Office	116.53	0.29	0.00
ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	113.87	1.56	113.87
DX Packaged System, EER=13.4, 10 tons	Restaurant	103.32	5.66	103.32
ROB 4L4' LED Tube, 2020	Retail	102.48	0.22	0.00
ROB 4L4' High Performance T8 (86 W), 2020	Office	101.49	3.25	101.49
Variable Speed Drive Control, 5 HP	Misc	98.78	1.27	98.78
LEDs (base incandescent A-line 72W) 2020	Retail	98.72	7.64	98.72
LEDs (base incandescent A-line 72W) 2020	Office	98.15	13.51	98.15
ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Retail	94.03	1.10	94.03
T5 (240W) (base metal halide)	Warehouse	91.46	6.92	91.46
Data Center Best Practices	Data Centers	87.33	46.96	87.33
ROB 4L4' High Performance T8 (86 W), 2020	Retail	85.79	2.30	85.79
LED Outdoor Area Lighting	Retail	85.13	0.57	0.00
DX Packaged System, EER=13.4, 10 tons	Lodging	83.71	2.21	83.71

Table 5-37: Top 20 Measures Contributing to Non-Residential Economic Energy Savings Potential

Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh
LEDs (base incandescent flood) 2020	Office	279.76	16.11	279.76
LEDs (base incandescent flood) 2020	Retail	279.42	9.05	279.42
LEDs (base incandescent flood) 2020	Misc	203.64	13.89	203.64
DX Packaged System, EER=13.4, 10 tons	Retail	196.46	3.06	196.46
Variable Speed Drive Control, 5 HP	Retail	165.73	3.41	165.73
DX Packaged System, EER=13.4, 10 tons	Office	142.07	4.57	142.07
ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	113.87	1.56	113.87
DX Packaged System, EER=13.4, 10 tons	Restaurant	103.32	5.66	103.32
ROB 4L4' High Performance T8 (86 W), 2020	Office	101.49	3.25	101.49
Variable Speed Drive Control, 5 HP	Misc	98.78	1.27	98.78
LEDs (base incandescent A-line 72W) 2020	Retail	98.72	7.64	98.72
LEDs (base incandescent A-line 72W) 2020	Office	98.15	13.51	98.15
ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Retail	94.03	1.10	94.03
T5 (240W) (base metal halide)	Warehouse	91.46	6.92	91.46
Data Center Best Practices	Data Centers	87.33	46.96	87.33
ROB 4L4' High Performance T8 (86 W), 2020	Retail	85.79	2.30	85.79
DX Packaged System, EER=13.4, 10 tons	Lodging	83.71	2.21	83.71
High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	80.81	5.76	80.81
Data Center Improved Operations	Data Centers	76.27	115.35	76.27
DX Packaged System, EER=13.4, 10 tons	Misc	71.92	3.38	71.92

Table 5-38: Top 20 Measures Contributing to Non-Residential Technical Demand Savings Potential

Measure Name	Building Type	Technical MW	Measure TRC	Economic MW
DX Packaged System, EER=13.4, 10 tons	Retail	162.36	3.06	162.36
DX Packaged System, EER=13.4, 10 tons	Office	99.40	4.57	99.40
DX Packaged System, EER=13.4, 10 tons	Restaurant	64.68	5.66	64.68
DX Packaged System, EER=13.4, 10 tons	Misc	55.62	3.38	55.62
Economizer Repair - DX	Retail	53.70	1.10	53.70
LEDs (base incandescent flood) 2020	Office	52.08	16.11	52.08
LEDs (base incandescent flood) 2020	Retail	50.56	9.05	50.56
DX Packaged System, EER=13.4, 10 tons	Lodging	50.41	2.21	50.41
DX Packaged System, EER=13.4, 10 tons	Warehouse	43.22	0.26	0.00
Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	36.49	6.41	36.49
LEDs (base incandescent flood) 2020	Misc	34.56	13.89	34.56
Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	32.42	4.28	32.42
Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	28.41	3.16	28.41
DX Packaged System, EER=13.4, 10 tons	Health	28.20	3.34	28.20
DX Packaged System, EER=13.4, 10 tons	School	26.43	1.64	26.43
Duct Testing/Sealing - DX	Retail	26.32	0.40	0.00
Demand Controlled Ventilation	Retail	22.57	0.09	0.00
Economizer Repair - DX	Office	22.47	1.66	22.47
Cool Roof - DX	Retail	22.46	0.84	0.00
Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	22.14	3.80	22.14

Table 5-39: Top 20 Measures Contributing to Non-Residential Economic Demand Savings Potential

Measure Name	Building Type	Technical GWh	Measure TRC	Economic MW
DX Packaged System, EER=13.4, 10 tons	Retail	162.36	3.06	162.36
DX Packaged System, EER=13.4, 10 tons	Office	99.40	4.57	99.40
DX Packaged System, EER=13.4, 10 tons	Restaurant	64.68	5.66	64.68
DX Packaged System, EER=13.4, 10 tons	Misc	55.62	3.38	55.62
Economizer Repair - DX	Retail	53.70	1.10	53.70
LEDs (base incandescent flood) 2020	Office	52.08	16.11	52.08
LEDs (base incandescent flood) 2020	Retail	50.56	9.05	50.56
DX Packaged System, EER=13.4, 10 tons	Lodging	50.41	2.21	50.41
Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	36.49	6.41	36.49
LEDs (base incandescent flood) 2020	Misc	34.56	13.89	34.56
Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	32.42	4.28	32.42
Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	28.41	3.16	28.41
DX Packaged System, EER=13.4, 10 tons	Health	28.20	3.34	28.20
DX Packaged System, EER=13.4, 10 tons	School	26.43	1.64	26.43
Economizer Repair - DX	Office	22.47	1.66	22.47
Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	22.14	3.80	22.14
ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	21.20	1.56	21.20
HE PTAC, EER=9.6, 1 ton	Misc	19.60	1.37	19.60
ROB 4L4' High Performance T8 (86 W), 2020	Office	18.89	3.25	18.89
DX Packaged System, EER=13.4, 10 tons	Grocery	18.70	3.33	18.70

5.4 Achievable (Program) Potential

This section provides a high-level summary of the achievable potential analysis, based on the results of the technical and economic potential analyses. This achievable analysis was conducted using the results of the base avoided cost scenario, and excludes opt-out, exempt, and non-jurisdictional customers. Although savings from these customers were included in the technical and economic results, they are excluded from the program achievable potential as they do not participate in Dominion programs and therefore should not be included in the estimation of program potential.

In contrast to the technical and economic potential estimates which are based on measure-level costs and savings, our estimates of achievable potential take into account market and other factors that affect the adoption of efficiency measures. As further described in Section 4 and Appendix A of this report, our method of estimating measure adoption takes into account market barriers and program incentives and reflects actual consumer and business implicit discount rates. This portion of the analysis also includes program budgets as they impact the savings potential and are used in the analysis of the total resource cost and other cost benefit tests. The discount rate assumptions can be

found in Appendix C of the report, while annual budget assumptions can be found in Appendix J of the draft report.

In this analysis, achievable potential refers to the amount of savings that would occur in response to one or more specific program interventions. Gross or total market savings shown in this section includes net savings and savings attributable to program free-riders – those customers who would have installed the measure in the absence of the program. Net or program savings associated with program potential are savings that are projected beyond those that would occur naturally in the absence of any market intervention.

The achievable analysis typically begins by calibrating budgets and savings to recent program results.[23] After the calibration is complete, all cost-effective measures from the technical and economic analysis are included in the model, and administrative and marketing budgets are increased to account for the additional measures.

DNV GL calibrated the non-residential sector results to recent non-residential programs but found that calibrating to current residential programs was not feasible. DNV GL attempted to calibrate the residential sector results to the current Residential Home Energy Check Up and Residential Heat Pump Upgrade programs, but found that these two programs did not replicate well in our modeling framework.[24] This was due to the audit nature of the Residential Home Energy Check Up program not representing a natural market normally assumed by the model. As such, it did not seem reasonable to expand the results of the calibration efforts to the full potential analysis. We instead established residential budgets and parameters based on our experience rather than calibration to past program results. Initial administrative and marketing budgets were based on data from the indicator tables, which was increased to account for the additional measures included in the analysis.

Because achievable potential depends on the type and degree of intervention applied, we developed potential estimates under alternative funding scenarios: 50 percent incentives and 75 percent incentives.[25] We estimated program energy and peak demand savings under each scenario for the 2014-2023 period. Per the direction of Dominion, we then modeled the two aforementioned incentive scenarios, defined as follows:

- 50 percent incentives: We assume customer incentives are set at 50 percent of incremental costs.
- 75 percent incentives: We assume customer incentives are offered at the midpoint between the 50 percent incentive and a 100 percent incentive. Program budgets were increased in conjunction with the increased incentive spending.

Table 5-40 shows the results of the achievable analysis as compared to base consumption, technical potential, and economic potential. The energy savings estimates from the 50 percent scenario are three percent of base consumption (excluding opt-outs/exempt/non-jurisdictional) and 15 percent of

23 The calibration stage only includes measures that can be mapped to Dominion programs. All cost-effective measures are included in the funding scenario analyses.

24 In particular, RHEC provides a fixed incentive through a direct install program which does not respond in the same way as incentive-driven programs. The model would typically assume that the high levels of incentives seen in RHEC would lead to measure penetration beyond what the 2012 and 2013 RHEC EM&V results suggest. In order to replicate the results of the RHEC program we needed to set artificially high barriers in order to constrain penetration of these measures and in doing so limited the amount of potential that could realistically be feasible for these measures.

25 These scenarios reflect the percentage of incremental measure cost that is assumed to be paid in customer incentives.

the economic potential.[26] Overall energy savings under the 75 percent scenario are projected to be six percent of base consumption and 26 percent of economic potential. These results as a percent of base consumption are comparatively lower than results seen in other jurisdictions for the following reasons:

- DNV GL found that the avoided cost and rate structure suppresses program savings potential. Low avoided costs and rates reduce the cost-effectiveness and associated penetration of each measure.
- Without extensive program experience to rely on, these results suggest that more effort and time are required to inform customers of program benefits than in other jurisdictions with many years of program history. Although Dominion has offered DSM programs for five years, opportunities still remain in untouched markets like appliance recycling which will take time to develop into programs.

Table 5-40: Ten Year Cumulative Potential – GWh

Sector	2023 Base Energy Use (GWH)	Ten Year Cumulative Potential - GWh			
		Technical Potential	Economic Potential	50% Achievable (Program)	75% Achievable (Program)
Residential	31,255	15,374	7,642	1,488	2,484
Savings % of Base		49%	24%	5%	8%
Non-Residential	33,170	9,806	6,734	623	1,297
Savings % of Base		30%	20%	2%	4%
Opt-Out/Exempt/ Non-Jurisdictional	10,380	3,128	2,223	0	0
Savings % of Base		30%	21%	0%	0%
Total	74,805	28,308	16,660	2,111	3,782
Savings % of Base		38%	22%	3%	5%
Total No Opt-Out/ Exempt/ Non-Jur.	64,425	25,181	14,437	2,111	3,782
Savings % of Base		39%	22%	3%	6%

[26] Savings presented in the executive summary were compared to base consumption including opt-out/exempt/non-jurisdictional customers. In that case, savings from the 50% scenario are 3% of base consumption and savings from the 75% scenario are 5% of base.

5.4.1 Achievable (Program) Potential – Overall Results

Figure 5-31 shows our estimates of achievable potential savings over time. As shown in this figure, by 2023 cumulative net[27] energy savings are projected to be 2,111 GWh under the 50 percent incentive scenario and 3,782 GWh under the 75 percent incentive scenario. In each scenario, savings increase over time. A breakdown of the program costs can be seen in Figure 5-31 below.

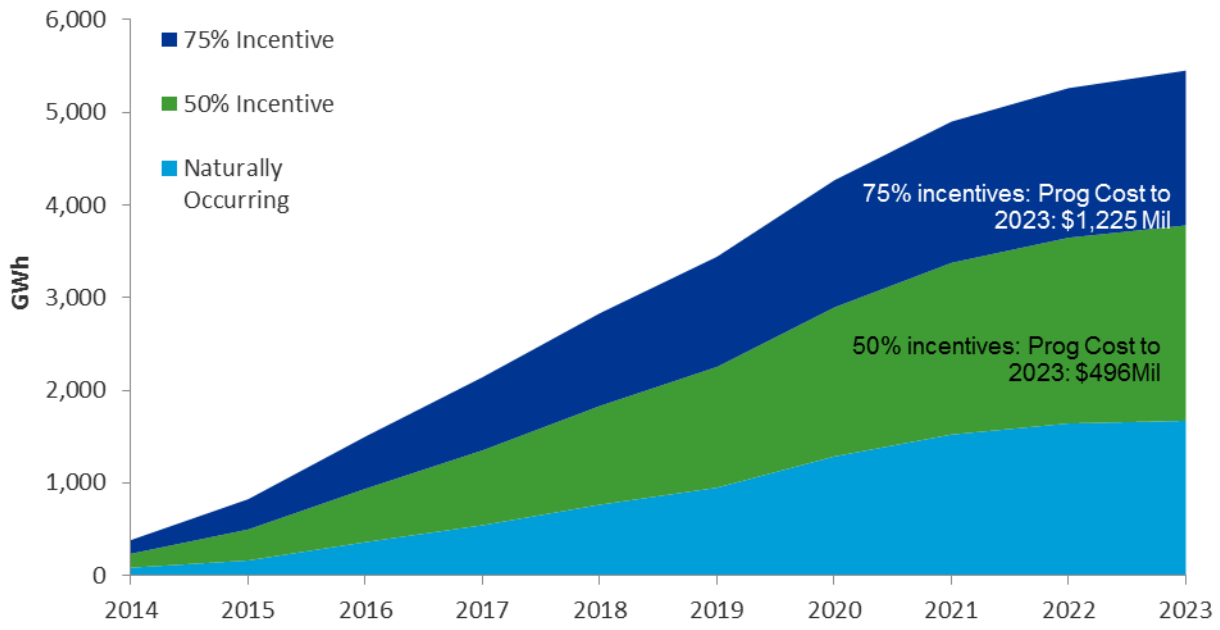


Figure 5-31: Achievable Electric Energy Savings: All Evaluated Sectors

As incentive levels increase between program scenarios, the costs to administer and market the program also increase from additional programmatic activity. Increased incentives also affect participant costs as the incremental cost participants must pay per measure has decreased as a result of the higher incentives. It is also important to note that although the level of naturally occurring savings does not change between scenarios, program free riders receive the same incentives payments as program participants.

[27] Throughout this section, *net* refers to savings beyond those estimated to be naturally occurring; that is, from customer adoptions that would occur in the absence of any programs or standards.

Figure 5-32 depicts the estimated costs and benefits under each funding scenario from 2014 to 2023. The present value of program costs (including program incentives[28] and program administration, marketing[29]) is $389 million under the 50 percent incentive scenario and $963 million under the 75 percent incentive scenario.

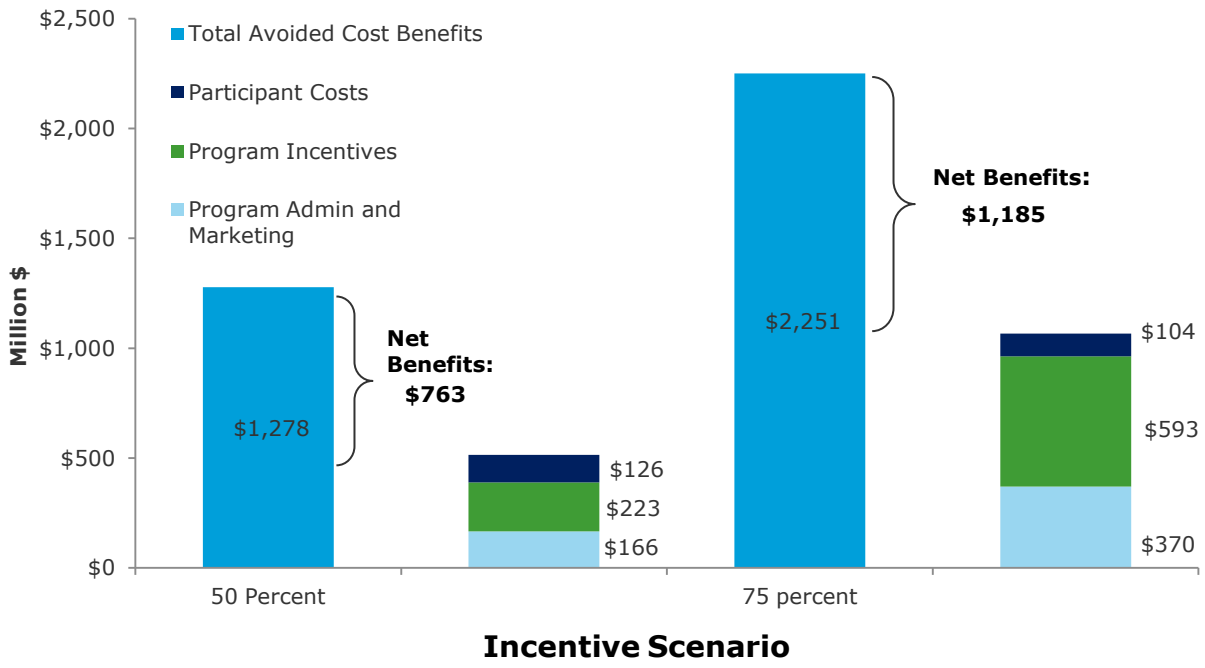


Figure 5-32: Benefits and Costs of Energy Efficiency Savings—2014-2023*

* Present value of benefits and costs over normalized 20-year measure lives; nominal discount rate is 7.45 percent, inflation rate is 1.87 percent.

The present value of total avoided cost benefits is $1,278 million under 50 percent incentives and $2,251 million under 75 percent incentives. Finally, all scenarios have positive net benefits: the present value of *net* avoided cost benefits, i.e., the difference between total avoided cost benefits and total costs (which include participant costs in addition to program costs), is $763 million under 50 percent incentives and $1,185 million under 75 percent incentives.

Both of the funding scenarios are cost-effective based on the TRC test, which is the test used in this study to determine program cost-effectiveness.[30] The TRC benefit-cost ratios for Dominion's service territory are 2.5 for the 50 percent scenario and 2.1 under the 75 percent scenario.

[28] The incentive budgets reported for this study are calculated by the model based on the penetration of the energy efficiency measures and the incentives paid.

[29] The administrative and marketing costs used in the analysis were based off the costs (indirect-other and direct implementation) from the EM&V indicator tables. These budgets were scaled up to account for the addition of other cost-effective measures in the analysis.

[30] Other cost benefit tests will be provided in the appendix of the draft report.

The high TRC in both scenarios is largely driven by LED installations, particularly in the residential sector. Without LEDs in the residential analysis, where they have the largest impact, the program TRCs would be about 1.6 over the 10-year analysis period.

The saturation study showed remaining potential exists for both CFLs and LEDs. In the early years of the analysis period, CFLs are still cost-competitive with LEDs, but using recent data on price trends, we expect LEDs to be more cost-effective than CFLs in 2016. The model projects that LEDs will have a large impact on program savings beginning in 2016. As a result, all residential lighting savings after that point can be attributed to LED lamp replacements. Recent research on LEDs has shown that the major barrier to LED penetration is still costs, which are expected to decline. Performance and quality concerns were initial barriers when LEDs were first introduced to the market, but through extensive research and development at major manufacturers and national-level quality standards, these barriers have diminished and it is expected that consumers will be more interested in LEDs than they were in CFLs. As such, we expect to see an increase in LED penetration as costs continue to decline.

Key results of our efficiency scenario forecasts from 2014 to 2023 are summarized in Table 5-41.

Table 5-41: Summary of Achievable Potential Results—2014-2023*

Result - Programs	Program Scenario:	
	50 percent Incentives	75 percent Incentives
Total Market Energy Savings - GWh	4,195	5,809
Total Market Peak Demand Savings - MW	723	1,042
Program Energy Savings - GWh	2,111	3,782
Program Peak Demand Savings - MW	370	698
Program Costs - Real, $ Million		
Administration	$158	$397
Marketing	$54	$74
Incentives	$284	$754
Total	$495	$1,225
PV Avoided Costs	$1,278	$2,251
PV Annual Program Costs (Adm/Mkt)	$166	$370
PV Net Measure Costs	$349	$697
Net Benefits	$763	$1,185
TRC Ratio	2.5	2.1

*PV (present value) of benefits and costs is calculated over a 20-year normalized measure life for 2014-2023 program years, nominal discount rate = 7.45 percent, inflation rate = 1.87 percent; GWh and MW savings are cumulative through 2023.

5.4.2 Breakdown of Achievable Potential by Sector

Cumulative net achievable potential estimates by sector for the period of 2014-2023 are presented in Figure 5-33 and Figure 5-34. These figures compare the residential and non-residential sector results for each funding scenario. All opt-out, exempt, and non-jurisdictional customers were excluded from this analysis.

Under the program assumptions developed for this study, achievable energy savings under the 50 percent and 75 percent scenarios are highest for the residential sector. Peak demand savings under both scenarios are also highest for the residential sector.[31]

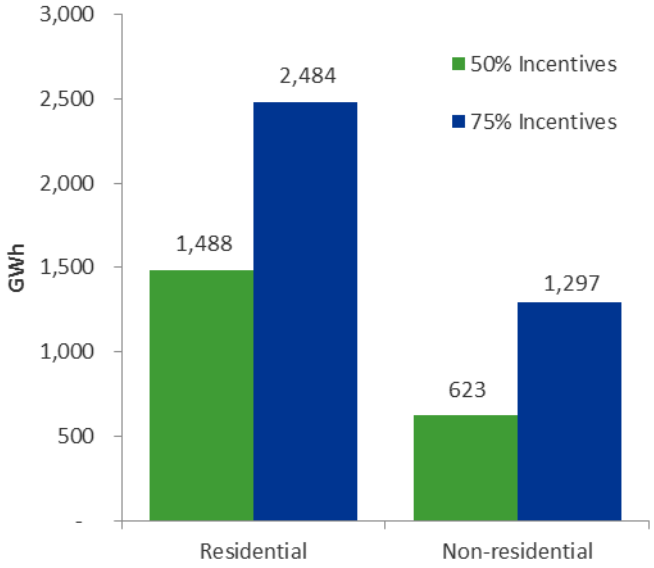


Figure 5-33: Net Achievable Energy Savings (2023) by Sector—GWh per Year

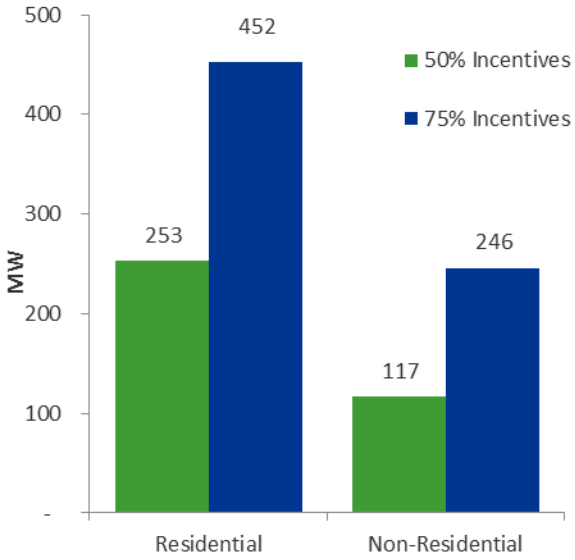


Figure 5-34: Net Achievable Peak-Demand Savings (2023) by Sector—MW

[31] The estimates of peak demand savings are from the installation of energy efficiency measures and do not include demand savings from demand response technologies such as direct load control or dynamic pricing.

Cumulative net achievable potential estimates by Virginia customer class are presented in Figure 5-35 and Figure 5-36. Similar to the system level results, achievable energy and peak demand savings are highest for the residential sector under both scenarios.

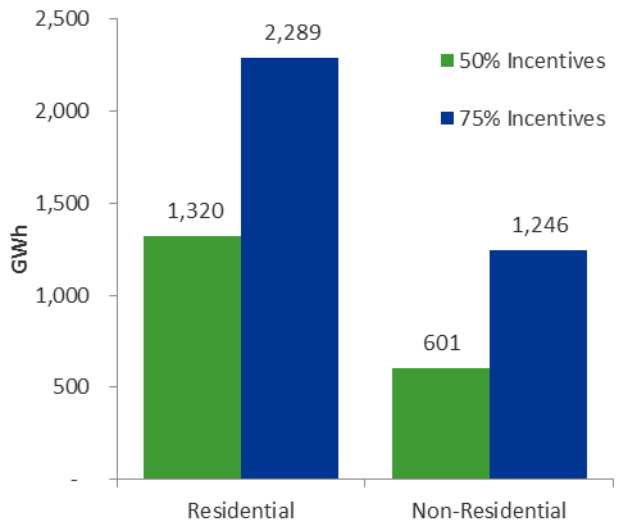


Figure 5-35: Net Achievable Energy Savings (2023) by Sector in Virginia—GWh per Year

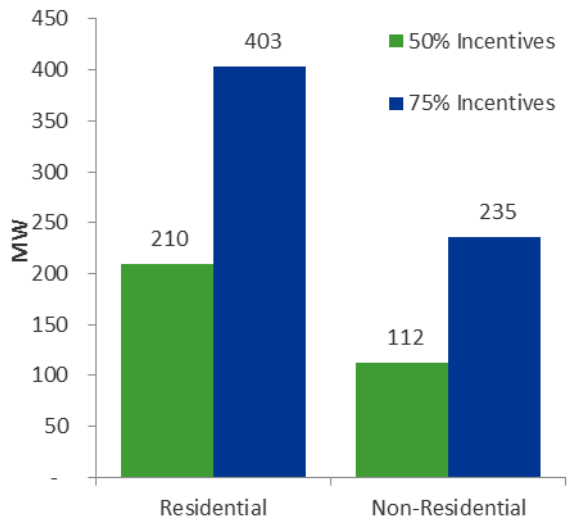


Figure 5-36: Net Achievable Peak-Demand Savings (2023) by Sector in Virginia—MW

Figure 5-37 and Figure 5-38 show the net cumulative energy and demand savings in North Carolina. Achievable energy and peak demand savings are highest for the residential sector under both scenarios. The increase in residential savings between the 50 percent and 75 percent scenarios is much smaller in North Carolina than in Virginia.

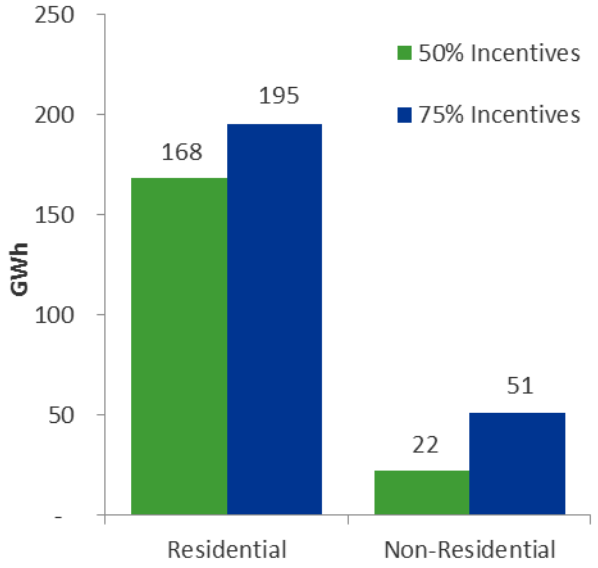


Figure 5-37: Net Achievable Energy Savings (2023) by Sector in North Carolina—GWh per Year

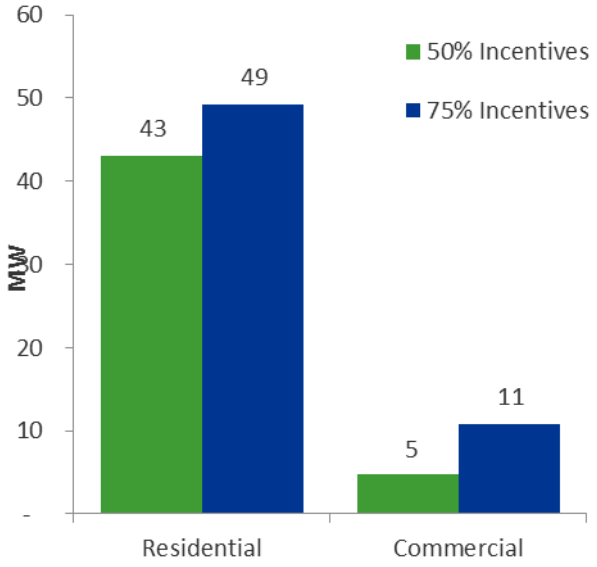


Figure 5-38: Net Achievable Peak-Demand Savings (2023) by Sector in North Carolina—MW

Figure 5-39 shows cumulative net achievable program savings for the total residential sector by program scenario. By 2023, net energy savings reach 1,488 GWh under the 50 percent incentive scenario and 2,484 GWh under the 75 percent incentive scenario.

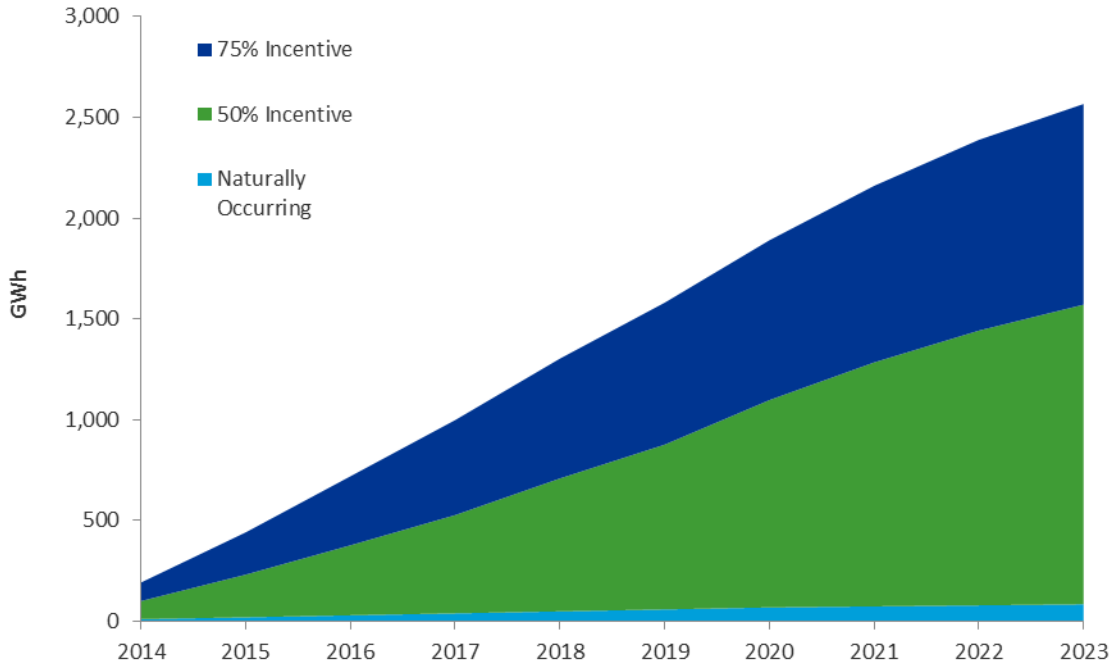


Figure 5-39: Achievable Energy Savings: Residential Sector

Table 5-42 shows detailed information for the measures that were included in the residential achievable potential analysis. This table presents savings at the system level and shows the average TRC across all building types.[32] Savings from the 50 percent and 75 percent scenarios are compared against the economic potential for each measure to show how much economic potential is projected to be achieved during the 10-year analysis period. These results show that program potential generally does not reach saturation in this time frame as various forces such as measure cost-effectiveness, awareness decay, and late adopters[33] prevent additional penetration.

[32] An average TRC can be below one if the measure is not cost-effective in some, but not all, building types.

[33] The modelling process assumes that initial awareness is a function on measure-level cost effectiveness. Awareness increases over time due to program marketing and advertising efforts, but we also assume a fraction of customers will forget and become "unaware" each year and must be reached by the program again. Furthermore, we assume that despite a program's best efforts, there will be a portion of the market that will not be converted due to factors outside a program's control.

Table 5-42: Residential Measure-Level Savings: GWh

Measure	Average TRC Ratio	Technical Potential (GWh)	Economic Potential (GWh)	Net Ach @50% Incentives	% of Economic	Net Ach @75% Incentives	% of Economic
Proper Refrigerant Charging and Air Flow (CAC)	1.07	226.7	148.8	33.4	22%	65.0	44%
Duct Insulation (CAC)	1.15	74.7	2.3	0.3	13%	0.8	37%
Return Duct Modification (CAC)	1.73	73.7	12.4	2.9	23%	6.1	49%
Programmable Thermostat (CAC)	2.14	49.3	12.7	4.4	34%	7.2	57%
Self-Install Weatherization (CAC)	6.09	27.0	27.0	10.6	39%	13.1	49%
Proper Refrigerant Charging and Air Flow (CAC early replacement)	1.00	55.2	4.0	1.1	27%	1.9	48%
Duct Insulation (CAC early replacement)	8.38	4.2	3.3	1.2	36%	1.5	44%
Return Duct Modification (CAC early replacement)	1.59	21.1	2.0	0.4	21%	0.9	47%
Programmable Thermostat (CAC early replacement)	1.97	15.0	2.4	0.8	35%	1.3	54%
Self-Install Weatherization (CAC early replacement)	5.97	9.7	6.8	2.7	40%	3.3	49%
Door Weatherization (CAC early replacement)	1.24	23.7	8.7	1.3	15%	2.7	32%
Heat pump upgrade	0.97	962.4	412.5	20.5	5%	37.3	9%
Duct Insulation (HP cooling)	8.53	17.8	17.8	6.4	36%	7.8	44%
Programmable Thermostat (HP cooling)	1.51	143.1	29.1	8.2	28%	15.4	53%
Self-Install Weatherization (HP cooling)	2.29	43.5	25.6	9.0	35%	14.9	58%
Door Weatherization (HP cooling)	0.96	535.0	12.2	2.2	18%	4.2	35%
Duct Insulation (HP cooling Early Replacement)	7.44	2.8	2.8	1.1	38%	1.3	47%
Programmable Thermostat (HP cooling Early Replacement)	0.84	69.0	0.4	0.4	80%	0.4	93%
Self-Install Weatherization (HP cooling Early Replacement)	2.06	6.8	4.0	1.3	32%	2.3	56%
Door Weatherization (HP cooling Early Replacement)	1.00	67.7	2.1	0.4	18%	0.7	35%
Self-Install Weatherization (RAC)	3.72	1.6	1.6	0.6	40%	0.9	58%
Door Weatherization (RAC)	0.87	4.2	0.7	0.2	25%	0.3	39%

Measure	Average TRC Ratio	Technical Potential (GWh)	Economic Potential (GWh)	Net Ach @50% Incentives	% of Economic	Net Ach @75% Incentives	% of Economic
ECM Furnace Fan (variable speed motor) – Cooling	3.60	926.3	926.3	47.2	5%	147.3	16%
Duct Insulation (HP heating)	8.92	24.9	24.9	7.3	29%	8.6	35%
Programmable Thermostat (HP heating)	1.22	155.3	40.1	13.4	33%	22.6	56%
Self-Install Weatherization (HP heating)	2.51	60.7	35.8	15.5	43%	21.2	59%
Door Weatherization (HP heating)	0.79	360.9	14.0	2.5	18%	4.9	35%
Duct Insulation (HP heating early replacement)	8.54	4.4	4.4	1.3	30%	1.6	35%
Programmable Thermostat (HP heating early replacement)	1.17	30.1	6.8	2.2	33%	3.8	56%
Self-Install Weatherization (HP heating early replacement)	2.57	11.0	6.5	2.8	43%	3.8	59%
Door Weatherization (HP heating early replacement)	0.80	62.0	2.5	0.4	18%	0.9	35%
Air Source Heat Pump (resistance heating)	4.89	346.9	346.9	35.5	10%	47.1	14%
Programmable Thermostat (resistance heating)	1.49	398.8	15.7	6.2	39%	9.3	60%
Self-Install Weatherization	2.52	363.5	16.6	7.2	43%	9.8	59%
Door Weatherization (resistance heating)	1.37	410.4	30.0	6.7	22%	11.2	38%
CFLs	28.31	1705.6	1705.6	55.0	3%	119.8	7%
LEDs	6.17	1249.1	1237.9	319.9	26%	455.6	37%
CFLs-specialty	3.95	138.4	138.4	0.1	0%	0.3	0%
LEDs-specialty	30.87	628.7	628.7	214.4	34%	311.7	50%
ROB 2L4'T8, 1EB	2.29	241.3	241.3	9.8	4%	15.0	6%
Refrigerator (Energy Star)	1.74	210.7	210.7	13.4	6%	21.4	10%
2nd Refrigerator Recycling	2.13	479.7	479.7	87.2	18%	193.9	40%
Freezer (Energy Star)	1.18	41.5	41.5	3.8	9%	6.4	15%
Freezer - Early Replacement (Energy Star)	1.41	62.8	62.8	17.0	27%	24.1	38%
2nd Freezer Recycling	3.03	19.4	19.4	5.3	27%	8.2	42%
Heat Pump Water Heater - Energy Star	0.98	1103.9	325.5	17.7	5%	30.5	9%

Measure	Average TRC Ratio	Technical Potential (GWh)	Economic Potential (GWh)	Net Ach @50% Incentives	% of Economic	Net Ach @75% Incentives	% of Economic
DHW Tank Wrap	1.03	661.3	141.0	15.1	11%	42.9	30%
Pipe Wrap	3.72	116.2	116.2	46.2	40%	61.5	53%
Hot water turndown 5 degrees	2.52	162.3	14.2	3.1	22%	4.2	30%
Hot water turndown 10 degrees	2.52	172.4	19.2	4.2	22%	5.7	30%
Hot water turndown 15 degrees	2.50	180.9	4.5	1.0	22%	1.3	30%
Hot water turndown 20 degrees	2.50	178.5	1.7	0.4	22%	0.5	30%
Drain Water Heat Recovery (GFX)	1.35	414.5	131.5	21.6	16%	57.9	44%
Faucet Aerators	1.30	442.2	72.1	16.2	22%	35.2	49%
Low Flow Showerhead 1.5 Gal/Min	2.55	255.3	111.2	42.3	38%	62.4	56%
Heat Pump Water Heater - Energy Star - Early Replacement	0.96	94.5	69.5	18.7	27%	33.3	48%
High Efficiency CD (EF=3.01 w/moisture sensor)	1.51	253.1	253.1	20.1	8%	32.5	13%
Variable-Speed Pool Pump (<1 hp)	1.90	210.8	210.8	19.7	9%	40.3	19%
Energy Star Plasma TV	6.96	14.3	14.3	2.6	18%	3.3	23%
Smart Power Strips	0.51	436.7	45.8	9.1	20%	14.1	31%
Energy Star LCD TV	15.35	134.6	134.6	21.1	16%	24.8	18%
Energy Star DVD Player	3.90	31.1	31.1	5.7	18%	7.6	24%
Energy Star Desktop PC	14.41	61.4	61.4	9.8	16%	11.6	19%
Indirect Feedback	2.28	457.1	372.5	12.4	3%	23.7	6%

Figure 5-40 shows cumulative net achievable program savings by non-residential program scenario. By 2023, net energy savings reach 623 GWh under the 50 percent incentive scenario and 1,297 GWh under the 75 percent incentive scenario.

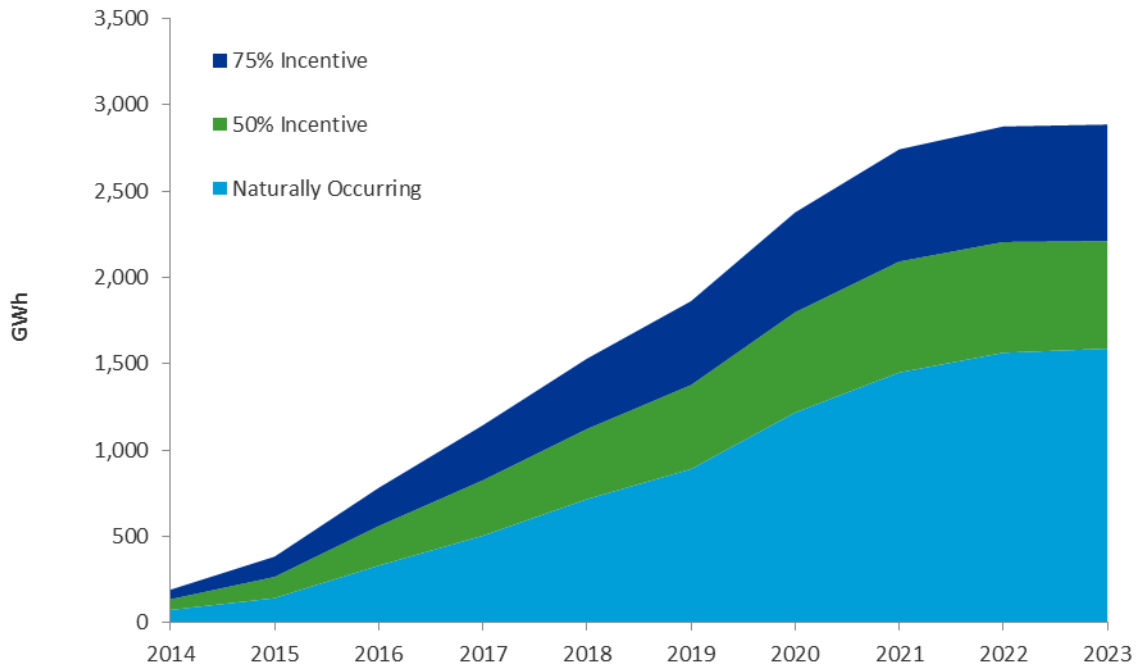


Figure 5-40: Achievable Energy Savings: Non-Residential Sector

Table 5-43 presents savings information for all measures included in the non-residential achievable potential analysis. Similar to

Table 5-42, this table shows system-level savings as well as the average TRC across all building types and compares projections of achievable potential to a measure's estimated economic potential.[34]

[34] An average TRC can be below 1 if the measure is not cost-effective in some, but not all building types.

Table 5-43: Non-Residential Measure-Level Savings: GWh

Measure	Average TRC ratio	Technical	Economic	Ach @50% Incentives	% of Net Economic	Ach @75% Incentives	% of Net Economic
Tube Fluorescents	2.10	1473.4	1374.8	115.3	8%	206.4	15%
LED	2.66	3710.7	2091.4	236.8	11%	368.0	18%
Lighting Controls	3.05	347.4	210.6	18.6	9%	53.4	25%
High Performance Lighting R/R	2.48	497.0	481.5	20.7	4%	97.6	20%
CFL	2.64	1464.8	1464.7	6.0	0%	8.6	1%
Cooling Equipment	2.82	1578.2	1495.7	23.1	2%	56.4	4%
Shell	2.78	199.8	83.9	3.0	4%	15.7	19%
Cooling Controls	0.62	216.2	30.7	0.3	1%	1.9	6%
Cooling Maintenance	1.29	18.8	8.2	0.1	1%	0.6	7%
VSD	2.78	1116.2	858.1	69.4	8%	202.8	24%
Economizer	0.65	359.7	91.7	0.4	0%	2.6	3%
Motors	2.01	260.6	210.7	0.5	0%	2.9	1%
Ventilation Controls	0.76	393.1	103.2	2.7	3%	12.7	12%
Other Refrigeration	5.23	213.9	137.5	10.6	8%	22.4	16%
Refrigeration Equipment	5.08	96.6	75.7	3.3	4%	7.5	10%
Power Management	1.33	131.1	117.9	1.1	1%	0.4	0%
Office Equipment	22.02	115.6	115.3	2.2	2%	3.1	3%
Data Center	63.70	601.9	601.9	36.0	6%	49.4	8%
Other Water Heating	2.28	117.3	82.7	2.4	3%	12.2	15%
Water Heating Equipment	1.61	133.0	113.9	0.3	0%	1.5	1%
Vending Controls	1.01	36.1	33.1	0.3	1%	1.0	3%
Cooking	0.59	73.3	55.3	0.3	1%	1.5	3%

DNV·GL

DOMINION ENERGY EFFICIENCY POTENTIAL STUDY

Dominion Energy Efficiency Potential Study Draft Report Appendices

Dominion Virginia Power

Prepared by Kema, Inc.

January 9, 2015

Appendices

A DETAILED METHODOLOGY AND MODEL DESCRIPTION

In this appendix we present and discuss our basic methodology for conducting market potential studies. We also present an overview of DSM ASSYST™, our model used to develop market potential estimates. Information presented here has been extracted from several recent energy efficiency potential reports.

A.1 Overview of DSM Forecasting Method

The crux of any DSM forecasting process involves carrying out a number of systematic analytical steps that are necessary to produce accurate estimates of energy efficiency (EE) effects on system load. A simplified overview of these basic analytical steps is shown in Figure A-1.

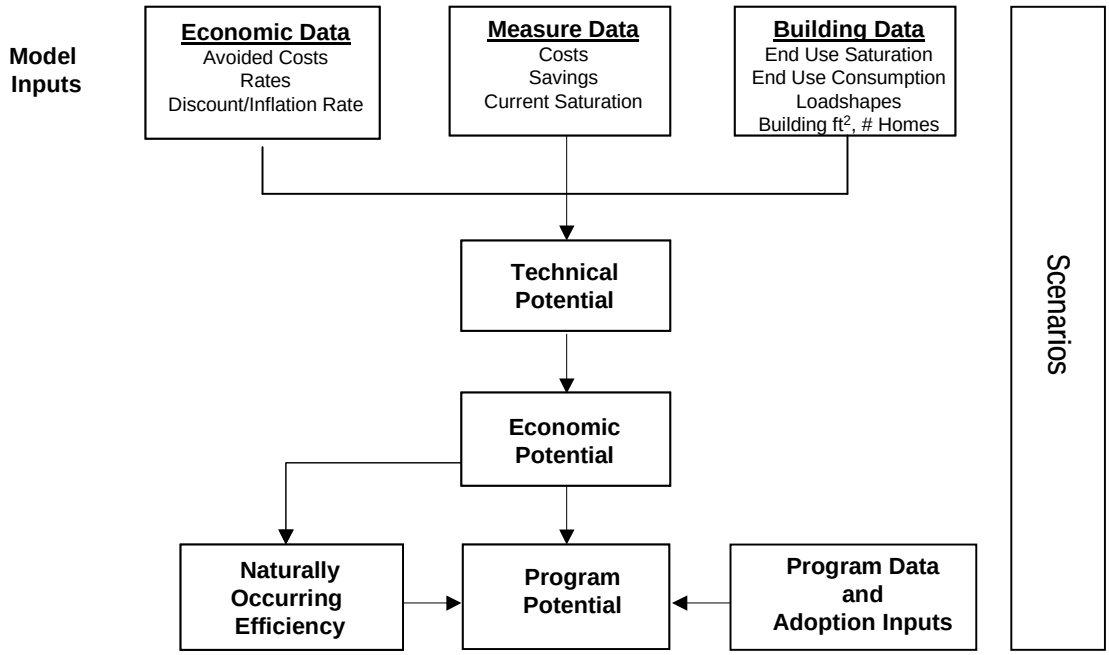


Figure 0-1: Simplified Conceptual Overview of Modeling Process

Developing a DSM forecast is viewed by DNV GL as a five-step process. The steps include:

Step 1: Develop Initial Input Data

- Develop list of EE measure opportunities to include in scope
- Gather and develop technical data (costs and savings) on efficient measure opportunities
- Gather, analyze, and develop information on building characteristics, including total square footage and households, electricity consumption and intensity by end use, end-use consumption load patterns by time of day and year (i.e., load shapes), market shares of key electric consuming equipment, and market shares of EE technologies and practices.

Step 2: Estimate Technical Potential and Develop Supply Curves

- Match and integrate data on efficient measures to data on existing building characteristics to produce estimates of technical potential and EE supply curves.

Step 3: Estimate Economic Potential

- Gather economic input data such as current and forecasted retail electric prices and current and forecasted costs of electricity generation, along with estimates of other potential benefits of reducing supply, such as the value of reducing environmental impacts associated with electricity production
- Match and integrate measure and building data with economic assumptions to produce indicators of costs from different viewpoints (e.g., utility, societal, and consumer)
- Estimate total economic potential using supply curve approach

Step 4: Estimate Achievable Program and Naturally Occurring Potentials

- Gather and develop estimates of program costs (e.g., for administration and marketing) and historic program savings
- Develop estimates of customer adoption of EE measures as a function of the economic attractiveness of the measures, barriers to their adoption, and the effects of program intervention
- Estimate achievable program and naturally occurring potentials; calibrate achievable and naturally occurring potential to recent program and market data
- Develop alternative economic estimates associated with alternative future scenarios

Step 5: Scenario Analyses and Resource Planning Inputs

- Recalculate potentials under alternate economic scenarios and deliver data in format required for resource planning.

Provided below is additional discussion of DNV GL's modeling approaches for technical, economic, and achievable DSM forecasts.

A.1.1 Estimate Technical Potential and Develop Energy-Efficiency Supply Curves

Technical potential refers to the amount of energy savings or peak demand reduction that would occur with the *complete* penetration of all measures analyzed in applications where they were deemed *technically* feasible from an *engineering* perspective. Total technical potential is developed from estimates of the technical potential of individual measures as they are applied to discrete market segments (commercial building types, residential dwelling types, etc.).

A.1.1.1 Core Equation

The core equation used to calculate the energy technical potential for each individual efficiency measure, by market segment, is shown below (using a commercial example):[1]

[1] Note that stock turnover is not accounted for in our estimates of technical and economic potential, stock turnover *is accounted for* in our estimates of achievable potential. Our definition of technical potential assumes instantaneous replacement of standard-efficiency with high-efficiency measures.

Technical Potential of Efficient Measure	=	Total Square Feet	×	Base Case Equipment EUI	×	Applicability Factor	×	Not Complete Factor	×	Feasibility Factor	×	Savings Factor

where:

Square feet is the total floor space for all buildings in the market segment. For the residential analysis, the **number of dwelling units** is substituted for square feet.

Base-case equipment EUI is the energy used per square foot by each base-case technology in each market segment. This is the consumption of the energy-using equipment that the efficient technology replaces or affects. For example, if the efficient measure were a CFL, the base EUI would be the annual kWh per square foot of an equivalent incandescent lamp. For the residential analysis, unit energy consumption (UECs), energy used per dwelling, are substituted for EUIs.

Applicability factor is the fraction of the floor space (or dwelling units) that is applicable for the efficient technology in a given market segment; for the example above, the percentage of floor space lit by incandescent bulbs.

Not complete factor is the fraction of applicable floor space (or dwelling units) that has not yet been converted to the efficient measure; that is, (1 minus the fraction of floor space that already has the EE measure installed).

Feasibility factor is the fraction of the applicable floor space (or dwelling units) that is technically feasible for conversion to the efficient technology from an *engineering* perspective.

Savings factor is the percent reduction in energy consumption resulting from application of the efficient technology.

Technical potential for peak demand reduction is calculated analogously.

An example of the core equation is shown in Table A-1 for the case of a prototypical 4-lamp 4-foot standard T-8 lighting fixture, which is replaced by a 4-lamp 4-foot premium T-8 fixture in the office segment of a large utility service territory.

Table 0-1
Example of Technical Potential Calculation—Replace 4-Lamp 4-Foot Standard T-8s with 4-Lamp 4-Foot Premium T-8s in the Office Segment of a Utility Service Territory
(Note: Data are illustrative only)

Technical Potential of Efficient Measure =	Total square feet	× Base Case Equipment UEC	× Applicability Factor	× Not Complete Factor	× Feasibility Factor	× Savings Factor
57 million kWh	195 million	5.74	0.34	0.95	1.00	0.16

Technical EE potential is calculated in two steps. In the first step, all measures are treated independently; that is, the savings of each measure are not marginalized or otherwise adjusted for overlap between competing or synergistic measures. By treating measures independently, their relative economics are analyzed without making assumptions about the order or combinations in which they might be implemented in customer buildings. However, the total technical potential across measures cannot be estimated by summing the individual measure potentials directly. The cumulative savings cannot be estimated by adding the savings from the individual savings estimates because some savings would be double counted. For example, the savings from a measure that reduces heat gain into a building, such as window film, are partially dependent on other measures that affect the efficiency of the system being used to cool the building, such as a high-efficiency chiller; the more efficient the chiller, the less energy saved from the application of the window film.

A.1.1.2 Use of Supply Curves

In the second step, cumulative technical potential is estimated using an EE supply curve approach.[2] This method eliminates the double-counting problem. In Figure A-2, we present a generic example of a supply curve. As shown in the figure, a supply curve typically consists of two axes—one that captures the cost per unit of saving a resource or mitigating an impact (e.g., $/kWh saved or $/ton of carbon avoided) and the other that shows the amount of savings or mitigation that could be achieved at each level of cost. The curve is typically built up across individual measures that are applied to specific base-case practices or technologies by market segment. Savings or mitigation measures are sorted on a least-cost basis, and total savings or impacts mitigated are calculated incrementally with respect to measures that precede them. Supply curves typically, but not always, end up reflecting diminishing returns, i.e., as costs increase rapidly and savings decrease significantly at the end of the curve.

[2] This section describes conservation supply curves as they have been defined and implemented in numerous studies. Readers should note that Stoft 1995 describes several technical errors in the definition and implementation of conservation supply curves in the original and subsequent conservation supply curve studies. Stoft concludes that conservation supply curves are not “true” supply curves in the standard economic sense but can still be useful (albeit with his recommended improvements) for their intended purpose (demonstration of cost-effective conservation opportunities).

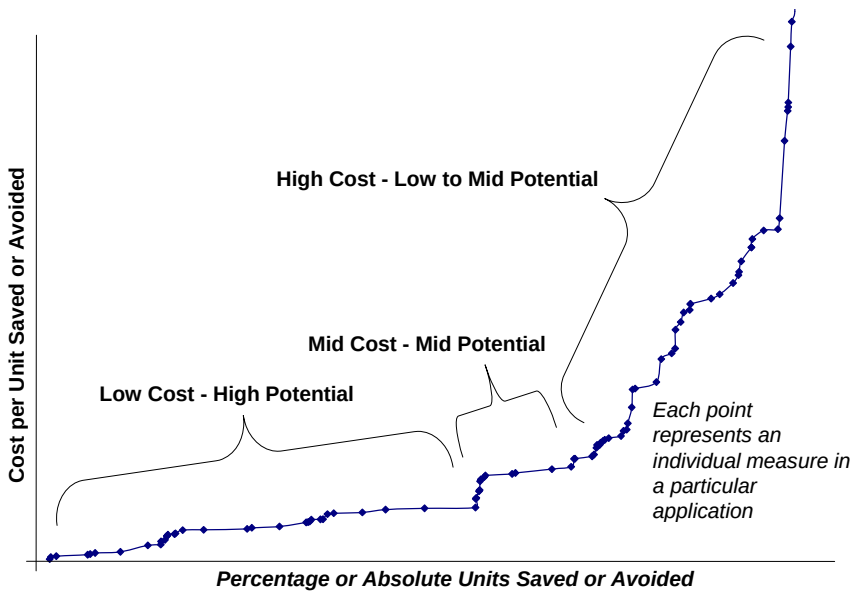


Figure 0-2: Generic Illustration of EE Supply Curve

As noted above, the cost dimension of most EE supply curves is usually represented in dollars per unit of energy savings. Costs are usually annualized (often referred to as "levelized") in supply curves. For example, EE supply curves usually present levelized costs per kWh or kW saved by multiplying the initial investment in an efficient technology or program by the "capital recovery rate" (CRR):

$$\text{CRR} = \frac{d}{1-(1+d)^{-n}}$$

where *d* is the real discount rate and *n* is the number of years over which the investment is written off (i.e., amortized).

Thus,

Levelized Cost per kWh Saved = Initial Cost x CRR/Annual Energy Savings

Levelized Cost per kW Saved = Initial Cost x CRR/Peak Demand Savings

The levelized cost per kWh and kW saved are useful because they allow simple comparison of the characteristics of EE with the characteristics of energy supply technologies. However, the levelized cost per kW saved is a biased indicator of cost-effectiveness because all of the efficiency measure costs are arbitrarily allocated to peak savings.

Returning to the issue of EE supply curves, Table A-2 shows a simplified numeric example of a supply curve calculation for several EE measures applied to commercial lighting for a hypothetical population of buildings. What is important to note is that in an EE supply curve, the measures are sorted by relative cost—from least to most expensive. In addition, the energy consumption of the system being

affected by the efficiency measures goes down as each measure is applied. As a result, the savings attributable to each subsequent measure decrease if the measures are interactive. For example, the occupancy sensor measure shown in Table 1-2 would save more at less cost per unit saved if it were applied to the base-case consumption before the T8 lamp and electronic ballast combination. Because the T8 electronic ballast combination is more cost-effective, however, it is applied first, reducing the energy savings potential for the occupancy sensor. Thus, in a typical EE supply curve, the base-case end-use consumption is reduced with each unit of EE that is acquired. Notice in Table 1-2 that the total end-use GWh consumption is recalculated after each measure is implemented, thus reducing the base energy available to be saved by the next measure.

Table A-2 shows an example that would represent measures for one base-case technology in one market segment. These calculations are performed for all of the base-case technologies, market segments, and measure combinations in the scope of a study. The results are then ordered by levelized cost and the individual measure savings are summed to produce the EE potential for the entire sector.

In the next subsection, we discuss how economic potential is estimated as a subset of the technical potential.

Table 0-2
Sample Technical Potential Supply Curve Calculation for Commercial Lighting
(Note: Data are illustrative only)

Measure	Total End Use Consumption of Population (GWh)	Applicable, Not Complete and Feasible (1000s of ft^2)	Average kWh/ft^2 of population	Savings %	GWh Savings	Levelized Cost ($/kWh saved)
Base Case: T12 lamps with Magnetic Ballast	425	100,000	4.3	N/A	N/A	N/A
1. T8 w. Elec. Ballast	425	100,000	4.3	21%	89	$0.04
2. Occupancy Sensors	336	40,000	3.4	10%	13	$0.11
3. Perimeter Dimming	322	10,000	3.2	45%	14	$0.25
With all measures	309		3.1	27%	116	

A.1.2 Estimation of Economic Potential

Economic potential is typically used to refer to the technical potential of those energy conservation measures that are cost effective when compared to either supply-side alternatives or the price of energy. Economic potential takes into account the fact that many EE measures cost more to purchase initially than do their standard-efficiency counterparts. The incremental costs of each efficiency measure are compared to the savings delivered by the measure to produce estimates of energy

savings per unit of additional cost. These estimates of EE resource costs can then be compared to estimates of other resources such as building and operating new power plants.

A.1.2.1 Cost Effectiveness Tests

To estimate economic potential, it is necessary to develop a method by which it can be determined that a measure or program is economic. There is a large body of literature that debates the merits of different approaches to calculating whether a public purpose investment in EE is cost effective (Chamberlin and Herman 1993, RER 2000, Ruff 1988, Stoft 1995, and Sutherland 2000). We usually utilize the total resource cost (TRC) test to assess cost effectiveness. The TRC is a form of societal benefit-cost test. Other tests that have been used in analyses of program cost-effectiveness by EE analysts include the utility cost, ratepayer impact measure (RIM), and participant tests. These tests are discussed in detail the California Standard Practice Manual (CASPM).

Before discussing the TRC test and how it is often used in our DSM forecasts, we present below a brief introduction to the basic tests as described in the CASPM:[3]

- Total Resource Cost Test—The TRC test measures the net costs of a demand-side management program as a resource option based on the total costs of the program, including both the participants' and the utility's costs. The test is applicable to conservation, load management, and fuel substitution programs. For fuel substitution programs, the test measures the net effect of the impacts from the fuel not chosen versus the impacts from the fuel that is chosen as a result of the program. TRC test results for fuel substitution programs should be viewed as a measure of the economic efficiency implications of the total energy supply system (gas and electric). A variant on the TRC test is the societal test. The societal test differs from the TRC test in that it includes the effects of externalities (e.g. environmental, national security), excludes tax credit benefits, and uses a different (societal) discount rate.
- Participant Test—The participant test is the measure of the quantifiable benefits and costs to the customer due to participation in a program. Since many customers do not base their decision to participate in a program entirely on quantifiable variables, this test cannot be a complete measure of the benefits and costs of a program to a customer.
- Utility (Program Administrator) Test—The program administrator cost test measures the net costs of a demand-side management program as a resource option based on the costs incurred by the program administrator (including incentive costs) and excluding any net costs incurred by the participant. The benefits are similar to the TRC benefits. Costs are defined more narrowly.
- Ratepayer Impact Measure Test—The ratepayer impact measure (RIM) test measures what happens to customer bills or rates due to changes in utility revenues and operating costs caused by the program. Rates will go down if the change in revenues from the program is greater than the change in utility costs. Conversely, rates or bills will go up if revenues collected after program implementation are less than the total costs incurred by the utility in implementing the program. This test indicates the direction and magnitude of the expected change in customer bills or rate levels.

[3] These definitions are direct excerpts from the California Standard Practice Manual, October 2001.

The key benefits and costs of the various cost-effectiveness tests are summarized in Table A-3.

Table 0-3
Summary of Benefits and Costs of California Standard Practice Manual Tests

Test	Benefits	Costs
TRC Test	Generation, transmission and distribution savings Participants avoided equipment costs (fuel switching only)	Generation costs Program costs paid by the administrator Net participant measure costs
Participant Test	Bill reductions Incentives Participants avoided equipment costs (fuel switching only)	Bill increases Participant measure costs
Utility (Program Administrator) Test	Generation, transmission and distribution savings	Generation costs Program costs paid by the administrator Incentives
Ratepayer Impact Measure Test	Generation, transmission and distribution savings Revenue gain	Generation costs Revenue loss Program costs paid by the administrator Incentives

Generation, transmission and distribution savings (hereafter, energy benefits) are defined as the economic value of the energy and demand savings stimulated by the interventions being assessed. These benefits are typically measured as induced changes in energy consumption, valued using some mix of avoided costs. Electricity benefits are valued using three types of avoided electricity costs: avoided distribution costs, avoided transmission costs, and avoided electricity generation costs.

Participant costs are comprised primarily of incremental measure costs. Incremental measure costs are essentially the costs of obtaining EE. In the case of an add-on device (say, an adjustable-speed drive or ceiling insulation), the incremental cost is simply the installed cost of the measure itself. In the case of equipment that is available in various levels of efficiency (e.g., a central air conditioner), the incremental cost is the excess of the cost of the high-efficiency unit over the cost of the base (reference) unit.

Administrative costs encompass the real resource costs of program administration, including the costs of administrative personnel, program promotions, overhead, measurement and evaluation, and shareholder incentives. In this context, administrative costs are not defined to include the costs of various incentives (e.g., customer rebates and salesperson incentives) that may be offered to encourage certain types of behavior. The exclusion of these incentive costs reflects the fact that they are essentially transfer payments. That is, from a societal perspective they involve offsetting costs (to the program administrator) and benefits (to the recipient).

A.1.2.2 Use of the Total Resource Cost to Estimate Economic Potential

We often use the TRC test in two ways in our model. First, we develop an estimate of economic potential by calculating the TRC of individual measures and applying the methodology described below. Second, we develop estimates of whether different program scenarios are cost effective.

Economic potential can be defined either inclusively or exclusively of the costs of programs that are designed to increase the adoption rate of EE measures. In many of our projects, we define economic potential to exclude program costs. We do so primarily because program costs are dependent on a number of factors that vary significantly as a function of program delivery strategy. There is no single estimate of program costs that would accurately represent such costs across the wide range of program types and funding levels possible. Once an assumption is made about program costs, one must also link those assumptions to expectations about market response to the types of interventions assumed. Because of this, we believe it is more appropriate to factor program costs into our analysis of program potential. Thus, our definition of economic potential is that portion of the technical potential that passes our economic screening test (described below) exclusive of program costs. Economic potential, like technical potential, is a theoretical quantity that will exceed the amount of potential we estimate to be achievable through current or more aggressive program activities.

As implied in Table A-3 and defined in the CASPM 2001, the TRC focuses on resource savings and counts benefits as utility-avoided supply costs and costs as participant costs and utility program costs. It ignores any impact on rates. It also treats financial incentives and rebates as transfer payments; i.e., the TRC is not affected by incentives. The somewhat simplified benefit and cost formulas for the TRC are presented in Equations A-1 and A-2 below.

Equation 0-1

$$\text{Benefits} = \sum_{t=1}^{N} \frac{\text{Avoided Costs of Supply}_{p,t}}{(1+d)^{t-1}}$$

Equation 0-2

$$\text{Costs} = \sum_{t=1}^{N} \frac{\text{Program Cost}_{t} + \text{Participant Cost}_{t}}{(1+d)^{t-1}}$$

Where:

d = the discount rate
p = the costing period
t = time (in years)
n = 20 years

A nominal discount rate is typically used in the analysis, as inflation is taken into account separately.

The avoided costs of supply are calculated by multiplying measure energy savings and peak demand impacts by per-unit avoided costs by costing period. Energy savings are allocated to costing periods and peak impacts estimated using load shape factors.

As noted previously, in the measure-level TRC calculation used to estimate economic potential, program costs are excluded from Equation A-2. Using the supply curve methodology discussed previously, measures are ordered by TRC (highest to lowest) and then the economic potential is calculated by summing the energy savings for all of the technologies for which the marginal TRC test is greater than 1.0. In the example in Table A-4, the economic potential would include the savings for measures 1 and 2, but exclude saving for measure 3 because the TRC is less than 1.0 for measure 3. The supply curve methodology, when combined with estimates of the TRC for individual measures, produces estimates of the economic potential of efficiency improvements. By definition and intent, this estimate of economic potential is a theoretical quantity that will exceed the amount of potential we estimate to be achievable through program activities in the final steps of our analyses.

Table 0-4: Sample Use of Supply Curve Framework to Estimate Economic Potential (Note: Data are illustrative only)

Measure	Total End Use Consumption of Population (GWh)	Applicable, Not Complete and Feasible Sq.Feet (000s)	Average kWh/ft^2 of population	Savings %	GWh Savings	Total Resource Cost Test	Savings Included in Economic Potential?
Base Case: T12 lamps with Magnetic Ballast	425	100,000	4.3	N/A	N/A	N/A	N/A
1. T8 w. Elec. Ballast	425	100,000	4.3	21%	89	2.5	Yes
2. Occupancy Sensors	336	40,000	3.4	10%	13	1.3	Yes
3. Perimeter Dimming	322	10,000	3.2	45%	14	0.8	No
Technical Potential with all measures				27%	116		
Economic Potential with measures for which TRC Ratio > 1.0				24%	102		

A.1.3 Estimation of Program and Naturally occurring Potentials

In this section we present the method we employ to estimate the fraction of the market that adopts each EE measure in the presence and absence of EE programs. We define:

- Program potential as the amount of savings that would occur in response to one or more specific market interventions
- Naturally occurring potential as the amount of savings estimated to occur as a result of normal market forces, that is, in the absence of any utility or governmental intervention.

Our estimates of program potential are typically the most important results of the modeling process. Estimating technical and economic potentials are necessary steps in the process from which important information can be obtained; however, the end goal of the process is better understanding how much of the remaining potential can be captured in programs, whether it would be cost-effective to increase

program spending, and how program costs may be expected to change in response to measure adoption over time.

A.1.3.1 Adoption Method Overview

We use a method of estimating adoption of EE measures that applies equally to be our program and naturally occurring analyses. Whether as a result of natural market forces or aided by a program intervention, the rate at which measures are adopted is modeled in our method as a function of the following factors:

- The availability of the adoption opportunity as a function of capital equipment turnover rates and changes in building stock over time
- Customer awareness of the efficiency measure
- The cost-effectiveness of the efficiency measure
- Market barriers associated with the efficiency measure.

The method we employ is executed in the measure penetration module of DNV GL's DSM ASSYST™ model.

In many of our projects, only measures that pass the measure-level TRC test are put into the penetration module for estimation of customer adoption.

A.1.3.2 Availability

A crucial part of the model is a stock accounting algorithm that handles capital turnover and stock decay over a period of up to 20 years. In the first step of our achievable potential method, we calculate the number of customers for whom each measure will apply. The input to this calculation is the total floor space available for the measure from the technical potential analysis, i.e., the total floor space multiplied by the applicability, not complete, and feasibility factors described previously. We call this the eligible stock. The stock algorithm keeps track of the amount of floor space available for each efficiency measure in each year based on the total eligible stock and whether the application is new construction, retrofit, or replace-on-burnout.[4]

Retrofit measures are available for implementation by the entire eligible stock. The eligible stock is reduced over time as a function of adoptions[5] and building decay.[6] Replace-on-burnout measures are available only on an annual basis, approximated as equal to the inverse of the service life.[7] The annual portion of the eligible market that does not accept the replace-on-burnout measure does not have an opportunity again until the end of the service life.

[4] Replace-on-burnout measures are defined as the efficiency opportunities that are available only when the base equipment turns over at the end of its service life. For example, a high-efficiency chiller measure is usually only considered at the end of the life of an existing chiller. By contrast, retrofit measures are defined to be constantly available, for example, application of a window film to existing glazing.

[5] That is, each square foot that adopts the retrofit measure is removed from the eligible stock for retrofit in the subsequent year, and remains out of the eligible stock until the end of the measure's useful life.

[6] Buildings do not last forever. An input to the model is the rate of decay of the existing floor space. Floor space typically decays at a very slow rate.

[7] For example, a base-case technology with a service life of 15 years is only available for replacement to a high-efficiency alternative each year at the rate of 1/15 times the total eligible stock. For example, the fraction of the market that does not adopt the high-efficiency measure in year *t* will not be available to adopt the efficient alternative again until year *t* + 15.

New construction applications are available for implementation in the first year. Those customers that do not accept the measure are given subsequent opportunities corresponding to whether the measure is a replacement or retrofit-type measure.

A.1.3.3 Awareness

In our modeling framework, customers cannot adopt an efficient measure merely because there is stock available for conversion. Before they can make the adoption choice, they must be aware and informed about the efficiency measure. Thus, in the second stage of the process, the model calculates the portion of the available market that is informed. An initial user-specified parameter sets the initial level of awareness for all measures. Incremental awareness occurs in the model as a function of the amount of money spent on awareness/information building and how costly it is to reach each customer.

The model also controls for information retention. An information decay parameter in the model is used to control for the percentage of customers that will retain program information from one year to the next. Information retention is based on the characteristics of the target audience and the temporal effectiveness of the marketing techniques employed.

A.1.3.4 Adoption

The portion of the total market this is available and informed can now face the choice of whether or not to adopt a particular measure. Only those customers for whom a measure is available for implementation (stage 1) and, of those customers, only those who have been informed about the program/measure (stage 2), are in a position to make the implementation decision.

In the third stage of our penetration process, the model calculates the fraction of the market that adopts each efficiency measure as a function of the participant test. The participant test is a benefit-cost ratio that is generally calculated as follows:

Equation 0-3

$$\text{Benefits} = \sum_{t=1}^{N} \frac{\text{Customer Bill Savings } (\$)_t}{(1+d)^{t-1}}$$

Equation 0-4

$$\text{Costs} = \sum_{t=1}^{N} \frac{\text{Participant Costs } (\$)_t}{(1+d)^{t-1}}$$

Where:

d = the discount rate
t = time (in years)
N = measure lifetime

The bill reductions are calculated by multiplying measure energy savings and customer peak demand impacts by retail energy and demand rates.

The model uses measure implementation curves to estimate the percentage of the informed market that will accept each measure based on the participant's benefit-cost ratio. The model provides

enough flexibility so that each measure in each market segment can have a separate implementation rate curve. The functional form used for the implementation curves is:

$$y = \frac{a}{\left(1+e^{-\ln\frac{x}{4}}\right)\times\left(1+e^{-c\ln(bx)}\right)}$$

where:

y = the fraction of the market that installs a measure in a given year from the pool of informed applicable customers;
x = the customer's benefit-cost ratio for the measure;
a = the maximum annual acceptance rate for the technology;
b = the inflection point of the curve. It is generally 1 over the benefit-cost ratio that will give a value of 1/2 the maximum value; and
c = the parameter that determines the general shape (slope) of the curve.

The primary curves utilized in our model are shown in Figure A-3. These curves produce base year program results that are calibrated to actual measure implementation results associated with major IOU commercial efficiency programs over the past several years. Different curves are used to reflect different levels of market barriers for different efficiency measures. A list of market barriers is shown in Table A-5. It is the existence of these barriers that necessitates program interventions to increase the adoption of EE measures.

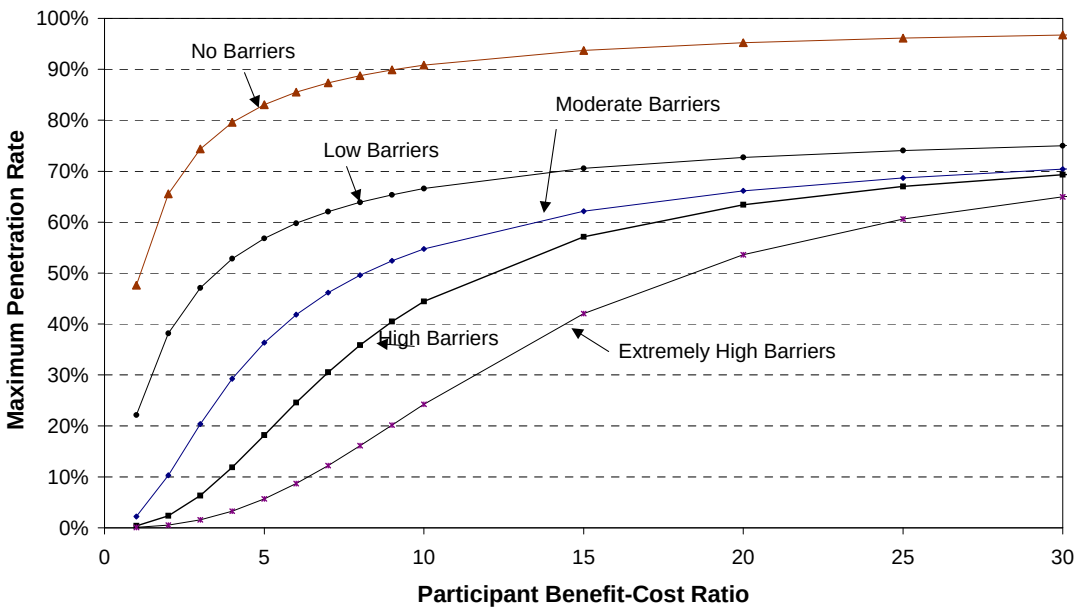


Figure 0-3: Primary Measure Implementation Curves Used in Adoption Model

Note that for the moderate, high barrier, and extremely high curves, the participant benefit-cost ratios have to be very high before significant adoption occurs. This is because the participant benefit-cost ratios are based on a 15-percent discount rate. This discount rate reflects likely adoption if there were no market barriers or market failures, as reflected in the no-barriers curve in the figure. Experience has shown, however, that actual adoption behavior correlates with implicit discount rates several times those that would be expected in a perfect market.[8]

Table 0-5: Summary Description of Market Barriers from Eto, Prahl, Schlegel 1997

Barrier	Description
Information or Search Costs	The costs of identifying energy-efficient products or services or of learning about energy-efficient practices, including the value of time spent finding out about or locating a product or service or hiring someone else to do so.
Performance Uncertainties	The difficulties consumers face in evaluating claims about future benefits. Closely related to high search costs, in that acquiring the information needed to evaluate claims regarding future performance is rarely costless.
Asymmetric Information and Opportunism	The tendency of sellers of energy-efficient products or services to have more and better information about their offerings than do consumers, which, combined with potential incentives to mislead, can lead to sub-optimal purchasing behavior.
Hassle or Transaction Costs	The indirect costs of acquiring EE, including the time, materials and labor involved in obtaining or contracting for an energy-efficient product or service. (Distinct from search costs in that it refers to what happens once a product has been located.)
Hidden Costs	Unexpected costs associated with reliance on or operation of energy-efficient products or services - for example, extra operating and maintenance costs.
Access to Financing	The difficulties associated with the lending industry's historic inability to account for the unique features of loans for energy savings products (i.e., that future reductions in utility bills increase the borrower's ability to repay a loan) in underwriting procedures.
Bounded Rationality	The behavior of an individual during the decision-making process that either seems or actually is inconsistent with the individual's goals.
Organization Practices or Customs	Organizational behavior or systems of practice that discourage or inhibit cost-effective EE decisions, for example, procurement rules that make it difficult to act on EE decisions based on economic merit.
Misplaced or Split incentives	Cases in which the incentives of an agent charged with purchasing EE are not aligned with those of the persons who would benefit from the purchase.
Product or Service Unavailability	The failure of manufacturers, distributors or vendors to make a product or service available in a given area or market. May result from collusion, bounded rationality, or supply constraints.
Externalities	Costs that are associated with transactions, but which are not reflected in the price paid in the transaction.

[8] For some, it is easier to consider adoption as a function of simple payback. However, the relationship between payback and the participant benefit-cost ratio varies depending on measure life and discount rate. For a long-lived measure of 15 years with a 15-percent discount rate, the equivalent payback at which half of the market would adopt a measure is roughly 6 months, based on the high barrier curve in Figure 2-3. At a 1-year payback, one-quarter of the market would adopt the measure. Adoption reaches near its maximum at a 3-month payback. The curves reflect the real-world observation that implicit discount rates can average up to 100 percent.

Non-externality Pricing	Factors other than externalities that move prices away from marginal cost. An example arises when utility commodity prices are set using ratemaking practices based on average (rather than marginal) costs.
Inseparability of Product Features	The difficulties consumers sometimes face in acquiring desirable EE features in products without also acquiring (and paying for) additional undesired features that increase the total cost of the product beyond what the consumer is willing to pay.
Irreversibility	The difficulty of reversing a purchase decision in light of new information that may become available, which may deter the initial purchase, for example, if energy prices decline, one cannot resell insulation that has been blown into a wall.

The model estimates adoption under both naturally occurring and program intervention situations. There are only two differences between the naturally occurring and program analyses. First, in any program intervention case in which measure incentives are provided, the participant benefit-cost ratios are adjusted based on the incentives. Thus, if an incentive that pays 50 percent of the incremental measure cost is applied in the program analysis, the participant benefit-cost ratio for that measure will double (since the costs have been halved). The effect on the amount of adoption estimated will depend on where the pre- and post-incentive benefit-cost ratios fall on the curve. This effect is illustrated in Figure A-4.

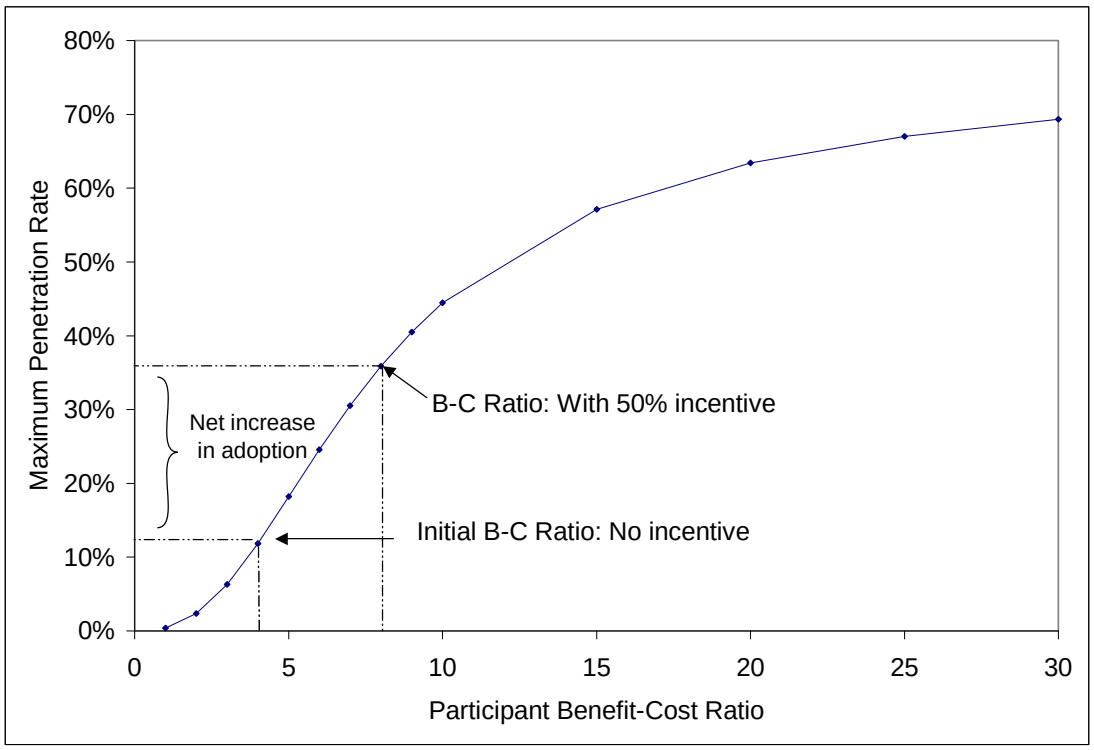


Figure 0-4: Illustration of Effect of Incentives on Adoption Level as Characterized in Implementation Curves

In many of our projects achievable potential EE forecasts are developed for several scenarios, ranging from base levels of program intervention, through moderate levels, up to an aggressive EE acquisition scenario. Uncertainty in rates and avoided costs are often characterized in alternate scenarios. The final results produced are annual streams of achievable program impacts (energy and demand by time-of-use period) and all societal and participant costs (program costs plus end-user costs).

A.1.4 Scenario Analyses

Achievable potential forecasts can be developed for multiple scenarios. For example, program savings can be modeled under low levels of program intervention, through moderate levels, up to an aggressive DSM acquisition scenario. Uncertainty in rates and avoided costs can be characterized in alternate scenarios as well. The final results produced will be annual streams of achievable DSM program impacts (energy and demand by time-of-use period) and all societal and participant costs. An example of the types of outputs that have been produced for similar studies in the past is shown in Table A-6 and Figure A-5.

Table 0-6: Example Format of DSM ASSYST Achievable Potential Outputs

DSM ASSYST Program Output	2006	2007	2008	etc.
Annual Energy Savings (kWh)				
Summer Period Energy Savings (kWh)				
Non Summer Period Energy Savings (kWh)				
Net Annual Energy Savings (kWh)				
Summer Period Net Energy Savings (kWh)				
Non Summer Period Net Energy Savings (kWh)				
Peak Demand Savings (kW)				
Net Peak Demand Savings (kW)				
Annual Program Costs				
Supplemental Customer Costs				

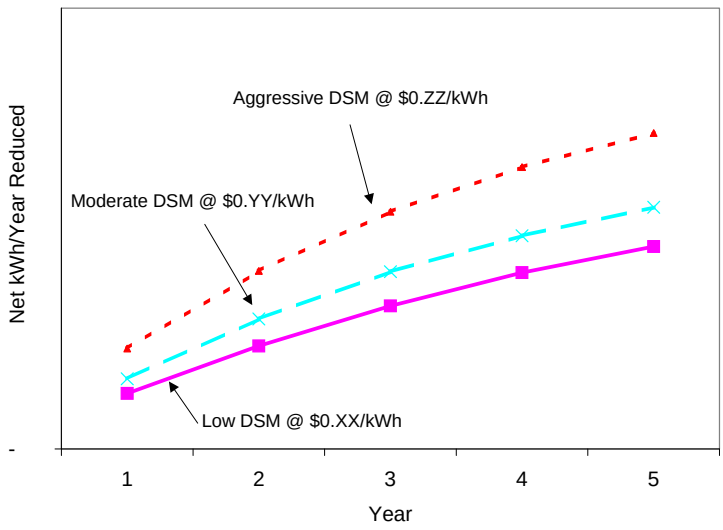


Figure 0-5: Example of DSM Scenario Outputs

A.1.5 Measure "Bundles" for Complex End Uses

Although potential can be estimated through measure-specific analyses for many sectors and end uses, there are some cases where the measure-specific approach becomes problematic because of the complexity or heterogeneity of the base-case energy systems being addressed. Two key examples are industrial processes and some aspects of residential and commercial new construction.

In the industrial case, there may be dozens or even hundreds of individual measures that can be applied to industrial processes throughout the population of industrial facilities in a service territory; however, analyzing each of these opportunities, though possible, is impractical within a resource and time-constrained study such as this one.

In the case of new construction, the problem is sometimes that an equipment substitution paradigm does not fit the real-world circumstances in which efficiency levels are improved. For example, in commercial lighting, virtually all new buildings tend to have electronic ballasts and T-8 lamps, as well as CFLs, and other high-efficiency components. However, the overall lighting system efficiency can often be increased by using these same components in smarter designs configurations or by combining with other features such as daylighting.

For both of these situations, our approach on recent related work has been to bundle multiple individual efficiency measures into somewhat simplified efficiency levels. For example, lighting levels for commercial new construction might be set at 10- and 20-percent improvement over those required by building codes. Similarly, for industrial compressed air systems, we have bundled savings opportunities into three levels where both savings and costs increase with each level. We then estimate an incremental cost for achieving each of the efficiency levels. An example of these results

developed in a recent study for industrial motors, compressed air, and processes in California is shown in Table A-7.

Once the levels efficiency are specified in terms of costs and savings, they are run through the modeling system as if they were individual measures. Thus, cost-effectiveness indicators are calculated for each level, those that pass the TRC are included in the achievable potential forecasting, and adoption is modeled using the same process as described above. Although we recommend using this approach for complex end uses because it creates a manageable forecasting process, care must be taken in developing the levels and recognizing that this approach results in some aggregation bias.

A.2 DSM ASSYST™ Model Description

DSM ASSYST™ (Demand-Side Management Technology Assessment System) is a tool developed to assess the technical, economic and market potential of DSM technologies in the residential, commercial and industrial sectors. Based on user-specified information about base technologies, conservation technologies, load shapes, utility avoided costs, utility service rates, and economic parameters, DSM ASSYST yields numeric data for a variety of criteria. The user can then evaluate and compare technologies. DSM ASSYST allows the user to analyze each DSM technology in multiple combinations of building types, market segments, end uses, and vintages both individually and compared to other DSM technology options.

Table 0-7: Example of Industrial Efficiency Levels Developed for a Recent California Potential Study

DSM ASSYST ADDITIVE SUPPLY ANALYSIS			Year	2011			
		Vintage: Existing Sector: Industrial Scenario: Base					
End Use	Measure Number	Measure	GWH Savings	MW Savings	Levelized Cost per KWh Saved $/kWH	Levelized Cost per KW Saved $/kW	Total Resource Cost Test TRC
Motors	101	Replace 1-5 HP Motor	248.7	34.1	$0.10	$698	0.8
Motors	102	Add 1-5 HP VSD	447.1	61.3	$0.14	$1,019	0.6
Motors	103	Motor Practices Level 1	607.0	83.2	$0.06	$440	1.3
Motors	104	Motor Practices Level 2	539.1	73.9	$0.24	$1,764	0.3
Motors	121	Replace 21-50 HP Motor	78.1	10.7	$0.09	$661	0.9
Motors	122	Add 21-50 HP VSD	319.0	43.7	$0.04	$278	2.1
Motors	123	Motor Practices Level 1	404.3	55.4	$0.03	$211	2.7
Motors	124	Motor Practices Level 2	361.9	49.6	$0.12	$840	0.7
Motors	151	Replace 201-500 HP Motor	143.5	19.7	$0.03	$201	2.8
Motors	152	Add 201-500 HP VSD	516.6	70.8	$0.01	$106	5.4
Motors	153	Motor Practices Level 1	598.6	82.0	$0.02	$152	3.7
Motors	154	Motor Practices Level 2	554.9	76.0	$0.08	$586	1.0
Compressed Air	202	CAS Level 1	433.9	59.5	$0.02	$168	3.4
Compressed Air	203	CAS Level 2	453.6	62.2	$0.05	$362	1.6
Compressed Air	204	CAS Level 3	325.5	44.6	$0.13	$936	0.6
Other Process	301	Process Level 1	1,031.8	141.4	$0.03	$190	3.0
Other Process	302	Process Level 2	1,219.7	167.1	$0.05	$345	1.7
Other Process	303	Process Level 3	767.3	105.1	$0.25	$1,831	0.3

The current version of DSM ASSYST uses a combination of Microsoft Excel spreadsheets and Visual Basic (VB) programming software. All input and output data are stored in spreadsheets. The VB modules read input data from various spreadsheets, perform the various analyses, and store output results into spreadsheets.

There are three major VB analysis modules: Basic, Supply, and Penetration. Figure A-6 provides an overview of the model process and key inputs. Each module is briefly described below.

A.2.1 Basic Module

In the Basic module, each technology is assessed individually by comparing it to a base case. Comparisons are made at a high degree of segmentation. The segmentation may include, but is not limited to sector, building type, end use, vintage and geographic area.

The Basic module reads four types of information, contained within four spreadsheet files. These files include:

- Economic: containing utility rates paid by customers, discount rates, avoided costs, and other utility-specific economic parameters
- Building: containing square footage or number of households and load shape data
- Measure: containing technology based inputs for the Basic Analysis
- Driver: containing information that drives the analysis process.

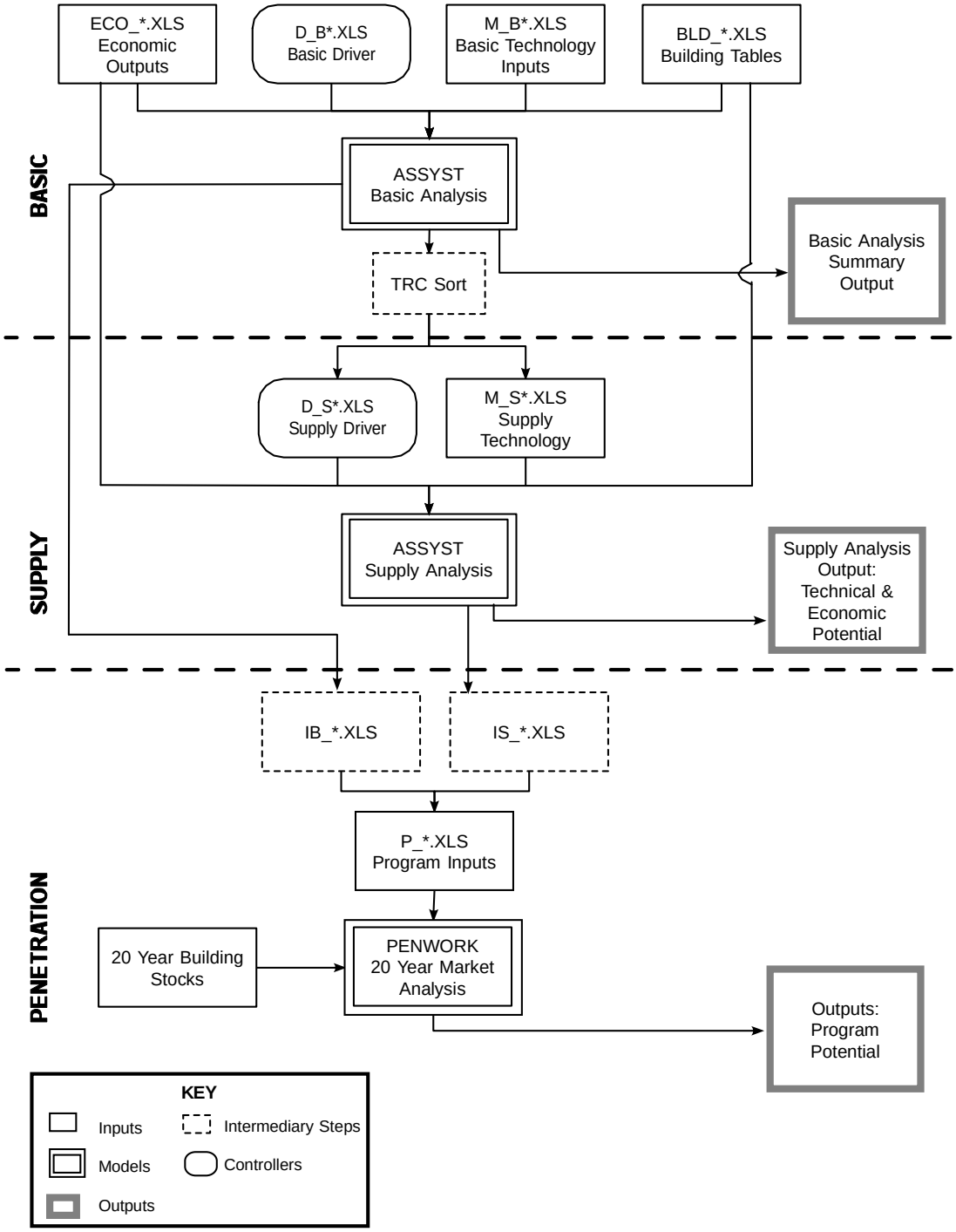


Figure 0-6: DSM ASSYST Analytic Flow

The output files produced by the Basic module include a Summary Basic Output file that contains an assessment of how much energy and demand each technology will save relative to the base case

within each segment. In addition, the summary contains cost data, savings fractions, before and after EUIs or UECs, service life, the levelized costs of implementing the technology, and results of economic tests including the TRC test, participant test, and customer payback.

This module also produces a second file that contains all the measures that were assessed in the Basic Analysis sorted in the highest to lowest TRC order within each market segment and end use. This file serves as an input file for the Supply module.

A.2.2 Supply Module

In the Supply Module each technology, within each market segment, is stacked, or implemented, such that all energy savings are realized from preceding technologies prior to the implementation of all subsequent technologies. The stacking order generally follows the TRC sort order, highest to lowest, resulting from the Basic module.

The Supply module requires two input files: a Driver file and a modified output file from the Basic module. As in the Basic module, the Driver file contains instructions for the analysis process. The output file from the basic analysis must be modified in Excel to address overlapping measures, such as different SEER levels or measures that are direct substitutes for each other.

Output from the Supply module contains the technical and economic potential plus energy and demand supply curves. The Supply module produces measure-level information that can be incorporated into the input file for the Penetration module.

A.2.3 Penetration Module

The Penetration (or Program Potential) module of ASSYST is designed to calculate the costs and net energy and demand savings from DSM programs under a variety of marketing scenarios. This module estimates the net impact and cost of a program over time by forecasting the naturally occurring penetration of each measure as well as the penetration of each measure given the program activities (i.e., incentives and awareness building).

Using a stock accounting algorithm over a period of 20 years, this module first calculates the number of customers for whom the measure will apply. Second, the model calculates the number of informed customers based on the amount of money spent on advertising. Third, the model calculates the number of customers who will implement the technology based on their benefit/cost ratio. Finally, the model compares the number of customers that implement the technology due to the program with those who would take the technology anyway (naturally occurring). Per-unit energy and demand savings are applied to the net number of customers (total minus naturally occurring) over the 20-year period. After completing the analysis, the results are automatically summed across measures to provide program-level costs and savings for 20 years, and formatted for input into Integrated Resource Planning models.

A program input file is used to define a program and provide the building stock forecast. The program characterization variables include:

- Incentive Levels
- Incentive Budget Constraints
- Yearly Incentive Adjuster
- Technology Acceptance Curve Parameters
- Administration Budgets
- Advertising Budgets
- Awareness Decay Rate
- Advertising Effective Ratio.

B MEASURE DESCRIPTIONS

This appendix describes the energy efficiency measures used in the study.

B.1 Residential Measures

This subsection provides brief descriptions of the residential electric measures included in this study. Measures are grouped by end use.

B.1.1 HVAC Equipment

Central air conditioner upgrade: Air conditioner equipment includes a compressor, an air-cooled or evaporatively-cooled condenser (located outdoors), an expansion valve, and an evaporator coil (located in the supply air duct near the supply fan). Cooling efficiencies vary based on the quality of the materials used, the size of equipment, the condenser type, and the configuration of the system. Central air conditioners may be of the unitary variety (all components housed in a factory-built assembly) or be a split system (an outdoor condenser section and an indoor evaporator section connected by refrigerant lines and with the compressor at either the outdoor or indoor location). Efficient air conditioner measures involve the upgrade of a standard efficiency unit (13 SEER) to a higher efficiency unit (14 SEER or higher), assuming quality installation.

Central air conditioner early replacement: For this measure we assume replacement of an older central air conditioner (11 SEER) with a new high-efficiency unit (14 SEER). Energy savings are diminished to account for the fact that a fraction of the associated energy savings would have been realized at the end of the older unit's useful life, when a minimum EER unit would have been purchased as a replacement.

Heat pump upgrade: Air-source heat pumps transfer heat from the outside air to the inside of a building or vice versa, providing both heating and cooling. We consider a 15 SEER/8.2 HSPF replacement and a 16 SEER/8.7 HSPF replacement. We consider both a replace-on-burnout measure and an early replacement measure.

AC maintenance: The efficiency of a central air conditioner can be reduced if the unit is not properly maintained. This group of measures includes both indoor and outdoor coil cleaning, as well as other standard efficiency practices such as filter replacement.

Proper refrigerant charging and air flow: This measure involves diagnostic and repair services for existing central air conditioners to improve their efficiency. Inspection and services of AC systems involves checking the refrigerant level, cleaning the coils, cleaning the blower, cleaning or replacing filters, and making sure air is flowing properly through the system.

High efficiency room air conditioner: Window (or wall) mounted room air conditioners are designed to cool individual rooms or spaces. This type of unit incorporates a complete air-cooled refrigeration and air-handling system in an individual package. Cooled air is discharged in response to thermostatic control to meet room requirements. Each unit has a self-contained, air-cooled direct expansion (DX) cooling system and associated controls. Room air conditioners are rated by energy efficiency ratio (EER), which is cooling output divided by power consumption. The efficient room air conditioner measure involves the upgrade of a standard efficiency unit (10.6 EER) to a higher efficiency unit (EER 10.8 or 11.3).

Room air conditioner early replacement: For this measure we assume replacement of an older room air conditioner (EER 9.7) with a new high-efficiency unit (EER 11.3). Energy savings are diminished to account for the fact that a fraction of the associated energy savings would have been realized at the end of the older unit's useful life, when a minimum EER unit would have been purchased as a replacement.

High-efficiency dehumidifier: ENERGY STAR® qualified dehumidifiers use less energy to remove moisture from the air on account of more efficient refrigeration coils, fans, and compressors. Savings are compared to a unit meeting the minimum federal standard.

Ceiling fans: ENERGY STAR® Ceiling Fans save energy through improved motors and blade designs. Ceiling fans save energy from space conditioning in the summer by creating a wind chill, and during the winter by distributing hot air evenly throughout the room.

Variable speed furnace / AC fans: Air handler models with the lowest electrical use ratings employ electronically commutated motors (ECMs). ECMs, also known as brushless DC motors or variable speed blower motors, have two principal advantages over the typical permanent-magnet split capacitor (PSC) blower motors found in the majority of air handlers. First, ECMs are claimed to be 20% to 30% more efficient than standard blower motors. Second, the typical ECM blower can produce a much wider range of airflow than a PSC blower, which typically has only three or four set speeds over a fairly narrow range. Because power consumption by an air handler rises with the cube of airflow, the ability to reduce airflow when appropriate can dramatically reduce the electrical power draw by the air handler.

Proper sizing and quality install: Most HVAC systems are typically over-sized by contractors for a variety of reasons: as a precaution against peak day temperatures or future problems from duct leaks, improper flow across the coils, and improper charge, or because they replace older systems with the same size (or larger) unit – even though the house may have been made more energy efficient since it was originally constructed (through home improvements, window replacements, insulation, caulking, and so on). Oversized air conditioners will be more expensive and tend to cycle, rather than run continuously, during both typical and peak cooling periods. This more frequent cycling reduces overall operating efficiency and also results in more variable indoor humidity levels. This measure assumes the contractor performs an Air Conditioning Contractors of America (ACCA) Manual J calculation to size the HVAC system and an ACCA Manual D calculation to size the ducts. These calculations take into account climate, house and site characteristics and orientation, air exchange rates, occupancy, and heat-emitting appliances. Since our central air conditioner upgrade measure includes quality installation, this measure applies only to the installation of standard efficiency equipment.

Programmable thermostat: ENERGY STAR® programmable thermostats come pre-programmed with settings intended to deliver energy savings without sacrificing comfort. The settings vary for the cooling and heating months, with specific temperature ranges and setback points for the morning, daytime, evening, and night. Programmable thermostat settings may also be changed to reflect individual schedules and preferences.

B.1.2 Building Envelope

Duct repair: An ideal duct system would be free of leaks, especially when the ducts are outside the conditioned space. Leakage in unsealed ducts varies considerably with the fabricating machinery used, the

methods for assembly, installation workmanship, and age of the ductwork. To seal ducts, a wide variety of sealing methods and products exist. Care should be taken to tape or otherwise seal all joints to minimize leakage in all duct systems and the sealing material should have a projected life of 20 to 30 years. Current duct sealing methods include use of computer-controlled aerosol and pre- and post-sealing duct pressurization testing.

Duct insulation: Insulation material inhibits the transfer of heat through the air-supply duct. Several types of ducts and duct insulation are available, including flexible duct, pre-insulated flexible duct, duct board, duct wrap, tacked or glued rigid insulation, and water proof hard shell materials for exterior ducts. Duct insulation for existing construction involves wrapping un-insulated ducts with an R-4 insulating material.

ENERGY STAR® windows: Windows which meet the ENERGY STAR® requirements have U-value and solar heat gain coefficients (SHGC) specified by climate zone, and are certified by the National Fenestration Rating Council (NFRC). These are modeled as a replace on burnout measure, so the costs are not the full cost of the window and installation, but rather the cost compared to installing a new non-ENERGY STAR® window.

Comprehensive shell air sealing - infiltration reduction: Professional installation of weather stripping, caulking, and expanding foam insulation aided by a blower door test. These measures reduce energy consumption by improving the tightness of the building shell and limiting heat gain and loss.

Self-install weatherization: Installation of weather stripping, caulking, and expanding foam insulation from a spray can to fix easily found leaks and reduce air infiltration, completed by the homeowner.

Ceiling and floor insulation: Thermal insulation is material or combinations of materials that are used to inhibit the flow of heat energy by conductive, convective, and radiative transfer modes. By inhibiting the flow of heat energy, thermal insulation can conserve energy by reducing heat loss or gain of a structure. An important characteristic of insulating materials is the thermal resistivity, or R-value. The R-value of a material is the reciprocal of the time rate of heat flow through a unit of this material in a direction perpendicular to two areas of different temperatures.

Basement insulation: Basement walls are typically insulated by constructing a stud wall inside the house foundation, and insulating it as any interior wall. This increases the cost of basement insulation compared to crawlspace insulation (in addition to the taller wall height to be insulated). The cost-effectiveness of basement insulation depends on whether the basement will be conditioned. Basement insulation includes rim joist insulation.

Wall insulation: For existing construction, this measure involves adding R-13 insulation to un-insulated walls. This is usually accomplished by drilling holes into the building's siding or interior walls and blowing in insulation material.

B.1.3 Lighting

Compact fluorescent lighting (CFLs): Compact fluorescent lamps are designed to replace standard incandescent lamps. They are approximately four times more efficient than incandescent light sources.

Screw-in modular lamps have reusable ballasts that typically last the life of four lamps. This study takes into account recently enacted Federal standards under the Energy Policy and Conservation Act. The standards mandate an increase in efficiency of approximately 30% for the majority of residential incandescent light bulbs using a phased approach, beginning with 100 watt bulbs in 2012 and ending with 40 watt bulbs in 2014. It was that this would result in a shift to a high efficiency incandescent lamps baseline for the specified bulb types.

LED general purpose lighting: A light emitting diode (LED) is a solid state lighting (SSL) technology that produces light by passing electrons through a semiconductor material, which is mounted on a heat sink and encased in a lens. Each LED is 7 mm to 9 mm on a side, and typically mounted in arrays on a circuit board, which is in turn mounted on another heat sink and encased in a fixture or bulb. This technology is revolutionizing the field in terms of light quality, energy efficiency, and design. However, poor manufacture has led to a range of problems in early products, notably color degradation and prematurely dimmed diodes from under-performing heat sinks, and "burnt out" diodes from faulty circuit boards. ENERGY STAR® provides rigorous standards to certify quality LED lighting fixtures, which are commercially available and currently rebated in numerous energy efficiency programs, and has recently completed an LED bulb specification around which products are being rapidly developed. LED general purpose lighting is applied as a measure to both high efficiency incandescent lighting and to base CFLs.

Super T-8 lamps with electronic ballasts: T-8 lamps are a smaller diameter fluorescent lamp than T-12 lamps. When paired with specially designed electronic ballasts, T-8 lamps provide more lumens per watt, resulting in energy savings. Electronic ballasts replace the standard core and coil technology in magnetic ballasts with solid-state components. This technology allows for more consistent control over ballast output and converts power to higher frequencies, causing the fluorescent lamps to operate more efficiently. For existing first generation T-8 systems, this measure is specified as an upgrade to efficiency levels associated with optimal Super T-8 lamp-ballast combinations on a replace-on-burnout basis.

Photocell/time clock (outdoor lighting): Photocells automatically turn off lights when the sensor detects enough ambient light. Used on outdoor fixtures, photocells ensure that the lamp is turned off during daylight hours. Photocells can be combined with other lighting controls, such as motion sensors or time clocks. Time clocks are devices that can be programmed to turn lights on and off according to a set schedule.

B.1.4 Water Heat

Heat pump water heater: Air-to-water heat pump water heaters extract low-grade heat from the air then transfer this heat to the water by means of an immersion coil. This is the most commonly utilized residential heat pump water heater. The air-to-water heat pump unit includes a compressor, air-to-refrigerant evaporator coil, evaporator fan, water circulating pump, refrigerant-to-water condenser coil, expansion valve, and controls. Residential heat pump water heaters replace base electric units with the same tank capacities.

Early replacement water heater to heat pump water heater: For this measure we assume replacement of an older water heater with a heat pump water heater as a retrofit measure. Energy savings are diminished to account for the fact that a fraction of the associated energy savings would have been realized

at the end of the older unit's useful life, when a new unit meeting current standards would have been purchased.

High efficiency water heater: Higher efficiency water heaters have greater insulation to reduce standby heat loss.

Solar water heater: Heat transfer technology that uses the sun's energy to warm water. Solar water heaters preheat water supplied to a conventional domestic hot water heating system. The energy savings for the system depend on solar radiation, air temperatures, water temperatures at the site, and the hot water use pattern.

Tankless water heater: Also known as "instant" or "on-demand" water heaters, tankless units function only when a hot water faucet is turned on. There is no energy required to maintain the temperature of the water in a tank, eliminating standby losses.

Drain water heat recovery (GFX): Gravity film exchange (GFX) drain-water heat recovery systems consist of a copper pipe for incoming cold water coiled tightly around a copper drain-water pipe. When water goes down the drain, it doesn't drop straight down as though poured from a spout, but rather falls against the side of the pipe. This phenomenon allows the GFX unit to easily re-capture some of this energy, as heat is transferred through the copper pipes to the incoming water supply going to the water heater.

Hot water temperatures turndown: Many residential water heaters are set well above the recommended 120 degrees Fahrenheit. Turning down the setpoint will save energy, and, depending on the original temperature, may also improve resident safety.

Low-flow showerhead: Many households are still equipped with showerheads using 3+ gallons per minute. Low flow showerheads can significantly reduce water heating energy for a nominal cost. Typical low-flow showerheads use 1.0-2.5 gallons per minute compared to conventional flow rate of 3.5-6.0 gallons per minute. The reduction in shower water use can substantially lower water heating energy use since showering accounts for about one-fourth of total domestic hot water energy use.

Pipe wrap: Thermal insulation is material or combinations of materials that are used to inhibit the flow of heat energy by conductive, convective, and radiative transfer modes. By inhibiting the flow of heat energy, thermal insulation can conserve energy by reducing heat loss or gain.

Faucet aerators: Water faucet aerators are threaded screens that attach to existing faucets. They reduce the volume of water coming out of faucets while introducing air into the water stream. A standard non-conserving faucet aerator has a typical flow rate of 3-5 gallons per minute. A water-saving aerator can reduce the flow to 1-2 gallons per minute. The reduction in the flow rate will lower hot water use and save energy (kitchen and bathroom sinks utilize approximately 7 percent of total domestic hot water energy use).

B.1.5 Appliances

High efficiency refrigerator: We model both an ENERGY STAR® and a CEE Tier 2 refrigerator. ENERGY STAR® refrigerators must exceed the stringent July 1, 2001 minimum federal standards for refrigerator

energy consumption by at least 10%. As specified for this study, the average efficiency improvement is 20% for ENERGY STAR® and 25% for CEE Tier II. An energy efficient refrigerator/freezer is designed by improving the various components of the cabinet and refrigeration system. These component improvements include cabinet insulation, compressor efficiency, evaporator fan efficiency, defrost controls, mullion heaters, oversized condenser coils, and improved door seals.

Early replacement refrigerator: We model an ENERGY STAR® refrigerator as an early replacement measure. Energy savings are diminished to account for the fact that a fraction of the associated energy savings would have been realized at the end of the older unit's useful life, when a minimum efficiency unit would have been purchased as a replacement.

Refrigerator/freezer recycling: For this measure we assume replacement of an older refrigerator (10 years old or more) with a new standard-efficiency refrigerator. The early replacement assumes that the same new refrigerator would have been bought, only six years later. Savings for this measure result for six years because the newer refrigerators, given the stringent efficiency standards implemented in 2001, use much less energy than older units.

High efficiency freezer: Stand-alone freezers include either upright or chest models. Efficient freezers should exceed standard efficiencies by 10 percent or more. As specified for this study, the average efficiency improvement is 15 percent.

Early replacement freezer: We also model an ENERGY STAR® freezer as an early replacement measure. Energy savings are diminished to account for the fact that a fraction of the associated energy savings would have been realized at the end of the older unit's useful life, when a minimum efficiency unit would have been purchased as a replacement.

ENERGY STAR® dishwasher: ENERGY STAR® labeled dishwashers save by using both improved technology for the primary wash cycle, and by using less hot water to clean. They include more effective washing action, energy efficient motors and other advanced technology such as sensors that determine the length of the wash cycle and the temperature of the water necessary to clean the dishes.

High efficiency clothes washer: A standard clothes washer uses various temperatures, water levels, and cycle durations to wash clothes depending on the clothing type and size of the laundry load. A high-efficiency vertical-axis clothes washer, which eliminates the warm rinse option and utilizes a spray technology to rinse clothes, can significantly reduce washer-related energy. Such machines also utilize a spin cycle that eliminates more water from the clothes than conventional clothes washers and are generally driven by more efficient motors. A horizontal axis clothes washer utilizes a cylinder that rotates horizontally to wash, rinse, and spin the clothes. These types of washing machines can be top loading or front loading, and utilize significantly less water (hot and cold) than the standard vertical axis machines. A vertical axis machine generally fills the tub until all of the clothes are immersed in water. In contrast, the horizontal axis machine only requires about one third of the tub to be full, since the rotation of the drum around its axis forces the clothes into the water and thus can drastically reduce the total energy use for washing. These machines are also easier on clothes and use less detergent.

High efficiency clothes dryer: High efficiency clothes dryers incorporate moisture sensors and prevent the frequency and magnitude of over-drying compared to clothes dryers without moisture sensors. The Federal minimum Energy Factor (pounds of clothing per kilowatt hour) is 3.01, and does not vary widely between models currently on the market.

Heat pump clothes dryer: These clothes dryers are sometimes referred to as "ventless" dryers because the warm, moist process air is passed in a closed-loop cycle from the tumbler through a heat pump. The refrigerant first takes energy out of the process air sufficient to cool it to the ambient dew point in order to condense any water vapor, which is then drained. Then the cycle transfers heat back into the dehumidified process air, which is passed into the clothes tumbler, and the cycle repeats.

B.1.6 Home Electronics

ENERGY STAR® home electronics (televisions, set-top boxes, DVD players, laptop and desktop computers): ENERGY STAR® qualified home electronics have off-mode power draws of 1 watt or less. Some home electronic devices spend the vast majority of their time in off-mode but often continue to draw a small "trickle charge" to maintain clock or other memory functions. Reductions in off-mode power draws can thus produce significant reductions in total energy consumption without changing on-mode power consumption characteristics. In addition, some products, such as TVs and computers, have active mode power requirements. Savings from ENERGY STAR® home electronics considered in this study were estimated based data from the Environmental Protection Agency.

Smart power strip: These power strips use a variety of controls to reduce standby power consumption of home electronics, including timers, occupancy sensors, and secondary outlets which automatically turn off in tandem with a pre-specified outlet.

B.1.7 Whole House Measures

Behavioral conservation: Indirect feedback approaches utilize energy information report mailers that motivate customers to use less, while direct feedback interventions use in-home energy-use monitors.

Residential new construction: The Environmental Protection Agency's ENERGY STAR® Homes Program sets efficiency requirements for new homes. To earn the ENERGY STAR label, homes must be at least 15% more energy efficient than homes built to the 2004 International Residential Code (IRC), and include additional energy-saving features that typically make them 20–30% more efficient than standard homes.

B.1.8 Other End Uses

Variable-speed pool pump: This measure saves energy much in the same way as two-speed pool pumps, with the exception that variable-speed pumps are able to further optimize pump operation and pool water flows to match the specific needs and requirements of individual owners.

B.2 Commercial Measures

This subsection provides brief descriptions of the commercial measures included in this study.

B.1.1. Lighting

Super T-8 lamps with electronic ballast: T-8 lamps are a smaller diameter fluorescent lamp than T-12 lamps. When paired with specially designed electronic ballasts, T-8 lamps provide more lumens per watt, resulting in energy savings. Electronic ballasts replace the standard core and coil technology in magnetic ballasts with solid-state components. This technology allows for more consistent control over ballast output and converts power to higher frequencies, causing the fluorescent lamps to operate more efficiently. For existing first generation T-8 systems, this measure is specified as an upgrade to efficiency levels associated with optimal Super T-8 lamp-ballast combinations on a replace-on-burnout basis.

T-5 high-output lighting with electronic ballast: Like T8 lamps, straight tube T5 lamps are available in nominal 2', 3', 4', and 5' lengths. Standard T-5 lamps have light output and efficiency comparable to T-8/electronic ballast systems. High output T-5 lamps have considerably higher light output: a 1-lamp high output T-5 cross-section can replace a 2-lamp T-8 cross-section. The 5/8" bulb diameter of the T-5 lamp lends itself to low profile luminaires well-suited for cove lighting and display case lighting. Its smaller scale allows for sleeker fluorescent indirect and direct/indirect pendants and shallower profile recessed troffer type luminaires. Because of variances in actual lamp lengths and a different socket design, the T-5 lamp cannot easily be retrofitted in existing T-12 and T-8 luminaires. Consequently, use the T-5 lamp to its best advantage in specially designed luminaires.

Induction lamps: The primary difference between induction lighting and conventional fluorescent lamps is that induction lighting does not have an electrical connection going inside the glass bulb (electrodeless). Instead, energy is transferred wirelessly into the glass envelope via electromagnetic induction. Induction lamps typically take the place of HID lamps. Their advantage is both long life and quick start, which unlike HID lamps, allows them to be turned off and on with the demand. Although induction lamps have a longer service life than other lamp technology they are also more expensive. They are most often used in places where the lamps are difficult to reach and replace. Induction lamps have very long lifetimes (100,000 hours), excellent color rendering, and perform well in a wide temperature range. They have better lumen maintenance than HID lamps. Our study looks at two applications for induction lighting--high bay lighting and streetlighting.

Pulse-start metal halide lamps: Pulse start lamps have a greater light output than standard metal halide, provide a white light and require special ballasts and fixtures for each specific lamp. The pulse start metal halide combined with new, more efficient low current crest factor ballasts using high voltage igniters provides higher light levels initially (20% more) and significantly more maintained light over time (40% more) than today's standard metal halide.

Compact fluorescent lighting (CFLs): Compact fluorescent lamps are designed to replace standard incandescent lamps. They are approximately four times more efficacious than incandescent light sources. Screw-in modular lamps have reusable ballasts that typically last for four lamp lives.

Lighting control tune-up: This involves various measures to optimize the customer's current lighting control systems, with measures such as: relocating/tuning occupancy sensors, relocating photocells, optimizing sweep timers, repairing lighting timers, and adjust lighting schedules.

Occupancy sensors: Occupancy sensors (infrared or ultrasonic motion detection devices) turn lights on upon entry of a person into a room, and then turn the lights off from ½ minute to 20 minutes after they have left. Occupancy sensors require proper installation and calibration. Their savings depend on the mounting type.

Outdoor lighting controls (photocells and timeclocks): Photocells can be used to automatically control both outdoor lamps and indoor lamps adjacent to skylights and windows. When lights do not need to be on all night, a photocell in series with a time clock provides maximum savings and eliminates the need for manual operation and seasonal time clock adjustments. Time clocks enable users to turn on and off electrical equipment at specific times during the day or week.

LED lighting: A light emitting diode (LEDs) is a semiconductor light source. They have been use for many years in niche application (such as indicator lights), but it was not until the late 1990's that high-output white LEDs became feasible. Over the last decade, LEDs have begun appearing in a variety of illumination applications. LEDs have the potential to be more efficient than fluorescent lighting, although efficacy varies widely between products (but in general continues to improve). They have long lifetimes (about 50,000 hours), are shock resistant and dimmable, can be cycled rapidly, and they perform well in low temperatures. The light from LEDs is highly directional, creating challenges for luminaire design, which is reflected in highly variable luminaire performance. This study considers LED lighting as a measure for indoor lighting, outdoor lighting, and streetlighting

LED technology, both in the LEDs themselves and in luminaire design, continues to change rapidly. In certain applications (architectural lighting, undercabinet lighting, streetlighting), highly effective LED products are available and competitive on a life-cycle-cost basis with incandescent and fluorescent technologies. LED products are rapidly becoming competitive in other applications.

LED exit sign: Exit signs were an early application of LED technology. Since exit signs are typically red or green, colored LEDs could be used directly, without the colored filter necessary when using a white light source. LED exit signs require significantly less maintenance than incandescent or CFL exit sign. Even a CFL would need to be replaced every year or two, while an LED sign could go without maintenance for up to 10 years. Because exit signs are operated continuously, the energy savings are significant.

Bi-level outdoor lighting controls: Bi-level lighting is designed to operate at a minimum level of light output until occupancy is detected (e.g. through a motion sensor), then temporarily increase to a higher level of illumination.

High performance lighting retrofit/replacement: Because of the interaction between lighting measures (daylighting, controls, etc.), the costs and benefits may not be additive. We allocate a percent of the applicable stock to comprehensive lighting retrofits, at a 25 percent savings level.

B.2.2 Space Cooling

Chiller efficiency upgrade: Centrifugal chillers are used in building types which normally use water-based cooling systems and have cooling requirements greater than 200 tons. Centrifugal chillers reject heat through a water cooled condenser or cooling tower. In general, efficiency levels for centrifugal chillers start at 0.80 kW/ton (for older units) and may go as high as 0.4 kW/ton. This measure involves installation of a

high-efficiency chiller (0.51 kW per ton) versus a standard unit (0.58 kW per ton). This measure also serves in the potential analysis as a proxy for other non-centrifugal chiller systems.

High-efficiency chiller motors: This measure involves replacement of standard efficiency motors that power compressor systems on chillers. High-efficiency chiller motors have typically have efficiencies exceeding 90% and are typically electronically-commutated motors, which produce higher average operating efficiencies at partial loads compared to standard efficiency, brushed DC compressor motors.

VSD – cooling circulation pumps: Variable speed drives installed on chilled water pumps can reduce energy use by varying the pump speed according to the building's demand for cooling. There is also a reduction in piping losses associated with this measure, which can have a major impact on the heating loads and energy use for a building. Pump speeds, however, can generally only be reduced to a minimum specified rate, because chillers and the control valves may require a minimum flow rate to operate.

VSD – cooling tower fans: Energy usage in cooling tower fans can be reduced by installing electronic variable speed drives (VSDs). VSDs are a far more efficient method of regulating speed or torque than other control mechanisms. Energy required to operate a fan motor can be reduced significantly during reduced load conditions by installing a VSD.

Chiller tune-up/diagnostics: In addition to some of the activities conducted in a DX tune-up, an optimization of the chilled water plant can include activities such as: optimizing CW/CHW set points, improving chiller staging, trimming pump impellers, resetting chilled water supply temperature, and staging cooling tower fan operation.

Energy management system: The term Energy Management System (EMS) refers to a complete building control system which usually can include controls for both lighting and HVAC systems. The HVAC control system may include on\off scheduling and warm-up routines. The complete lighting and HVAC control systems are generally integrated using a personal computer and control system software.

Cool roof: The color and material of a building structure surface will determine the amount of solar radiation absorbed by that surface. By using an appropriate reflective material to coat the roof, the roof will absorb less solar radiation and consequently reduce the cooling load.

DX packaged system efficiency upgrade: A single-package A/C unit consists of a single package (or cabinet housing) containing a condensing unit, a compressor, and an indoor fan/coil. An additional benefit of package units is that there is no need for field-installed refrigerant piping, thus minimizing labor costs and the possibility of contaminating the system with dirt, metal, oxides or non-condensing gases. We look at two efficiency levels, EERs of 1 10.9 and an EER 13.4, compared to a base case unit with EER=10.3.

Tune up/advanced diagnostics: The assumed tune-up includes cleaning the condenser and evaporator coils, establishing optimal refrigerant levels, and purging refrigerant loops of entrained air. The qualifying relative performance range for a tune-up is between 60 and 85 percent of the rated efficiency of the unit. This measure includes fresh air economizer controls providing demand control ventilation and consisting of a logic module, enthalpy sensor(s), and CO2 sensors in appropriate applications.

Window film: Reflective window film is an effective way to reduce solar energy gains, thus reducing mechanical cooling energy consumption. Windows affect building energy use through thermal heat transfer (U-value), solar heat gains (shading coefficient), daylighting (visible light transmittance), and air leakage.

Programmable thermostat: Setback programmable thermostats are appropriate controls for HVAC equipment that serve spaces with regular occupied and unoccupied periods, resulting in long periods of time when heating and cooling set points can be adjusted.

Roof / ceiling insulation: Thermal insulation is material or combinations of materials that are used to inhibit the flow of heat energy by conductive, convective, and radiative transfer modes. By inhibiting the flow of heat energy, thermal insulation can conserve energy by reducing heat loss or gain of a structure. An important characteristic of insulating materials is the thermal resistance, or R-value. The R-value of a material is the reciprocal of the time rate of heat flow through a unit of this material in a direction perpendicular to two areas of different temperatures.

Installation of air-side economizers: Air-side economizers reduce the energy consumption associated with cooling by providing access to outside air – when temperatures permit – in lieu of using mechanical cooling of recirculated indoor air. We specifically consider a dual-enthalpy economizer replacing a dry-bulb economizer.

Duct insulation: Insulation material inhibits the transfer of heat through air supply ducts or hot water pipes. Several types of ducts and duct insulation are available, including flexible duct, pre-insulated flexible duct, duct board, duct wrap, tacked or glued rigid insulation, and water proof hard shell materials for exterior ducts.

Duct repair and sealing: An ideal duct system would be free of leaks, especially when the ducts are outside the conditioned space. Leakage in unsealed ducts varies considerably with the fabricating machinery used, the methods for assembly, installation workmanship, and age of the ductwork. To seal ducts, a wide variety of sealing methods and products exist. Care should be taken to tape or otherwise seal all joints to minimize leakage in all duct systems and the sealing material should have a projected life of 20-30 years. Current duct sealing methods include use of computer-controlled aerosol and pre- and post-sealing duct pressurization testing.

Heat pump upgrade: Air-source heat pumps transfer heat from the outside air to the inside of a building or vice versa, providing both heating and cooling. We consider a 15 SEER, 8.2 HSPF heat pump.

Geothermal heat pump: A geothermal, or ground-source, heat pump operates on the same principle as more common air-source heat pumps. But unlike air-source heat pumps, which transfers heat to or from the outside air, geothermal heat pumps exchange heat with the ground. Underground temperatures maintain a relatively constant temperature throughout the year, especially compared to air temperatures, which increases the system efficiency compared to an air-source heat pump. Because the system relies on extensive subterranean piping for heat exchange, geothermal heat pumps are expensive to install, and installation opportunities in existing buildings are limited.

High efficiency packaged terminal air conditioner: A packaged terminal air conditioner (PTAC) is a self-contained heating and air conditioning system commonly found in hotels. High efficiency units are available, offering significant energy savings in the lodging industry.

Hotel room controllers: Large amounts of energy are wasted in the lodging industry heating, cooling, and lighting unoccupied hotel room. Hotel guest room energy management control systems use occupancy sensors to determine whether anyone is present in the room, and adjusts the HVAC settings for energy savings when the room is empty.

B.2.3 Ventilation

Motor efficiency upgrade: Premium-efficiency motors use additional copper to reduce electrical losses and better magnetic materials to reduce core losses, and are generally built to more precise tolerances. Consequently, such motors are more reliable, resulting in reduced downtime and replacement costs. Premium-efficiency motors may also carry longer manufacturer's warranties.

VFD on motor installation: Energy usage in HVAC systems can be reduced by installing electronic variable frequency drives (VFDs) on ventilation fans. VFDs are a far more efficient method of regulating speed or torque than throttling valves, inlet vanes and fan dampers. Energy required to operate a fan motor can be reduced as much as 85% during reduced load conditions by installing a VFD.

Installation of demand-controlled ventilation (via occupancy sensors, CO2 sensors, etc.): Often, usage of a building's ventilation control goes beyond what is necessary to maintain a healthy and comfortable environment. A variety of controls can save energy by limiting the use of the ventilation system to minimum amount necessary. Sensors that detect critical contaminants activate ventilations systems only when necessary. Occupancy sensors limit the operation ventilation systems to periods when the building is in use.

Air handler optimization: Optimization of a building's air-handling system is concerned principally with the proper sizing and configuration of its HVAC units. Energy savings can result from a variety of improvements, including reduced equipment loads and better functionality of existing equipment.

Electronically commutated motors (ECM) on air-handler unit: Air handler models with the lowest electrical use ratings employ ECMs. ECMs, also known as brushless DC motors or variable speed blower motors, have two principal advantages over the typical permanent magnet split capacitor (PSC) blower motors found in the majority of air handlers. First, ECMs are claimed to be 20% to 30% more efficient than standard blower motors. Second, the typical ECM blower can produce a much wider range of airflow than a PSC blower, which typically has only three or four set speeds over a narrow range. Because power consumption by an air handler rises with the cube of airflow, the ability to reduce airflow when appropriate can dramatically reduce the electrical power draw by the air handler.

Energy recovery ventilation: These systems provide a controlled way of ventilating a building while minimizing energy loss. Heating energy requirements are reduced during the winter season by transferring

heat from the warm inside air being exhausted to the fresh (but cold) supply air. Similarly, in the summer, the inside air being exhausted cools the warmer supply air and reduces cooling energy requirements.

Separate makeup air / exhaust hoods: Ventilation requirements in restaurants and grocery stores are driven both by occupancy and by the need to exhaust fumes from food preparation activities. Standard ventilation and exhaust systems operate at constant speeds that are most often matched to maximum ventilation requirements. Systems that modulate both exhaust and make-up air flow rates in response to measurements of "smoke" and temperature in the exhaust hood reduce exhaust and make-up air flow rates when full exhaust capacity is not required, and can thereby produce significant reduction in fan power and space conditioning energy use.

B.2.4. Refrigeration

Motor efficiency upgrade for fans and compressors: In addition to saving energy, premium-efficiency motors are more reliable, resulting in reduced downtime and replacement costs.

Strip curtains: Installing strip curtains on doorways to walk-in boxes and refrigerated warehouses can produce energy savings due to decreased infiltration of outside air into the refrigerated space. Although refrigerated spaces have doors, these doors are often left open, for example during product delivery and store stocking activities.

Night covers: Installing film or blanket type night covers on display cases can significantly reduce the infiltration of warm ambient air into the refrigerated space. This reduction in display case loads in turn reduces the electric use of the central plant, including compressors and condensers, thus saving energy. The target market for this measure is small, independently owned grocery stores and other stores that are typically closed at night and restock their shelves during the day. The target cases are vertical displays, with a single- or double-air curtain, and tub (coffin) type cases.

Auto door closers for walk-ins and reach-ins: Auto door closers minimize air infiltrations in walk-in and reach-in refrigerators and freezers.

Variable speed compressor retrofit: A variable speed compressor is a screw or reciprocating compressor whose current is modulated by a frequency inverter. A controller senses the compressor suction pressure and modulates the current and therefore the motor speed in response to changes in this pressure. When low load conditions exist, the current to the compressor motor is decreased, decreasing the compressor work done on the refrigerant.

Floating head pressure controls: Floating head pressure controls allow a refrigeration system to operate under lower condensing temperature and pressure settings, where compressor operation is most efficient, working against a relatively low head pressure. The condensing temperature is allowed to float below the design set point of, say, 95 deg. F under lower outdoor temperatures, which in-turn lowers the condensate pressure. In a conventional system a higher fixed condensing temperature set point is used which results in a lowered capacity for the system, requires extra power, and may overload the compressor motor. Energy savings can be realized if the refrigeration system head pressure is allowed to float during periods of low ambient temperature, when the condensing temperature can be dramatically reduced.

Refrigeration commissioning: Refrigeration commissioning refers to a process whereby refrigeration systems are subject to inspection on a variety of criteria to ensure efficiency. The commissioning process can involve tests that cover a system's controls for humidity and temperature, anti-condensation, and heat recovery, among others.

Demand defrost: Defrost of a refrigeration system is critical to its efficient operation. Demand defrost uses a pressure-sensing device to activate the defrost cycle when it detects a significant drop in pressure of the air across the refrigeration coil. Because load during defrost can be three times that of normal operation, defrosting on demand only – not when an individual operator deems it necessary – can save energy by minimizing the amount of time spent on defrosting.

Humidistat controls: A humidistat control is a control device to turn refrigeration display case anti-sweat heaters off when ambient relative humidity is low enough that sweating will not occur. Anti-sweat heaters evaporate moisture by heating the door rails, case frame and glass of display cases. Savings result from reducing the operating hours of the anti-sweat heaters, which without a humidistat control generally run continuously. There are various types of control strategies including cycling on a fixed schedule.

LED display lighting: This measure involves the replacement of standard fluorescent tube lighting fixtures within medium and low-temperature display cases with LED fixtures. The higher luminous efficacy of LED lamps compared to T-8 and T-5 fluorescent lamps delivers significant energy savings and also results in lower heat gains inside refrigerator and freezer cases, which in turn reduces the effective load served by the compressor. LED fixtures also exhibit much longer service lives compared to T-8 or T-5 fixtures and very little maintenance requirements.

High R-value glass doors: This measure involves the replacement of standard glass doors on refrigerated display cases with advanced glass doors that incorporate heat-reflective treated glass and/or low-conductivity gas fills between panes to produce high R-values. The greater insulation properties of the insulated glass doors reduce condensation buildup and reduce or eliminate the need for anti-sweat heaters.

Multiplex compressor systems: Multiplex refrigeration systems involve the use of multiple compressors in parallel, rather than single compressors, to serve specific refrigeration loads. Multiplex systems are designed so that compressors can be selectively selected and cycled in order to better match changes in refrigeration load dynamically and increase the overall operational efficiency of the compressors.

Oversized air cooled condenser: The use of oversized condensers can provide additional "natural sub-cooling" of the condensed refrigerant, which results in lower-temperature refrigerant liquid in the system, lower evaporator temperatures, and reduced load on the compressor.

Freezer/cooler replacement gaskets: Worn out freezer/cooler door gaskets can result in significant leakage and increased cooling energy consumption. Regular replacement of worn door gaskets reduces unnecessary air leaks and can lead to significant refrigeration energy savings.

ENERGY STAR® refrigeration: The Environmental Protection Agency's ENERGY STAR® program labels high-efficiency commercial refrigerators, freezers, and ice machines. High efficiency units are designed with components such as ECM evaporator and condenser fan motors, hot gas anti-sweat heaters, or high-efficiency compressors, which significantly reduce energy consumption.

Compared to standard models, ENERGY STAR labeled commercial refrigerators and freezers can lead to energy savings of as much as 35 percent with a 1.3 year payback.

B.2.5 Office Equipment

Power management enabling: Most PCs, monitors, printers and copiers have the capability of entering a low-power "sleep" mode when idle. However devices may come with this feature disabled or users may disable it for a variety of reasons. Enabling power management reduces energy use when devices are left idle during the day, or when a device is left on overnight. Most savings occur off-peak. This measure can be applied to PCs, PC monitors, printers and copiers.

ENERGY STAR® or better office equipment: For many years, virtually all PCs and monitors met the ENERGY STAR® efficiency requirements, which required only that devices be capable of entering a low-power "sleep" mode after a period of inactivity. The Environmental Protection Agency (EPA) has tightened its requirements, adding active-mode power requirements to the specifications. Choosing ENERGY STAR® PCs, monitors, copiers and printers can reduce energy use both in all power modes.

Data center energy efficiency: Data centers are facilities that are densely packed with electronic equipment for data processing, data storage, and networking. Ranging from a server closet in a small building to building that provide remote data operations to multiple clients, data centers are extremely energy intensive, both for the information architecture and the for cooling required to support it. We analyze three scenarios for reduce energy use in data centers, taken from a 2007 EPA report:[9] (1) Improved operations focuses on operational improvements with little or no capital investment. (1) Best Practices assumes the adoption of practices and technologies used in the most energy-efficient of today's data centers. (3) State of the Art Practices represents the maximum efficiency achievable using available technologies.

A.2.6 Water Heating

High efficiency water heater: Higher efficiency water heater have greater insulation to reduce standby heat loss. For this study, efficiency of the base unit (measured as the Energy Factor) is specified as 0.88, whereas the efficiency of the high efficiency electric water heater is specified as 0.93.

Heat pump water heater: Air-to-water heat pump water heaters extract low-grade heat from the air then transfer this heat to the water by means of an immersion coil. This is the most commonly utilized residential heat pump water heater. The air-to-water heat pump unit includes a compressor, air-to-refrigerant evaporator coil, evaporator fan, water circulating pump, refrigerant-to-water condenser coil, expansion valve, and controls. Residential heat pump water heaters replace base electric units with the same tank

[9] EPA, 2007. *Report to Congress on Server and Data Center Energy Efficiency, Public Law 109-431*. Available at: http://www.energystar.gov/ia/partners/prod_development/downloads/EPA_Datacenter_Report_Congress_Final1.pdf

capacities. For this study, efficiency of the base unit (measured as the Energy Factor) is specified as 0.88, whereas the efficiency of the heat pump water heater is specified as 2.9.

Solar water heater: Heat transfer technology that uses the sun's energy to warm water. Solar water heaters preheat water supplied to a conventional domestic hot water heating system. The energy savings for the system depend on solar radiation, air temperatures, water temperatures at the site, and the hot water use pattern.

Demand-controlled circulating systems: Hot water circulation systems are designed to maintain water in hot water pipes at a pre-determined temperature and prevent excess water demand (and associated water heating energy) from waiting for hot water to arrive from the water heater. Demand-controlled circulating systems provide additional savings by optimizing pumping energy requirements to only specific moments of hot water demand. This is achieved through the integration of an electronic controller on the circulation pump that is triggered by a switch engaged by the consumer at the point of hot water demand.

Heat recovery units: This measure is heat transfer strategy that uses the heat rejected during the refrigerant cycle on air conditioning units to heat water.

Pipe wrap: Thermal insulation is material or combinations of materials that are used to inhibit the flow of heat energy by conductive, convective, and radiative transfer modes. By inhibiting the flow of heat energy, thermal insulation can conserve energy by reducing heat loss or gain.

Heat trap: Heat traps are valves or loops of pipe, which allow water to flow into the water heater tank but prevent unwanted hot-water flow out of the tank that would otherwise occur due to convection.

Tankless water heater: Tankless water heaters eliminate the standby tank (and associated losses) of a standard water heater. The water is heated instantaneously by a high energy heat source that can be either gas or electric.

B.2.7 Cooking

Convection oven: Convection ovens use a small fan to circulate hot air within the oven cavity. Circulating air can heat food more efficiently than the still air found in conventional ovens. The hot air in the oven can be heated by gas or electricity. In general, a convection oven will save 30% of the energy used by an oven. These savings result from burners cycling off for a longer period.

ENERGY STAR® fryer: Fryers cook foods by submerging them in hot animal or vegetable oils, and utilize a range of different burner types. In order to qualify as ENERGY STAR, electric fryers must meet a minimum cooking efficiency 80 percent while also meeting a maximum idle energy rate of 1,000 watts. Energy efficient fryers offer shorter cook times and higher production rates through advanced burner and heat exchanger designs. Fry pot insulation reduces standby losses resulting in a lower idle energy rate.

ENERGY STAR® steamer: Commercial steam cookers are versatile appliances which can be used to quickly prepare any foods that do not require a crust. Steamers come in a variety of configurations but generally resemble an oven, with between one and four gasketed and windowless compartments. The stacked compartments typically accommodate a standard 12 by 20-inch hotel pan. Pressure steamers have

an external boiler that produces potable steam under pressure, and atmospheric steamers have a steam generator located directly below the compartments. Both require a water line and drain hookup. In contrast, the connectionless steamer is a closed loop system with a reservoir that is periodically drained and refilled. Significant improvements in water- and energy- efficiency are achieved because no steam is allowed to escape down the condensate drain.

Vending misers: The Vending Miser is an after-market energy control technology for refrigerated vending machines. It incorporates an occupancy sensor, thermostat, and timer to power down the vending machine for extended period, while periodically repowering refrigerated devices to ensure that the product stays cold.

C. ECONOMIC INPUTS

APPENDIX C - ECONOMIC INPUTS

Residential Electricity

UTILITY NAME	Dominion
SECTOR	Res
BATCH #	1
UTILITY DISCOUNT RATE	7.45%
CUSTOMER DISCOUNT RATE	8.45%
GENERAL INFLATION RATE (M	1.87%
BASE YEAR	2014
START YEAR	2014
UTILITY LINE LOSS RATE	5.20%

ENERGY COSTS AND RATES

RATE TYPE	Residential
ENERGY UNITS	$/kWh
DEMAND UNITS	$/kW

Rate/Time F	2		3	4	
Name	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	
Abbreviatior	SON	SOFF	WON	WOFF	TOTAL
Hours	850	2078	1392	4440	8760

	AVOIDED ENERGY COSTS BY TIME PERIOD				AVOIDED DEMAND COSTS BY TIME PERIOD				RESIDENTIAL ENERGY RATES			
Year	SON $/kWh	SOFF $/kWh	WON $/kWh	WOFF $/kWh	SON $/kWh	SOFF $/kWh	WON $/kWh	WOFF $/kWh	SON $/kWh	SOFF $/kWh	WON $/kWh	WOFF $/kWh
2014	0.050	0.035	0.050	0.035	31.040	0.000	0.000	0.000	0.112	0.112	0.112	0.112
2015	0.051	0.037	0.051	0.037	48.120	0.000	0.000	0.000	0.114	0.114	0.114	0.114
2016	0.054	0.042	0.054	0.042	33.370	0.000	0.000	0.000	0.116	0.116	0.116	0.116
2017	0.057	0.044	0.057	0.044	21.270	0.000	0.000	0.000	0.118	0.118	0.118	0.118
2018	0.061	0.047	0.061	0.047	29.310	0.000	0.000	0.000	0.121	0.121	0.121	0.121
2019	0.062	0.048	0.062	0.048	38.610	0.000	0.000	0.000	0.123	0.123	0.123	0.123
2020	0.064	0.050	0.064	0.050	50.840	0.000	0.000	0.000	0.125	0.125	0.125	0.125
2021	0.066	0.051	0.066	0.051	66.990	0.000	0.000	0.000	0.128	0.128	0.128	0.128
2022	0.068	0.053	0.068	0.053	88.280	0.000	0.000	0.000	0.130	0.130	0.130	0.130
2023	0.073	0.059	0.073	0.059	111.280	0.000	0.000	0.000	0.133	0.133	0.133	0.133
2024	0.075	0.061	0.075	0.061	113.510	0.000	0.000	0.000	0.135	0.135	0.135	0.135
2025	0.077	0.063	0.077	0.063	115.760	0.000	0.000	0.000	0.138	0.138	0.138	0.138
2026	0.080	0.066	0.080	0.066	118.000	0.000	0.000	0.000	0.141	0.141	0.141	0.141
2027	0.082	0.068	0.082	0.068	120.250	0.000	0.000	0.000	0.143	0.143	0.143	0.143
2028	0.085	0.070	0.085	0.070	121.320	0.000	0.000	0.000	0.146	0.146	0.146	0.146
2029	0.087	0.073	0.087	0.073	122.230	0.000	0.000	0.000	0.149	0.149	0.149	0.149
2030	0.090	0.076	0.090	0.076	123.130	0.000	0.000	0.000	0.152	0.152	0.152	0.152
2031	0.094	0.079	0.094	0.079	127.460	0.000	0.000	0.000	0.154	0.154	0.154	0.154
2032	0.097	0.083	0.097	0.083	131.780	0.000	0.000	0.000	0.157	0.157	0.157	0.157
2033	0.101	0.087	0.101	0.087	134.170	0.000	0.000	0.000	0.160	0.160	0.160	0.160
2034	0.105	0.091	0.105	0.091	136.590	0.000	0.000	0.000	0.163	0.163	0.163	0.163
2035	0.110	0.095	0.110	0.095	139.070	0.000	0.000	0.000	0.166	0.166	0.166	0.166
2036	0.114	0.099	0.114	0.099	141.590	0.000	0.000	0.000	0.169	0.169	0.169	0.169
2037	0.118	0.104	0.118	0.104	144.180	0.000	0.000	0.000	0.172	0.172	0.172	0.172
2038	0.123	0.108	0.123	0.108	146.840	0.000	0.000	0.000	0.175	0.175	0.175	0.175
2039	0.128	0.112	0.128	0.112	149.530	0.000	0.000	0.000	0.178	0.178	0.178	0.178
2040	0.133	0.117	0.133	0.117	152.250	0.000	0.000	0.000	0.182	0.182	0.182	0.182
2041	0.137	0.121	0.137	0.121	154.940	0.000	0.000	0.000	0.185	0.185	0.185	0.185
2042	0.143	0.126	0.143	0.126	157.580	0.000	0.000	0.000	0.189	0.189	0.189	0.189
2043	0.148	0.131	0.148	0.131	160.510	0.000	0.000	0.000	0.192	0.192	0.192	0.192
2044	0.154	0.136	0.154	0.136	163.490	0.000	0.000	0.000	0.196	0.196	0.196	0.196
2045	0.160	0.142	0.160	0.142	166.530	0.000	0.000	0.000	0.200	0.200	0.200	0.200
2046	0.166	0.147	0.166	0.147	169.620	0.000	0.000	0.000	0.203	0.203	0.203	0.203
2047	0.172	0.153	0.172	0.153	168.740	0.000	0.000	0.000	0.207	0.207	0.207	0.207
2048	0.178	0.160	0.178	0.160	165.270	0.000	0.000	0.000	0.211	0.211	0.211	0.211
2049	0.185	0.166	0.185	0.166	161.870	0.000	0.000	0.000	0.215	0.215	0.215	0.215
2050	0.192	0.173	0.192	0.173	158.530	0.000	0.000	0.000	0.219	0.219	0.219	0.219
2051	0.196	0.176	0.196	0.176	161.495	0.000	0.000	0.000	0.223	0.223	0.223	0.223
2052	0.199	0.179	0.199	0.179	164.514	0.000	0.000	0.000	0.227	0.227	0.227	0.227
2053	0.203	0.182	0.203	0.182	167.591	0.000	0.000	0.000	0.231	0.231	0.231	0.231

APPENDIX C - ECONOMIC INPUTS

Commercial Electricity

UTILITY NAME	Dominion
SECTOR	Com
BATCH #	1
UTILITY DISCOUNT RATE	7.45%
CUSTOMER DISCOUNT RATE	8.45%
GENERAL INFLATION RATE (Measure)	1.87%
BASE YEAR	2014
START YEAR	2014
UTILITY LINE LOSS RATE	5.20%

ENERGY COSTS AND RATES

RATE TYPE	Commercial
ENERGY UNITS	$/kWh
DEMAND UNITS	$/kW

Rate/Time Per	1	2	3	4	
Name	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	
Abbreviation	SON	SOFF	WON	WOFF	TOTAL
Hours	850	2078	1392	4440	8760

	AVOIDED ENERGY COSTS BY TIME PERIOD				AVOIDED DEMAND COSTS BY TIME PERIOD				COMMERCIAL ENERGY RATES			
Year	SON $/kWh	SOFF $/kWh	WON $/kWh	WOFF $/kWh	SON $/kWh	SOFF $/kWh	WON $/kWh	WOFF $/kWh	SON $/kWh	SOFF $/kWh	WON $/kWh	WOFF $/kWh
2014	0.050	0.035	0.050	0.035	31.040	0.000	0.000	0.000	0.079	0.079	0.079	0.079
2015	0.051	0.037	0.051	0.037	48.120	0.000	0.000	0.000	0.081	0.081	0.081	0.081
2016	0.054	0.042	0.054	0.042	33.370	0.000	0.000	0.000	0.082	0.082	0.082	0.082
2017	0.057	0.044	0.057	0.044	21.270	0.000	0.000	0.000	0.084	0.084	0.084	0.084
2018	0.061	0.047	0.061	0.047	29.310	0.000	0.000	0.000	0.085	0.085	0.085	0.085
2019	0.062	0.048	0.062	0.048	38.610	0.000	0.000	0.000	0.087	0.087	0.087	0.087
2020	0.064	0.050	0.064	0.050	50.840	0.000	0.000	0.000	0.088	0.088	0.088	0.088
2021	0.066	0.051	0.066	0.051	66.990	0.000	0.000	0.000	0.090	0.090	0.090	0.090
2022	0.068	0.053	0.068	0.053	88.280	0.000	0.000	0.000	0.092	0.092	0.092	0.092
2023	0.073	0.059	0.073	0.059	111.280	0.000	0.000	0.000	0.094	0.094	0.094	0.094
2024	0.075	0.061	0.075	0.061	113.510	0.000	0.000	0.000	0.095	0.095	0.095	0.095
2025	0.077	0.063	0.077	0.063	115.760	0.000	0.000	0.000	0.097	0.097	0.097	0.097
2026	0.080	0.066	0.080	0.066	118.000	0.000	0.000	0.000	0.099	0.099	0.099	0.099
2027	0.082	0.068	0.082	0.068	120.250	0.000	0.000	0.000	0.101	0.101	0.101	0.101
2028	0.085	0.070	0.085	0.070	121.320	0.000	0.000	0.000	0.103	0.103	0.103	0.103
2029	0.087	0.073	0.087	0.073	122.230	0.000	0.000	0.000	0.105	0.105	0.105	0.105
2030	0.090	0.076	0.090	0.076	123.130	0.000	0.000	0.000	0.107	0.107	0.107	0.107
2031	0.094	0.079	0.094	0.079	127.460	0.000	0.000	0.000	0.109	0.109	0.109	0.109
2032	0.097	0.083	0.097	0.083	131.780	0.000	0.000	0.000	0.111	0.111	0.111	0.111
2033	0.101	0.087	0.101	0.087	134.170	0.000	0.000	0.000	0.113	0.113	0.113	0.113
2034	0.105	0.091	0.105	0.091	136.590	0.000	0.000	0.000	0.115	0.115	0.115	0.115
2035	0.110	0.095	0.110	0.095	139.070	0.000	0.000	0.000	0.117	0.117	0.117	0.117
2036	0.114	0.099	0.114	0.099	141.590	0.000	0.000	0.000	0.119	0.119	0.119	0.119
2037	0.118	0.104	0.118	0.104	144.180	0.000	0.000	0.000	0.121	0.121	0.121	0.121
2038	0.123	0.108	0.123	0.108	146.840	0.000	0.000	0.000	0.124	0.124	0.124	0.124
2039	0.128	0.112	0.128	0.112	149.530	0.000	0.000	0.000	0.126	0.126	0.126	0.126
2040	0.133	0.117	0.133	0.117	152.250	0.000	0.000	0.000	0.128	0.128	0.128	0.128
2041	0.137	0.121	0.137	0.121	154.940	0.000	0.000	0.000	0.131	0.131	0.131	0.131
2042	0.143	0.126	0.143	0.126	157.580	0.000	0.000	0.000	0.133	0.133	0.133	0.133
2043	0.148	0.131	0.148	0.131	160.510	0.000	0.000	0.000	0.136	0.136	0.136	0.136
2044	0.154	0.136	0.154	0.136	163.490	0.000	0.000	0.000	0.138	0.138	0.138	0.138
2045	0.160	0.142	0.160	0.142	166.530	0.000	0.000	0.000	0.141	0.141	0.141	0.141
2046	0.166	0.147	0.166	0.147	169.620	0.000	0.000	0.000	0.143	0.143	0.143	0.143
2047	0.172	0.153	0.172	0.153	168.740	0.000	0.000	0.000	0.146	0.146	0.146	0.146
2048	0.178	0.160	0.178	0.160	165.270	0.000	0.000	0.000	0.149	0.149	0.149	0.149
2049	0.185	0.166	0.185	0.166	161.870	0.000	0.000	0.000	0.152	0.152	0.152	0.152
2050	0.192	0.173	0.192	0.173	158.530	0.000	0.000	0.000	0.154	0.154	0.154	0.154
2051	0.196	0.176	0.196	0.176	161.495	0.000	0.000	0.000	0.157	0.157	0.157	0.157
2052	0.199	0.179	0.199	0.179	164.514	0.000	0.000	0.000	0.160	0.160	0.160	0.160
2053	0.203	0.182	0.203	0.182	167.591	0.000	0.000	0.000	0.163	0.163	0.163	0.163

D. BUILDING AND TOU FACTOR INPUTS

Residential Electric Building Stock Table

Number of Homes

Segment	Single Family Building Type 1	Multifamily Building Type 2
VA Existing	1,668,245	418,402
NC Existing	80,767	20,257
Opt-Outs	0	0
VA New	16,101	4,038

Residential Electric End Use Load Shape Table
(Fraction of annual energy)

	End Use 1 - Space Cooling				End Use 2 - Lighting				End Use 3 - Refrigeration				End Use 4 - Freezer				End Use 5 - Water Heating			
Building Type	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF
VA Existing	0.3338	0.4394	0.0511	0.1757	0.1178	0.1863	0.2058	0.4902	0.1243	0.2397	0.1467	0.4893	0.1271	0.2366	0.1466	0.4897	0.0980	0.1731	0.2025	0.5265
NC Existing	0.3338	0.4394	0.0511	0.1757	0.1178	0.1863	0.2058	0.4902	0.1243	0.2397	0.1467	0.4893	0.1271	0.2366	0.1466	0.4897	0.0980	0.1731	0.2025	0.5265
Opt-Outs	0.3338	0.4394	0.0511	0.1757	0.1178	0.1863	0.2058	0.4902	0.1243	0.2397	0.1467	0.4893	0.1271	0.2366	0.1466	0.4897	0.0980	0.1731	0.2025	0.5265
VA New	0.3338	0.4394	0.0511	0.1757	0.1178	0.1863	0.2058	0.4902	0.1243	0.2397	0.1467	0.4893	0.1271	0.2366	0.1466	0.4897	0.0980	0.1731	0.2025	0.5265
NC New	0.3338	0.4394	0.0511	0.1757	0.1178	0.1863	0.2058	0.4902	0.1243	0.2397	0.1467	0.4893	0.1271	0.2366	0.1466	0.4897	0.0980	0.1731	0.2025	0.5265

Residential Electric End Use Load Shape Table - Continued
(Fraction of annual energy)

	End Use 6 - Clothes Washer				End Use 7 - Clothes Dryer				End Use 8 - Dishwasher				End Use 9 - Space Heating				End Use 10 - Cooking			
Building Type	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF
VA Existing	0.1471	0.1857	0.1841	0.4832	0.1419	0.1529	0.1704	0.5348	0.1467	0.1538	0.2700	0.4295	0.1673	0.1970	0.1793	0.4564	0.1627	0.1381	0.2812	0.4180
NC Existing	0.1471	0.1857	0.1841	0.4832	0.1419	0.1529	0.1704	0.5348	0.1467	0.1538	0.2700	0.4295	0.1673	0.1970	0.1793	0.4564	0.1627	0.1381	0.2812	0.4180
Opt-Outs	0.1471	0.1857	0.1841	0.4832	0.1419	0.1529	0.1704	0.5348	0.1467	0.1538	0.2700	0.4295	0.1673	0.1970	0.1793	0.4564	0.1627	0.1381	0.2812	0.4180
VA New	0.1471	0.1857	0.1841	0.4832	0.1419	0.1529	0.1704	0.5348	0.1467	0.1538	0.2700	0.4295	0.1673	0.1970	0.1793	0.4564	0.1627	0.1381	0.2812	0.4180
NC New	0.1471	0.1857	0.1841	0.4832	0.1419	0.1529	0.1704	0.5348	0.1467	0.1538	0.2700	0.4295	0.1673	0.1970	0.1793	0.4564	0.1627	0.1381	0.2812	0.4180

Residential Electric End Use Load Shape Table - Continued
(Fraction of annual energy)

	End Use 11 - TV				End Use 12 - Pool Pump				End Use 13 - Cooling and Heating				End Use 14 - Miscellaneous				End Use 15 - House			
Building Type	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF
VA Existing	0.1387	0.1929	0.1811	0.4874	0.1675	0.1967	0.1799	0.4559	0.2882	0.3544	0.0733	0.2842	0.0935	0.1978	0.2139	0.4948	0.12255	0.19678	0.19326	0.48740
NC Existing	0.1387	0.1929	0.1811	0.4874	0.1675	0.1967	0.1799	0.4559	0.2882	0.3544	0.0733	0.2842	0.0935	0.1978	0.2139	0.4948	0.12255	0.19678	0.19326	0.48740
Opt-Outs	0.1387	0.1929	0.1811	0.4874	0.1675	0.1967	0.1799	0.4559	0.2882	0.3544	0.0733	0.2842	0.0935	0.1978	0.2139	0.4948	0.12255	0.19678	0.19326	0.48740
VA New	0.1387	0.1929	0.1811	0.4874	0.1675	0.1967	0.1799	0.4559	0.2882	0.3544	0.0733	0.2842	0.0935	0.1978	0.2139	0.4948	0.12255	0.19678	0.19326	0.48740

(Ratio of peak kW to average kW)

	End Use 1 - Space Cooling				End Use 2 - Lighting				End Use 3 - Refrigeration				End Use 4 - Freezer				End Use 5 - Water Heating			
Building Type	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN
VA Existing	1.5129	1.5914	0.0687	0.2291	0.8079	2.3723	0.6263	0.7655	1.1080	1.1183	1.0498	1.0162	1.0585	0.9582	1.0367	1.0011	1.0684	0.9985	1.4694	1.5534
NC Existing	1.5129	1.5914	0.0687	0.2291	0.8079	2.3723	0.6263	0.7655	1.1080	1.1183	1.0498	1.0162	1.0585	0.9582	1.0367	1.0011	1.0684	0.9985	1.4694	1.5534
Opt-Outs	1.5129	1.5914	0.0687	0.2291	0.8079	2.3723	0.6263	0.7655	1.1080	1.1183	1.0498	1.0162	1.0585	0.9582	1.0367	1.0011	1.0684	0.9985	1.4694	1.5534
VA New	1.5129	1.5914	0.0687	0.2291	0.8079	2.3723	0.6263	0.7655	1.1080	1.1183	1.0498	1.0162	1.0585	0.9582	1.0367	1.0011	1.0684	0.9985	1.4694	1.5534
NC New	1.5129	1.5914	0.0687	0.2291	0.8079	2.3723	0.6263	0.7655	1.1080	1.1183	1.0498	1.0162	1.0585	0.9582	1.0367	1.0011	1.0684	0.9985	1.4694	1.5534

Residential Electric Peak To Energy Relationship Table (Utility Coincidence) - Continued

(Ratio of peak kW to average kW)

	End Use 6 - Clothes Washer				End Use 7 - Clothes Dryer				End Use 8 - Dishwasher				End Use 9 - Space Heating				End Use 10 - Cooking			
Building Type	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN
VA Existing	1.0442	0.9414	1.4570	1.1445	1.0135	1.4988	0.8660	0.5408	0.9501	1.7548	0.6900	0.8324	0.6030	0.0894	0.9475	0.6168	1.6679	0.6518	0.5557	0.9439
NC Existing	1.0442	0.9414	1.4570	1.1445	1.0135	1.4988	0.8660	0.5408	0.9501	1.7548	0.6900	0.8324	0.6030	0.0894	0.9475	0.6168	1.6679	0.6518	0.5557	0.9439
Opt-Outs	1.0442	0.9414	1.4570	1.1445	1.0135	1.4988	0.8660	0.5408	0.9501	1.7548	0.6900	0.8324	0.6030	0.0894	0.9475	0.6168	1.6679	0.6518	0.5557	0.9439
VA New	1.0442	0.9414	1.4570	1.1445	1.0135	1.4988	0.8660	0.5408	0.9501	1.7548	0.6900	0.8324	0.6030	0.0894	0.9475	0.6168	1.6679	0.6518	0.5557	0.9439
NC New	1.0442	0.9414	1.4570	1.1445	1.0135	1.4988	0.8660	0.5408	0.9501	1.7548	0.6900	0.8324	0.6030	0.0894	0.9475	0.6168	1.6679	0.6518	0.5557	0.9439

Residential Electric Peak To Energy Relationship Table (Utility Coincidence) - Continued

(Ratio of peak kW to average kW)

	End Use 11 - TV				End Use 12 - Pool Pump				End Use 13 - Cooling and Heating				End Use 14 - Miscellaneous				End Use 15 - House			
Building Type	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN
VA Existing	0.8844	3.3941	0.1809	0.1237	0.6034	0.0901	0.9704	0.6345	1.5129	1.5808	0.1464	0.8593	1.1979	2.2884	0.4056	0.4841	1.7174	1.6188	0.7100	0.7816
NC Existing	0.8844	3.3941	0.1809	0.1237	0.6034	0.0901	0.9704	0.6345	1.5129	1.5808	0.1464	0.8593	1.1979	2.2884	0.4056	0.4841	1.7174	1.6188	0.7100	0.7816
Opt-Outs	0.8844	3.3941	0.1809	0.1237	0.6034	0.0901	0.9704	0.6345	1.5129	1.5808	0.1464	0.8593	1.1979	2.2884	0.4056	0.4841	1.7174	1.6188	0.7100	0.7816
VA New	0.8844	3.3941	0.1809	0.1237	0.6034	0.0901	0.9704	0.6345	1.5129	1.5808	0.1464	0.8593	1.1979	2.2884	0.4056	0.4841	1.7174	1.6188	0.7100	0.7816
NC New	0.8844	3.3941	0.1809	0.1237	0.6034	0.0901	0.9704	0.6345	1.5129	1.5808	0.1464	0.8593	1.1979	2.2884	0.4056	0.4841	1.7174	1.6188	0.7100	0.7816

Commercial Electric Building Stock Table
Square Feet

Segment	Office Building Type 1	Restaurant Building Type 2	Retail Building Type 3	Grocery Building Type 4	Warehouse Building Type 5	School Building Type 6	Health Building Type 7	Lodging Building Type 8	Data Centers Building Type 9	Non-Jurisdictional Building Type 10	Religious Worship Building Type 11	Misc. Building Type 12
VA Existing	229,033,353	95,960,213	598,719,467	51,849,706	368,656,381	148,316,397	108,863,065	189,430,773	6,064,089	557,616,115	186,135,561	448,255,447
NC Existing	9,580,125	2,541,070	15,854,363	1,373,004	9,146,991	13,317,823	2,882,743	5,016,213	135,434	0	4,928,954	12479962.15

Commercial Electric End Use Load Shape Table
(Fraction of annual energy)

	End Use 1 - Indoor Lighting				End Use 2 - Outdoor Lighting				End Use 3 - Cooling				End Use 4 - Ventilation			
Building Type	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF
Office Equipment	0.1576	0.1762	0.2228	0.4433	0.0618	0.2491	0.1321	0.5570	0.2955	0.2266	0.1330	0.3449	0.1532	0.1975	0.1915	0.4578
Restaurant	0.1564	0.1792	0.1966	0.4679	0.0782	0.2360	0.1533	0.5324	0.2821	0.2632	0.1235	0.3312	0.1452	0.2179	0.1738	0.4631
Retail	0.1456	0.1892	0.2030	0.4622	0.0823	0.2364	0.1563	0.5249	0.3411	0.2598	0.1046	0.2945	0.1545	0.2032	0.1903	0.4519
Grocery	0.1283	0.2062	0.1860	0.4794	0.0637	0.2454	0.1372	0.5537	0.2852	0.2914	0.1111	0.3123	0.1255	0.2204	0.1732	0.4810
Warehouse	0.1507	0.1818	0.2208	0.4467	0.0565	0.2481	0.1330	0.5623	0.4274	0.2537	0.0858	0.2331	0.1732	0.1946	0.1963	0.4359
School	0.1360	0.1629	0.2497	0.4514	0.0678	0.2422	0.1398	0.5503	0.3909	0.1905	0.1149	0.3037	0.1666	0.1467	0.2390	0.4477
Health	0.1271	0.2081	0.1849	0.4798	0.0591	0.2498	0.1301	0.5610	0.2455	0.2927	0.1179	0.3439	0.1163	0.2244	0.1609	0.4983
Lodging	0.1191	0.2162	0.1900	0.4747	0.0590	0.2505	0.1296	0.5610	0.2469	0.2978	0.1137	0.3416	0.1180	0.2271	0.1556	0.4993
Data Centers	0.1343	0.2179	0.2916	0.3562	0.1343	0.2179	0.2916	0.3562	0.1343	0.2179	0.2916	0.3562	0.1343	0.2179	0.2916	0.3562
Non-Jurisdictional	0.1519	0.1816	0.2133	0.4533	0.0722	0.2392	0.1468	0.5418	0.3154	0.2495	0.1163	0.3189	0.1545	0.2024	0.1837	0.4594
Religious Worship	0.1462	0.1869	0.2037	0.4632	0.0827	0.2292	0.1614	0.5267	0.3352	0.2724	0.0996	0.2928	0.1558	0.2073	0.1759	0.4609
Miscellaneous	0.1462	0.1869	0.2037	0.4632	0.0827	0.2292	0.1614	0.5267	0.3352	0.2724	0.0996	0.2928	0.1558	0.2073	0.1759	0.4609

Commercial Electric End Use Load Shape Table - Continued
(Fraction of annual energy)

	End Use 5 - Refrigeration				End Use 6 - Office Equipment				End Use 7 - Water Heating				End Use 8 - Vending			
Building Type	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF
Office Equipment	0.1121	0.2237	0.1610	0.5032	0.1303	0.2040	0.1837	0.4821	0.1180	0.1873	0.1903	0.5043	0.1396	0.1954	0.1941	0.4709
Restaurant	0.1162	0.2260	0.1586	0.4993	0.1562	0.1794	0.1952	0.4692	0.1435	0.1644	0.2093	0.4827	0.1428	0.1929	0.1881	0.4761
Retail	0.1179	0.2291	0.1567	0.4963	0.1494	0.1856	0.1971	0.4679	0.1334	0.1705	0.2088	0.4873	0.1469	0.1888	0.2008	0.4635
Grocery	0.1231	0.2349	0.1525	0.4895	0.1432	0.1914	0.2002	0.4651	0.1279	0.1804	0.2120	0.4797	0.1291	0.2054	0.1870	0.4784
Warehouse	0.1396	0.2625	0.1419	0.4559	0.1545	0.1794	0.2211	0.4450	0.1332	0.1716	0.2171	0.4781	0.1501	0.1857	0.2155	0.4488
School	0.1124	0.2250	0.1615	0.5012	0.1268	0.1744	0.2333	0.4655	0.1309	0.1657	0.2561	0.4474	0.1179	0.1672	0.2647	0.4502
Health	0.1140	0.2244	0.1609	0.5006	0.1260	0.2083	0.1794	0.4862	0.1143	0.1875	0.1925	0.5057	0.1256	0.2090	0.1795	0.4859
Lodging	0.1138	0.2231	0.1623	0.5007	0.1243	0.2111	0.1808	0.4838	0.1092	0.1942	0.2013	0.4953	0.1267	0.2109	0.1805	0.4819
Data Centers	0.1343	0.2179	0.2916	0.3562	0.1343	0.2179	0.2916	0.3562	0.1343	0.2179	0.2916	0.3562	0.1343	0.2179	0.2916	0.3562
Non-Jurisdictional	0.1146	0.2263	0.1593	0.4998	0.1387	0.1950	0.1921	0.4742	0.1224	0.1812	0.1928	0.5037	0.1412	0.1929	0.1980	0.4679
Religious Worship	0.1170	0.2290	0.1576	0.4963	0.1472	0.1859	0.2006	0.4663	0.1267	0.1750	0.1952	0.5030	0.1429	0.1904	0.2019	0.4648
Miscellaneous	0.1170	0.2290	0.1576	0.4963	0.1472	0.1859	0.2006	0.4663	0.1267	0.1750	0.1952	0.5030	0.1429	0.1904	0.2019	0.4648

Commercial Electric End Use Load Shape Table - Continued
(Fraction of annual energy)

	End Use 9 - Cooking				End Use 10 - Heating				End Use 11 - Pool Pump				End Use 13 - Miscellaneous			
Building Type	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF
Office Equipment	0.1721	0.1629	0.2416	0.4235	0.06272	0.13812	0.25370	0.54545	0.1396	0.1954	0.1941	0.4709	0.1396	0.1954	0.1941	0.4709
Restaurant	0.1556	0.1792	0.2080	0.4571	0.00723	0.02733	0.28671	0.67873	0.1428	0.1929	0.1881	0.4761	0.1428	0.1929	0.1881	0.4761
Retail	0.1552	0.1805	0.2167	0.4476	0.00756	0.04826	0.30983	0.63434	0.1469	0.1888	0.2008	0.4635	0.1469	0.1888	0.2008	0.4635
Grocery	0.1258	0.2093	0.1977	0.4673	0.00461	0.01892	0.21321	0.76325	0.1291	0.2054	0.1870	0.4784	0.1291	0.2054	0.1870	0.4784
Warehouse	0.1676	0.1655	0.2424	0.4245	0.00279	0.02598	0.41896	0.55227	0.1501	0.1857	0.2155	0.4488	0.1501	0.1857	0.2155	0.4488
School	0.1253	0.1561	0.3053	0.4134	0.00644	0.02242	0.36722	0.60391	0.1179	0.1672	0.2647	0.4502	0.1179	0.1672	0.2647	0.4502
Health	0.1446	0.1906	0.2058	0.4591	0.06064	0.18585	0.17665	0.57686	0.1256	0.2090	0.1795	0.4859	0.1256	0.2090	0.1795	0.4859
Lodging	0.1472	0.1934	0.2116	0.4478	0.02778	0.08631	0.16632	0.71959	0.1267	0.2109	0.1805	0.4819	0.1267	0.2109	0.1805	0.4819
Data Centers	0.1343	0.2179	0.2916	0.3562	0.13431	0.21791	0.29156	0.35621	0.1343	0.2179	0.2916	0.3562	0.1343	0.2179	0.2916	0.3562
Non-Jurisdictional	0.1558	0.1792	0.2208	0.4442	0.04382	0.09923	0.26017	0.59679	0.1412	0.1929	0.1980	0.4679	0.1412	0.1929	0.1980	0.4679
Religious Worship	0.1396	0.1954	0.2001	0.4649	0.02492	0.06034	0.26663	0.64812	0.1429	0.1904	0.2019	0.4648	0.1429	0.1904	0.2019	0.4648
Miscellaneous	0.1396	0.1954	0.2001	0.4649	0.02492	0.06034	0.26663	0.64812	0.1429	0.1904	0.2019	0.4648	0.1429	0.1904	0.2019	0.4648

Commercial Electric Peak To Energy Relationship Table (Utility Coincidence)
(Ratio of peak kW to average kW)

	End Use 1 - Indoor Lighting				End Use 2 - Outdoor Lighting				End Use 3 - Cooling				End Use 4 - Ventilation			
Building Type	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN	SON	SMID	SOFF	WIN
Office Equipment	1.003982	0.7324	1.2595	1.7423	0.1893	1.8290	0.0839	0.1523	2.01216	0.9714	1.5826	1.4847	1.67536	0.9149	1.2451	1.4973
Restaurant	1.073194	1.0799	0.7350	0.8189	0.7198	1.9077	0.0581	0.1953	1.88626	1.3117	0.9883	0.7890	1.50961	1.1172	0.9158	0.9896
Retail	1.0566	0.68217	1.09947	1.21884	0.6754	1.94868	0.01762	0.20031	2.05957	0.96074	1.1922	0.60813	1.5410	0.93158	0.92751	0.98573
Grocery	1.0105	0.94668	1.02002	1.16757	0.3183	1.80051	0.10274	0.12882	1.94676	1.29009	1.277	1.12042	1.4512	0.99799	1.00091	1.09687
Warehouse	1.0021	0.77279	1.28169	2.05114	0.2037	1.8441	0.0471	0.61431	1.89144	1.49235	1.89354	1.54961	1.5153	1.20664	1.20289	1.62568
School	0.8446	0.55787	1.60299	2.36239	0.5000	2.04493	0	0.44761	1.11641	0.34983	3.0434	1.65738	0.9955	0.34091	1.92928	2.74996
Health	1.0176	0.80318	1.12299	1.32205	0.1345	1.77184	0.08161	0.13359	1.90314	1.21469	1.34892	1.19026	1.4834	0.98969	1.03746	1.0564
Lodging	1.0102	1.09218	0.99315	1.14475	0.1242	1.83348	0.27543	1.33368	2.07316	1.36751	0.62052	0.28927	1.5238	1.02359	1.00866	1.02147
Data Centers	1.1010	1.10105	1.24392	1.24392	0.0700	1.82905	0.51254	1.24839	1.55772	1.10105	1.24392	1.24392	1.5577	1.10105	1.24392	1.24392
Non-Jurisdictional	0.9955	0.7088	1.2266	1.6178	0.4927	1.9625	0.0486	0.2931	1.98666	1.07465	1.49159	1.13346	1.6126	0.9456	1.15458	1.27396
Religious Worship	0.9870	0.68522	1.19369	1.49322	0.7961	2.096	0.01329	0.4339	1.96116	1.17786	1.40054	0.78223	1.5499	0.97631	1.06407	1.05062
Miscellaneous	0.9870	0.68522	1.19369	1.49322	0.7961	2.096	0.01329	0.4339	1.96116	1.17786	1.40054	0.78223	1.5499	0.97631	1.06407	1.05062

Commercial Electric Peak To Energy Relationship Table (Utility Coincidence) - Continued
(Ratio of peak kW to average kW)

	End Use 5 - Refrigeration				End Use 6 - Office Equipment				End Use 7 - Water Heating				End Use 8 - Vending			
Building Type	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF
Office Equipment	1.0631	0.9732	1.0417	1.0464	0.9055	0.8080	1.2487	1.3518	0.9733	0.8523	1.1474	1.2175	0.8862	0.7278	1.2997	1.4241
Restaurant	1.0953	0.9945	0.9888	1.0020	1.0620	0.9047	0.7691	0.8676	0.9994	0.7015	0.8807	0.9520	1.1680	1.1733	0.7577	0.8192
Retail	1.0962	0.98118	1.02264	1.02267	1.0157	0.63313	1.08927	1.19508	1.0235	0.62576	1.08131	1.06033	1.0347	0.73509	1.05629	1.22828
Grocery	1.1118	1.00075	1.01137	1.01862	1.0627	0.74363	1.02881	1.16793	1.0687	0.71743	1.04516	1.38286	1.0464	0.73115	1.09853	1.33604
Warehouse	1.1532	1.04592	1.10858	1.1155	0.9177	0.6006	1.41332	2.02535	1.0008	0.74503	1.14146	1.52959	1.0677	0.96774	1.17853	1.73969
School	1.0464	0.97066	1.06068	1.05916	0.5758	0.71631	1.46319	1.58238	0.5051	0.44793	1.52439	1.72396	0.6287	0.57904	1.5163	1.96456
Health	1.0800	0.96856	1.02464	1.05157	0.9585	0.75212	1.21583	1.30782	0.9585	0.81491	1.17497	1.30169	0.9421	0.74223	1.21392	1.31197
Lodging	1.0917	0.98095	0.97405	0.99651	1.0155	0.92646	1.03459	1.09242	1.0500	0.82523	1.20061	1.5591	1.0919	1.02521	0.91636	1.03278
Data Centers	1.1891	1.10105	1.24392	1.24392	1.1010	1.10105	1.24392	1.24392	1.1010	1.10105	1.24392	1.24392	1.1010	1.10105	1.24392	1.24392
Non-Jurisdictional	1.0782	0.9785	1.02906	1.03688	0.8900	0.71161	1.25802	1.43651	0.9818	0.86376	1.05269	1.09966	0.9377	0.73638	1.23433	1.46525
Religious Worship	1.0933	0.98384	1.01641	1.02735	0.8745	0.61524	1.26734	1.52121	0.9902	0.87524	0.95794	0.9818	0.9892	0.74502	1.16891	1.50639
Miscellaneous	1.0933	0.98384	1.01641	1.02735	0.8745	0.61524	1.26734	1.52121	0.9902	0.87524	0.95794	0.9818	0.9892	0.74502	1.16891	1.50639

Commercial Electric Peak To Energy Relationship Table (Utility Coincidence) - Continued
(Ratio of peak kW to average kW)

	End Use 9 - Cooking				End Use 10 - Heating				End Use 11 - Pool Pump				End Use 13 - Miscellaneous			
Building Type	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF	SON	SOFF	WON	WOFF
Office Equipment	0.7377	0.2447	1.6038	2.1886	0.0000	0.7077	0.8480	1.2188	0.88623	0.7278	1.2997	1.4241	0.8862	0.7278	1.2997	1.4241
Restaurant	1.1200	0.8805	0.7999	0.9876	0.0000	0.7489	0.2214	0.4592	1.16798	1.1733	0.7577	0.8192	1.1680	1.1733	0.7577	0.8192
Retail	0.9886	0.43922	1.2705	1.65943	0.0000	0.18747	0.24661	0.72119	1.0347	0.73509	1.05629	1.22828	1.0347	0.7351	1.0563	1.2283
Grocery	0.9402	0.61281	1.21734	1.61202	0.0000	0.36411	0.10073	0.20945	1.0464	0.73115	1.09853	1.33604	1.0464	0.7312	1.0985	1.3360
Warehouse	0.8348	0.32442	1.49748	2.35407	0.0000	0.23812	0.22433	1.72647	1.0677	0.96774	1.17853	1.73969	1.0677	0.9677	1.1785	1.7397
School	0.5011	0.24827	1.8326	3.52681	0.0000	0.18466	0.57632	2.39847	0.6287	0.57904	1.5163	1.96456	0.6287	0.5790	1.5163	1.9646
Health	1.1222	0.52643	1.11133	1.63007	0.0000	0.82392	0.8514	0.91417	0.9421	0.74223	1.21392	1.31197	0.9421	0.7422	1.2139	1.3120
Lodging	1.1797	0.87842	1.04424	1.36196	0.0000	0.59381	3.71416	4.01853	1.0919	1.02521	0.91636	1.03278	1.0919	1.0252	0.9164	1.0328
Data Centers	1.1010	1.10105	1.24392	1.24392	0.0000	1.10105	1.24392	1.24392	1.1010	1.10105	1.24392	1.24392	1.1010	1.1010	1.2439	1.2439

E. MEASURE INPUTS

Residential Electric Measure Inputs			BASE TECHNOLOGY EUIs (kWh/home)	
Segment	Measure #	Measure Description	Single Family	Multifamily
VA Existing	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	2912.00	947.00
VA Existing	1100	Base Split-System Air Conditioner - Early Replacement (11 SEER)	2713.00	1623.00
VA Existing	1200	Base Heat Pump Cooling (13 SEER)	2778.00	1339.00
VA Existing	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	2394.00	1369.00
VA Existing	1400	Base Room Air Conditioner - EER 10.6	1504.00	2122.00
VA Existing	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	1619.00	853.00
VA Existing	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	57.00	61.00
VA Existing	1700	Base Furnace Fan - Furnace & CAC	1109.00	529.00
VA Existing	2000	Base Heat Pump Space Heating (7.7 HSPF)	4546.00	1710.00
VA Existing	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSPF)	4338.00	2326.00
VA Existing	2200	Base Resistance Space Heating (Primary)	5323.00	2842.00
VA Existing	3000	Base Halogen Lighting - 0.5 hrs/day 2014-2015	148.59	68.68
VA Existing	3010	Base Halogen Lighting - 0.5 hrs/day 2016-2017	148.59	68.68
VA Existing	3020	Base Halogen Lighting - 0.5 hrs/day 2018-2019	148.59	68.68
VA Existing	3030	Base Halogen Lighting - 0.5 hrs/day 2020	148.59	68.68
VA Existing	3100	Base Halogen Lighting - 2.5 hrs/day 2014-2015	610.29	286.17
VA Existing	3110	Base Halogen Lighting - 2.5 hrs/day 2016-2017	610.29	286.17
VA Existing	3120	Base Halogen Lighting - 2.5 hrs/day 2018-2019	610.29	286.17
VA Existing	3130	Base Halogen Lighting - 2.5 hrs/day 2020	610.29	286.17
VA Existing	3200	Base Halogen Lighting - 6 hrs/day 2014-2015	403.32	178.57
VA Existing	3210	Base Halogen Lighting - 6 hrs/day 2016-2017	403.32	178.57
VA Existing	3220	Base Halogen Lighting - 6 hrs/day 2018-2019	403.32	178.57
VA Existing	3230	Base Halogen Lighting - 6 hrs/day 2020	403.32	178.57
VA Existing	3300	Base CFL Lighting - 0.5 hrs/day 2014-2015	20.00	9.00
VA Existing	3310	Base CFL Lighting - 0.5 hrs/day 2016-2017	20.00	9.00
VA Existing	3320	Base CFL Lighting - 0.5 hrs/day 2018-2019	20.00	9.00
VA Existing	3330	Base CFL Lighting - 0.5 hrs/day 2020	20.00	9.00
VA Existing	3400	Base CFL Lighting - 2.5 hrs/day 2014-2015	82.00	37.00
VA Existing	3410	Base CFL Lighting - 2.5 hrs/day 2016-2017	82.00	37.00
VA Existing	3420	Base CFL Lighting - 2.5 hrs/day 2018-2019	82.00	37.00
VA Existing	3430	Base CFL Lighting - 2.5 hrs/day 2020	82.00	37.00
VA Existing	3500	Base CFL Lighting - 6 hrs/day 2014-2015	54.00	25.00
VA Existing	3510	Base CFL Lighting - 6 hrs/day 2016-2017	54.00	25.00
VA Existing	3520	Base CFL Lighting - 6 hrs/day 2018-2019	54.00	25.00
VA Existing	3530	Base CFL Lighting - 6 hrs/day 2020	54.00	25.00
VA Existing	3600	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2014-2015	64.15	21.11
VA Existing	3610	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2016-2017	64.15	21.11
VA Existing	3620	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2018-2019	64.15	21.11
VA Existing	3630	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2020	64.15	21.11
VA Existing	3700	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2014-2015	265.75	85.26
VA Existing	3710	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2016-2017	265.75	85.26
VA Existing	3720	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2018-2019	265.75	85.26

Residential Electric Measure Inputs			BASE TECHNOLOGY EUIs (kWh/home)	
Segment	Measure #	Measure Description	Single Family	Multifamily
VA Existing	3730	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2020	265.75	85.26
VA Existing	3800	Base Halogen (Specialty) Lighting - 6 hrs/day 2014-2015	175.95	58.46
VA Existing	3810	Base Halogen (Specialty) Lighting - 6 hrs/day 2016-2017	175.95	58.46
VA Existing	3820	Base Halogen (Specialty) Lighting - 6 hrs/day 2018-2019	175.95	58.46
VA Existing	3830	Base Halogen (Specialty) Lighting - 6 hrs/day 2020	175.95	58.46
VA Existing	3900	Base Fluorescent Fixture 1.8 hrs/day	442.00	135.00
VA Existing	4000	Base Refrigerator	663.00	581.00
VA Existing	4100	Base Refrigerator--Early Replacement	533.00	447.00
VA Existing	4200	Base 2nd Refrigerator - Recycling	927.00	530.00
VA Existing	4500	Base Freezer	1101.00	1043.00
VA Existing	4600	Base Early Replacement Freezer	1105.00	1043.00
VA Existing	4700	Base 2nd Freezer Recycling	1101.00	1043.00
VA Existing	5000	Base Water Heating (40 gal, EF=0.88)	3538.00	2791.00
VA Existing	5100	Base Water Heating Early Replacement to Heat Pump Water Heater	3538.00	2791.00
VA Existing	5500	Base Clotheswasher (MEF=1.26)	46.00	46.00
VA Existing	5600	Base Clothes Dryer (EF=3.01)	697.00	963.00
VA Existing	5700	Base Dishwasher (EF=0.65)	260.00	260.00
VA Existing	6000	Base Single Speed Pool Pump (RET)	2165.00	2165.00
VA Existing	7000	Base Plasma TV	338.00	284.00
VA Existing	7100	Base LCD TV	219.00	164.00
VA Existing	7200	Base CRT TV	157.00	145.00
VA Existing	7300	Base Set-Top Box	299.00	206.00
VA Existing	7400	Base DVD Player	35.00	29.00
VA Existing	7500	Base Desktop PC	427.00	421.00
VA Existing	7600	Base Laptop PC	61.00	49.00
VA Existing	8000	Base Cooking	700.00	600.00
VA Existing	9000	Base Miscellaneous	321.50	270.08
VA Existing	9900	Base House Use	14,253	9,308
NC Existing	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	2507.00	960.00
NC Existing	1100	Base Split-System Air Conditioner - Early Replacement (11 SEER)	2380.00	1628.00
NC Existing	1200	Base Heat Pump Cooling (13 SEER)	2884.00	1339.00
NC Existing	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	2844.00	1371.00
NC Existing	1400	Base Room Air Conditioner - EER 10.6	942.00	2122.00
NC Existing	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	1442.00	853.00
NC Existing	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	69.00	74.00
NC Existing	1700	Base Furnace Fan - Furnace & CAC	1118.00	533.00
NC Existing	2000	Base Heat Pump Space Heating (7.7 HSPF)	3685.00	1710.00

Residential Electric Measure Inputs

Segment	Measure #	Measure Description	Start Year	End Year	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	Relative Energy Reduction Factors SS	S-ON	S-MD	S-OFF	W-ON	W-OFF	End Use	Implementation Type ROB = Replace on Burnout RET = Retrofit
VA Existing	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	2014	2053	home	ton	$0.00	$0.00	$0.00	$0.00	18	1	1	$0.00	1	1	1	1	1	1	1	ROB
VA Existing	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	2014	2053	home	ton	$107.00	$0.00	$0.00	$107.00	18	1	1	$107.00	1	1	1	1	1	1	1	ROB
VA Existing	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	2014	2053	home	ton	$218.00	$0.00	$0.00	$218.00	18	1	1	$218.00	1	1	1	1	1	1	1	ROB
VA Existing	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	2014	2053	home	ton	$460.00	$0.00	$0.00	$460.00	18	1	1	$460.00	1	1	1	1	1	1	1	ROB
VA Existing	1004	Proper Refrigerant Charging and Air Flow (CAC)	2014	2053	home	effective ton	$67.38	$0.00	$0.00	$67.38	10	1	1	$67.38	1	1	1	1	1	1	1	RET
VA Existing	1005	Proper Sizing and Quality Install (CAC)	2014	2053	home	Unit	$0.00	$439.43	$0.00	$439.43	18	1	1	$439.43	1	1	1	1	1	1	1	ROB
VA Existing	1006	AC Maintenance and/or tune-up (CAC)	2014	2053	home	unit	$0.00	$82.14	$0.00	$82.14	4	1	1	$82.14	1	1	1	1	1	1	1	ROB
VA Existing	1007	AC Filter Changes (CAC)	2014	2053	home	unit	$20.00	$0.00	$0.00	$20.00	1	1	1	$20.00	1	1	1	1	1	1	1	ROB
VA Existing	1008	Ceiling R-0 to R-38 Insulation (CAC)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	1	RET
VA Existing	1009	Ceiling R-0 to R-49 Insulation (CAC)	2014	2053	home	sq.ft.	$0.87	$0.00	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	1	RET
VA Existing	1010	Ceiling R-11 to R-38 Insulaton (CAC)	2014	2053	home	sq.ft.	$0.54	$0.00	$0.00	$0.54	20	1	1	$0.54	1	1	1	1	1	1	1	RET
VA Existing	1011	Ceiling R-11 to R-49 Insulation (CAC)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	1	RET
VA Existing	1012	Ceiling R-19 to R-38 Insulation (CAC)	2014	2053	home	sq.ft.	$0.41	$0.00	$0.00	$0.41	20	1	1	$0.41	1	1	1	1	1	1	1	RET
VA Existing	1013	Ceiling R-19 to R-49 Insulation (CAC)	2014	2053	home	sq.ft.	$0.58	$0.00	$0.00	$0.58	20	1	1	$0.58	1	1	1	1	1	1	1	RET
VA Existing	1014	Crawlspace insulation (CAC)	2014	2053	home	sq.ft.	$0.23	$0.00	$0.00	$0.23	20	1	1	$0.23	1	1	1	1	1	1	1	RET
VA Existing	1015	Basement insulation R-13 (CAC)	2014	2053	home	sq.ft.	$0.29	$0.58	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	1	RET
VA Existing	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	2014	2053	home	sq.ft.	$0.38	$0.51	$0.00	$0.89	20	1	1	$0.89	1	1	1	1	1	1	1	RET
VA Existing	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	2014	2053	home	sq.ft.	$0.41	$0.00	$0.00	$0.41	20	1	1	$0.41	1	1	1	1	1	1	1	RET
VA Existing	1018	Cool Roof (CAC)	2014	2053	home	sq.ft.	$0.27	$0.00	$0.00	$0.27	15	1	1	$0.27	1	1	1	1	1	1	1	ROB
VA Existing	1019	Duct Insulation (CAC)	2014	2053	home	linear foot	$0.75	$0.00	$0.00	$0.75	20	1	1	$0.75	1	1	1	1	1	1	1	RET
VA Existing	1020	Duct Testing and Sealing (CAC)	2014	2053	home	home	$346.85	$0.00	$0.00	$346.85	18	1	1	$346.85	1	1	1	1	1	1	1	RET
VA Existing	1021	Return Duct Modification (CAC)	2014	2053	home	Unit	$350.00	$0.00	$0.00	$350.00	20	1	1	$350.00	1	1	1	1	1	1	1	RET
VA Existing	1022	Programmable Thermostat (CAC)	2014	2053	home	unit	$15.60	$0.00	$0.00	$15.60	12	1	1	$15.60	1	1	1	1	1	1	1	RET
VA Existing	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	2014	2053	home	home	$265.63	$0.00	$0.00	$265.63	10	1	1	$265.63	1	1	1	1	1	1	1	RET
VA Existing	1024	Self Install Weatherization (CAC)	2014	2053	home	home	$5.74	$0.00	$0.00	$5.74	10	1	1	$5.74	1	1	1	1	1	1	1	RET
VA Existing	1025	Door Weatherization (CAC)	2014	2053	home	unit	$11.97	$0.00	$0.00	$11.97	5	1	1	$11.97	1	1	1	1	1	1	1	RET
VA Existing	1026	Ceiling Fans (CAC)	2014	2053	home	unit	$80.00	$40.00	$0.00	$120.00	15	1	1	$120.00	1	1	1	1	1	1	1	RET
VA Existing	1027	Whole House Fans (CAC)	2014	2053	home	unit	$243.17	$269.72	$0.00	$512.89	15	1	1	$512.89	1	1	1	1	1	1	1	RET
VA Existing	1028	Window Film (CAC)	2014	2053	home	sq.ft.	$0.90	$0.64	$0.00	$1.54	10	1	1	$1.54	1	1	1	1	1	1	1	RET
VA Existing	1029	WINDOWS - Default With Sunscreen (CAC)	2014	2053	home	sq.ft.	$0.63	$0.64	$0.00	$1.27	10	1	1	$1.27	1	1	1	1	1	1	1	RET
VA Existing	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	2014	2053	home	sq.ft.	$0.97	$0.00	$0.00	$0.97	20	1	1	$0.97	1	1	1	1	1	1	1	ROB
VA Existing	1100	Base Split-System Air Conditioner - Early Replacement (11 SEER)	2014	2053	home	Unit	$0.00	$0.00	$0.00	$0.00	8	1	1	$0.00	1	1	1	1	1	1	1	RET
VA Existing	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality Install - Early Repla	2014	2053	home	Unit	$546.43	$0.00	$0.00	$546.43	8	1	1	$546.43	1	1	1	1	1	1	1	RET
VA Existing	1102	Proper Refrigerant Charging and Air Flow (CAC early replacement)	2014	2053	home	effective ton	$67.38	$0.00	$0.00	$67.38	10	1	1	$67.38	1	1	1	1	1	1	1	RET
VA Existing	1103	Proper Sizing and Quality Install (CAC early replacement)	2014	2053	home	Unit	$0.00	$439.43	$0.00	$439.43	18	1	1	$439.43	1	1	1	1	1	1	1	ROB
VA Existing	1104	AC Maintenance and/or tune-up (CAC early replacement)	2014	2053	home	unit	$0.00	$82.14	$0.00	$82.14	4	1	1	$82.14	1	1	1	1	1	1	1	ROB
VA Existing	1105	AC Filter Changes (CAC early replacement)	2014	2053	home	unit	$20.00	$0.00	$0.00	$20.00	1	1	1	$20.00	1	1	1	1	1	1	1	ROB
VA Existing	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	1	RET
VA Existing	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	2014	2053	home	sq.ft.	$0.87	$0.00	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	1	RET
VA Existing	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	2014	2053	home	sq.ft.	$0.54	$0.00	$0.00	$0.54	20	1	1	$0.54	1	1	1	1	1	1	1	RET
VA Existing	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	1	RET
VA Existing	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	2014	2053	home	sq.ft.	$0.41	$0.00	$0.00	$0.41	20	1	1	$0.41	1	1	1	1	1	1	1	RET
VA Existing	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	2014	2053	home	sq.ft.	$0.58	$0.00	$0.00	$0.58	20	1	1	$0.58	1	1	1	1	1	1	1	RET
VA Existing	1112	Crawlspace insulation (CAC early replacement)	2014	2053	home	sq.ft.	$0.23	$0.00	$0.00	$0.23	20	1	1	$0.23	1	1	1	1	1	1	1	RET
VA Existing	1113	Basement insulation R-13 (CAC early replacement)	2014	2053	home	sq.ft.	$0.29	$0.58	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	1	RET
VA Existing	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	2014	2053	home	sq.ft.	$0.38	$0.51	$0.00	$0.89	20	1	1	$0.89	1	1	1	1	1	1	1	RET
VA Existing	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	2014	2053	home	sq.ft.	$0.41	$0.00	$0.00	$0.41	20	1	1	$0.41	1	1	1	1	1	1	1	RET
VA Existing	1116	Cool Roof (CAC early replacement)	2014	2053	home	sq.ft.	$0.27	$0.00	$0.00	$0.27	15	1	1	$0.27	1	1	1	1	1	1	1	ROB
VA Existing	1117	Duct Insulation (CAC early replacement)	2014	2053	home	linear foot	$0.75	$0.00	$0.00	$0.75	20	1	1	$0.75	1	1	1	1	1	1	1	RET
VA Existing	1118	Duct Testing and Sealing (CAC early replacement)	2014	2053	home	home	$346.85	$0.00	$0.00	$346.85	18	1	1	$346.85	1	1	1	1	1	1	1	RET
VA Existing	1119	Return Duct Modification (CAC early replacement)	2014	2053	home	Unit	$350.00	$0.00	$0.00	$350.00	20	1	1	$350.00	1	1	1	1	1	1	1	RET
VA Existing	1120	Programmable Thermostat (CAC early replacement)	2014	2053	home	unit	$15.60	$0.00	$0.00	$15.60	12	1	1	$15.60	1	1	1	1	1	1	1	RET
VA Existing	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early replacement)	2014	2053	home	home	$265.63	$0.00	$0.00	$265.63	10	1	1	$265.63	1	1	1	1	1	1	1	RET
VA Existing	1122	Self Install Weatherization (CAC early replacement)	2014	2053	home	home	$5.74	$0.00	$0.00	$5.74	10	1	1	$5.74	1	1	1	1	1	1	1	RET
VA Existing	1123	Door Weatherization (CAC early replacement)	2014	2053	home	unit	$11.97	$0.00	$0.00	$11.97	5	1	1	$11.97	1	1	1	1	1	1	1	RET
VA Existing	1124	Ceiling Fans (CAC early replacement)	2014	2053	home	unit	$80.00	$40.00	$0.00	$120.00	15	1	1	$120.00	1	1	1	1	1	1	1	RET
VA Existing	1125	Whole House Fans (CAC early replacement)	2014	2053	home	unit	$243.17	$269.72	$0.00	$512.89	15	1	1	$512.89	1	1	1	1	1	1	1	RET
VA Existing	1126	Window Film (CAC early replacement)	2014	2053	home	sq.ft.	$0.90	$0.64	$0.00	$1.54	10	1	1	$1.54	1	1	1	1	1	1	1	RET
VA Existing	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	2014	2053	home	sq.ft.	$0.63	$0.64	$0.00	$1.27	10	1	1	$1.27	1	1	1	1	1	1	1	RET
VA Existing	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early replacement)	2014	2053	home	sq.ft.	$0.97	$0.00	$0.00	$0.97	20	1	1	$0.97	1	1	1	1	1	1	1	ROB
VA Existing	1200	Base Heat Pump Cooling (13 SEER)	2014	2053	home	ton	$0.00	$0.00	$0.00	$0.00	15	1	1	$0.00	1	1	1	1	1	1	1	ROB
VA Existing	1201	Heat pump upgrade to (14.5-15.9 SEER, 8.2+ HSPF) (HP cooling)	2014	2053	home	ton	$162.06	$0.00	$0.00	$162.06	15	1	1	$162.06	1	1	1	1	1	1	1	ROB
VA Existing	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	2014	2053	home	ton	$213.96	$0.00	$0.00	$213.96	15	1	1	$213.96	1	1	1	1	1	1	1	ROB

Residential Electric Measure Inputs

Segment	Measure #	Measure Description	Start Year	End Year	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	Relative Energy Reduction Factors SS	S-ON	S-MD	S-OFF	W-ON	W-OFF	End Use	Implementation Type ROB = Replace on Burnout RET = Retrofit
VA Existing	1203	Ground Source Heat Pump with Desuperheater (HP cooling)	2014	2053	home	ton	$1,230.90	$615.45	$0.00	$1,846.35	15	1	1	$1,846.35	1	1	1	1	1	1	1	ROB
VA Existing	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	2014	2053	home	effective ton	$67.38	$0.00	$0.00	$67.38	10	1	1	$67.38	1	1	1	1	1	1	1	RET
VA Existing	1205	Proper Sizing and Quality Install (HP cooling)	2014	2053	home	Unit	$0.00	$439.43	$0.00	$439.43	18	1	1	$439.43	1	1	1	1	1	1	1	ROB
VA Existing	1206	Heat pump tune up	2014	2053	home	unit	$0.00	$140.00	$0.00	$140.00	5	1	1	$140.00	1	1	1	1	1	1	1	RET
VA Existing	1207	Heat Pump Filter Replacement	2014	2053	home	unit	$20.00	$0.00	$0.00	$20.00	1	1	1	$20.00	1	1	1	1	1	1	1	RET
VA Existing	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	1	RET
VA Existing	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	2014	2053	home	sq.ft.	$0.87	$0.00	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	1	RET
VA Existing	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	2014	2053	home	sq.ft.	$0.54	$0.00	$0.00	$0.54	20	1	1	$0.54	1	1	1	1	1	1	1	RET
VA Existing	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	1	RET
VA Existing	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	2014	2053	home	sq.ft.	$0.41	$0.00	$0.00	$0.41	20	1	1	$0.41	1	1	1	1	1	1	1	RET
VA Existing	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	2014	2053	home	sq.ft.	$0.58	$0.00	$0.00	$0.58	20	1	1	$0.58	1	1	1	1	1	1	1	RET
VA Existing	1214	Crawlspace insulation (HP cooling)	2014	2053	home	sq.ft.	$0.23	$0.00	$0.00	$0.23	20	1	1	$0.23	1	1	1	1	1	1	1	RET
VA Existing	1215	Basement insulation R-13 (HP cooling)	2014	2053	home	sq.ft.	$0.29	$0.58	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	1	RET
VA Existing	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	2014	2053	home	sq.ft.	$0.38	$0.51	$0.00	$0.89	20	1	1	$0.89	1	1	1	1	1	1	1	RET
VA Existing	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	2014	2053	home	sq.ft.	$0.15	$1.17	$0.00	$1.32	20	1	1	$1.32	1	1	1	1	1	1	1	RET
VA Existing	1218	Cool Roof (HP cooling)	2014	2053	home	sq.ft.	$0.27	$0.00	$0.00	$0.27	15	1	1	$0.27	1	1	1	1	1	1	1	ROB
VA Existing	1219	Duct Insulation (HP cooling)	2014	2053	home	linear foot	$0.75	$0.00	$0.00	$0.75	20	1	1	$0.75	1	1	1	1	1	1	1	RET
VA Existing	1220	Duct Testing and Sealing (HP cooling)	2014	2053	home	home	$346.85	$0.00	$0.00	$346.85	18	1	1	$346.85	1	1	1	1	1	1	1	RET
VA Existing	1221	Programmable Thermostat (HP cooling)	2014	2053	home	unit	$49.25	$14.82	$0.00	$64.07	12	1	1	$64.07	1	1	1	1	1	1	1	RET
VA Existing	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	2014	2053	home	home	$265.63	$0.00	$0.00	$265.63	10	1	1	$265.63	1	1	1	1	1	1	1	RET
VA Existing	1223	Self Install Weatherization (HP cooling)	2014	2053	home	home	$15.00	$0.00	$0.00	$15.00	10	1	1	$15.00	1	1	1	1	1	1	1	RET
VA Existing	1224	Door Weatherization (HP cooling)	2014	2053	home	unit	$11.97	$0.00	$0.00	$11.97	5	1	1	$11.97	1	1	1	1	1	1	1	RET
VA Existing	1225	Ceiling Fans (HP cooling)	2014	2053	home	unit	$80.00	$40.00	$0.00	$120.00	15	1	1	$120.00	1	1	1	1	1	1	1	RET
VA Existing	1226	Whole House Fans (HP cooling)	2014	2053	home	unit	$243.17	$269.72	$0.00	$512.89	15	1	1	$512.89	1	1	1	1	1	1	1	RET
VA Existing	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	2014	2053	home	sq.ft.	$1.50	$0.00	$0.00	$1.50	20	1	1	$1.50	1	1	1	1	1	1	1	ROB
VA Existing	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	2014	2053	home	ton	$0.00	$0.00	$0.00	$0.00	15	1	1	$0.00	1	1	1	1	1	1	1	ROB
VA Existing	1301	Heat pump upgrade to (14.5-15.9 SEER, 8.2+ HSPF) (HP cooling Early Replace	2014	2053	home	ton	$162.06	$0.00	$0.00	$162.06	15	1	1	$162.06	1	1	1	1	1	1	1	ROB
VA Existing	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Early Replacement)	2014	2053	home	ton	$213.96	$0.00	$0.00	$213.96	15	1	1	$213.96	1	1	1	1	1	1	1	ROB
VA Existing	1303	Ground Source Heat Pump with Desuperheater (HP cooling Early Replacement)	2014	2053	home	ton	$1,230.90	$615.45	$0.00	$1,846.35	15	1	1	$1,846.35	1	1	1	1	1	1	1	ROB
VA Existing	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Replacement)	2014	2053	home	effective ton	$67.38	$0.00	$0.00	$67.38	10	1	1	$67.38	1	1	1	1	1	1	1	RET
VA Existing	1305	Proper Sizing and Quality Install (HP cooling Early Replacement)	2014	2053	home	Unit	$0.00	$439.43	$0.00	$439.43	18	1	1	$439.43	1	1	1	1	1	1	1	ROB
VA Existing	1306	Heat pump tune up	2014	2053	home	unit	$0.00	$140.00	$0.00	$140.00	5	1	1	$140.00	1	1	1	1	1	1	1	RET
VA Existing	1307	Heat Pump Filter Replacement	2014	2053	home	unit	$20.00	$0.00	$0.00	$20.00	1	1	1	$20.00	1	1	1	1	1	1	1	RET
VA Existing	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	1	RET
VA Existing	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	2014	2053	home	sq.ft.	$0.87	$0.00	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	1	RET
VA Existing	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	2014	2053	home	sq.ft.	$0.54	$0.00	$0.00	$0.54	20	1	1	$0.54	1	1	1	1	1	1	1	RET
VA Existing	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	1	RET
VA Existing	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement)	2014	2053	home	sq.ft.	$0.41	$0.00	$0.00	$0.41	20	1	1	$0.41	1	1	1	1	1	1	1	RET
VA Existing	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement)	2014	2053	home	sq.ft.	$0.58	$0.00	$0.00	$0.58	20	1	1	$0.58	1	1	1	1	1	1	1	RET
VA Existing	1314	Crawlspace insulation (HP cooling Early Replacement)	2014	2053	home	sq.ft.	$0.23	$0.00	$0.00	$0.23	20	1	1	$0.23	1	1	1	1	1	1	1	RET
VA Existing	1315	Basement insulation R-13 (HP cooling Early Replacement)	2014	2053	home	sq.ft.	$0.29	$0.58	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	1	RET
VA Existing	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacement)	2014	2053	home	sq.ft.	$0.38	$0.51	$0.00	$0.89	20	1	1	$0.89	1	1	1	1	1	1	1	RET
VA Existing	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacement)	2014	2053	home	sq.ft.	$0.15	$1.17	$0.00	$1.32	20	1	1	$1.32	1	1	1	1	1	1	1	RET
VA Existing	1318	Cool Roof (HP cooling Early Replacement)	2014	2053	home	sq.ft.	$0.27	$0.00	$0.00	$0.27	15	1	1	$0.27	1	1	1	1	1	1	1	ROB
VA Existing	1319	Duct Insulation (HP cooling Early Replacement)	2014	2053	home	linear foot	$0.75	$0.00	$0.00	$0.75	20	1	1	$0.75	1	1	1	1	1	1	1	RET
VA Existing	1320	Duct Testing and Sealing (HP cooling Early Replacement)	2014	2053	home	home	$346.85	$0.00	$0.00	$346.85	18	1	1	$346.85	1	1	1	1	1	1	1	RET
VA Existing	1321	Programmable Thermostat (HP cooling Early Replacement)	2014	2053	home	unit	$49.25	$14.82	$0.00	$64.07	12	1	1	$64.07	1	1	1	1	1	1	1	RET
VA Existing	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling Early Replacement	2014	2053	home	home	$265.63	$0.00	$0.00	$265.63	10	1	1	$265.63	1	1	1	1	1	1	1	RET
VA Existing	1323	Self Install Weatherization (HP cooling Early Replacement)	2014	2053	home	home	$15.00	$0.00	$0.00	$15.00	10	1	1	$15.00	1	1	1	1	1	1	1	RET
VA Existing	1324	Door Weatherization (HP cooling Early Replacement)	2014	2053	home	unit	$11.97	$0.00	$0.00	$11.97	5	1	1	$11.97	1	1	1	1	1	1	1	RET
VA Existing	1325	Ceiling Fans (HP cooling early replacement)	2014	2053	home	unit	$80.00	$40.00	$0.00	$120.00	15	1	1	$120.00	1	1	1	1	1	1	1	RET
VA Existing	1326	Whole House Fans (HP cooling early replacement)	2014	2053	home	unit	$243.17	$269.72	$0.00	$512.89	15	1	1	$512.89	1	1	1	1	1	1	1	RET
VA Existing	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling Early Replacemer	2014	2053	home	sq.ft.	$1.50	$0.00	$0.00	$1.50	20	1	1	$1.50	1	1	1	1	1	1	1	ROB
VA Existing	1400	Base Room Air Conditioner - EER 10.6	2014	2053	home	unit	$0.00	$0.00	$0.00	$0.00	9	1	1	$0.00	1	1	1	1	1	1	1	ROB
VA Existing	1401	Energy Star Room Air Conditioner - EER 10.8	2014	2053	home	unit	$50.00	$0.00	$0.00	$50.00	9	1	1	$50.00	1	1	1	1	1	1	1	ROB
VA Existing	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	2014	2053	home	unit	$103.00	$0.00	$0.00	$103.00	9	1	1	$103.00	1	1	1	1	1	1	1	ROB
VA Existing	1403	Room AC Filter Replacement	2014	2053	home	unit	$20.00	$0.00	$0.00	$20.00	1	1	1	$20.00	1	1	1	1	1	1	1	RET
VA Existing	1404	Ceiling R-0 to R-38 Insulation (RAC)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	1	RET
VA Existing	1405	Ceiling R-0 to R-49 Insulation (RAC)	2014	2053	home	sq.ft.	$0.87	$0.00	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	1	RET
VA Existing	1406	Ceiling R-11 to R-38 Insulaton (RAC)	2014	2053	home	sq.ft.	$0.54	$0.00	$0.00	$0.54	20	1	1	$0.54	1	1	1	1	1	1	1	RET
VA Existing	1407	Ceiling R-11 to R-49 Insulation (RAC)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	1	RET
VA Existing	1408	Ceiling R-19 to R-38 Insulation (RAC)	2014	2053	home	sq.ft.	$0.41	$0.00	$0.00	$0.41	20	1	1	$0.41	1	1	1	1	1	1	1	RET
VA Existing	1409	Ceiling R-19 to R-49 Insulation (RAC)	2014	2053	home	sq.ft.	$0.58	$0.00	$0.00	$0.58	20	1	1	$0.58	1	1	1	1	1	1	1	RET

Residential Electric Measure Inputs

Segment	Measure #	Measure Description	Start Year	End Year	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	Relative Energy Reduction Factors SS	S-ON	S-MD	S-OFF	W-ON	W-OFF	End Use	Implementation Type ROB = Replace on Burnout RET = Retrofit
VA Existing	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	2014	2053	home	sq.ft.	$0.41	$0.00	$0.00	$0.41	20	1	1	$0.41	1	1	1	1	1	1	1	RET
VA Existing	1411	Cool Roof (RAC)	2014	2053	home	sq.ft.	$0.27	$0.00	$0.00	$0.27	15	1	1	$0.27	1	1	1	1	1	1	1	ROB
VA Existing	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	2014	2053	home	home	$265.63	$0.00	$0.00	$265.63	10	1	1	$265.63	1	1	1	1	1	1	1	RET
VA Existing	1413	Self Install Weatherization (RAC)	2014	2053	home	home	$5.74	$0.00	$0.00	$5.74	10	1	1	$5.74	1	1	1	1	1	1	1	RET
VA Existing	1414	Door Weatherization (RAC)	2014	2053	home	unit	$11.97	$0.00	$0.00	$11.97	5	1	1	$11.97	1	1	1	1	1	1	1	RET
VA Existing	1415	Ceiling Fans (RAC)	2014	2053	home	unit	$80.00	$40.00	$0.00	$120.00	15	1	1	$120.00	1	1	1	1	1	1	1	RET
VA Existing	1416	Whole House Fans (RAC)	2014	2053	home	unit	$243.17	$269.72	$0.00	$512.89	15	1	1	$512.89	1	1	1	1	1	1	1	RET
VA Existing	1417	Window Film (RAC)	2014	2053	home	sq.ft.	$0.90	$0.64	$0.00	$1.54	10	1	1	$1.54	1	1	1	1	1	1	1	RET
VA Existing	1418	WINDOWS - Default With Sunscreen (RAC)	2014	2053	home	sq.ft.	$0.63	$0.64	$0.00	$1.27	10	1	1	$1.27	1	1	1	1	1	1	1	RET
VA Existing	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	2014	2053	home	sq.ft.	$0.97	$0.00	$0.00	$0.97	20	1	1	$0.97	1	1	1	1	1	1	1	ROB
VA Existing	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	2014	2053	home	unit	$271.00	$0.00	$0.00	$271.00	15	1	1	$271.00	1	1	1	1	1	1	1	ROB
VA Existing	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early replacement)	2014	2053	home	unit	$736.25	$0.00	$0.00	$736.25	9	1	1	$736.25	1	1	1	1	1	1	1	RET
VA Existing	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	2014	2053	home	unit	$100.00	$0.00	$0.00	$100.00	12	1	1	$100.00	1	1	1	1	1	1	1	ROB
VA Existing	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/day)	2014	2053	home	unit	$110.00	$0.00	$0.00	$110.00	12	0	0	$110.00	1	1	1	1	1	1	1	ROB
VA Existing	1700	Base Furnace Fan - Furnace & CAC	2014	2053	home	Unit	$0.00	$0.00	$0.00	$0.00	18	1	1	$0.00	1	1	1	1	1	1	12	ROB
VA Existing	1701	ECM Furnace Fan (variable speed motor) - Cooling	2014	2053	home	Unit	$175.00	$0.00	$0.00	$175.00	18	1	1	$175.00	1	1	1	1	1	1	12	RET
VA Existing	2000	Base Heat Pump Space Heating (7.7 HSPF)	2014	2053	home	Unit	$0.00	$0.00	$0.00	$0.00	18	1	1	$0.00	1	1	1	1	1	1	9	ROB
VA Existing	2001	Heat pump upgrade to 14.5-15.9 SEER/8.2+ HSPF (HP heating)	2014	2053	home	ton	$111.94	$0.00	$0.00	$111.94	15	1	1	$111.94	1	1	1	1	1	1	9	ROB
VA Existing	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	2014	2053	home	ton	$197.04	$0.00	$0.00	$197.04	15	1	1	$197.04	1	1	1	1	1	1	9	ROB
VA Existing	2003	Ground Source Heat Pump with Desuperheater (HP heating)	2014	2053	home	ton	$1,230.90	$615.45	$0.00	$1,846.35	15	1	1	$1,846.35	1	1	1	1	1	1	9	ROB
VA Existing	2004	Heat pump tune up	2014	2053	home	unit	$0.00	$140.00	$0.00	$140.00	5	1	1	$140.00	1	1	1	1	1	1	9	RET
VA Existing	2005	Heat Pump Filter Replacement	2014	2053	home	unit	$20.00	$0.00	$0.00	$20.00	1	1	1	$20.00	1	1	1	1	1	1	9	RET
VA Existing	2006	Ceiling R-0 to R-38 Insulation (HP heating)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	9	RET
VA Existing	2007	Ceiling R-0 to R-49 Insulation (HP heating)	2014	2053	home	sq.ft.	$0.87	$0.00	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	9	RET
VA Existing	2008	Ceiling R-11 to R-38 Insulaton (HP heating)	2014	2053	home	sq.ft.	$0.54	$0.00	$0.00	$0.54	20	1	1	$0.54	1	1	1	1	1	1	9	RET
VA Existing	2009	Ceiling R-11 to R-49 Insulation (HP heating)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	9	RET
VA Existing	2010	Ceiling R-19 to R-38 Insulation (HP heating)	2014	2053	home	sq.ft.	$0.41	$0.00	$0.00	$0.41	20	1	1	$0.41	1	1	1	1	1	1	9	RET
VA Existing	2011	Ceiling R-19 to R-49 Insulation (HP heating)	2014	2053	home	sq.ft.	$0.58	$0.00	$0.00	$0.58	20	1	1	$0.58	1	1	1	1	1	1	9	RET
VA Existing	2012	Crawlspace insulation (HP heating)	2014	2053	home	sq.ft.	$0.23	$0.00	$0.00	$0.23	20	1	1	$0.23	1	1	1	1	1	1	9	RET
VA Existing	2013	Basement insulation R-13 (HP heating)	2014	2053	home	sq.ft.	$0.29	$0.58	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	9	RET
VA Existing	2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	2014	2053	home	sq.ft.	$0.38	$0.51	$0.00	$0.89	20	1	1	$0.89	1	1	1	1	1	1	9	RET
VA Existing	2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	2014	2053	home	sq.ft.	$0.15	$1.17	$0.00	$1.32	20	1	1	$1.32	1	1	1	1	1	1	9	RET
VA Existing	2016	Duct Insulation (HP heating)	2014	2053	home	linear foot	$0.75	$0.00	$0.00	$0.75	20	1	1	$0.75	1	1	1	1	1	1	9	RET
VA Existing	2017	Duct Testing and Sealing (HP heating)	2014	2053	home	home	$346.85	$0.00	$0.00	$346.85	18	1	1	$346.85	1	1	1	1	1	1	9	RET
VA Existing	2018	Heat Recovery Ventilators (HP heating)	2014	2053	home	unit	$1,200.00	$500.00	$0.00	$1,700.00	20	1	1	$1,700.00	1	1	1	1	1	1	9	ROB
VA Existing	2019	Programmable Thermostat (HP heating)	2014	2053	home	unit	$49.25	$14.82	$0.00	$64.07	12	1	1	$64.07	1	1	1	1	1	1	9	RET
VA Existing	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	2014	2053	home	home	$265.63	$0.00	$0.00	$265.63	10	1	1	$265.63	1	1	1	1	1	1	9	RET
VA Existing	2021	Self Install Weatherization (HP heating)	2014	2053	home	home	$15.00	$0.00	$0.00	$15.00	10	1	1	$15.00	1	1	1	1	1	1	9	RET
VA Existing	2022	Door Weatherization (HP heating)	2014	2053	home	unit	$11.97	$0.00	$0.00	$11.97	5	1	1	$11.97	1	1	1	1	1	1	9	RET
VA Existing	2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	2014	2053	home	sq.ft.	$1.50	$0.00	$0.00	$1.50	20	1	1	$1.50	1	1	1	1	1	1	9	ROB
VA Existing	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSPF)	2014	2053	home	Unit	$0.00	$0.00	$0.00	$0.00	18	1	1	$0.00	1	1	1	1	1	1	9	ROB
VA Existing	2101	Heat pump upgrade to 14.5-15.9 SEER/8.2+ HSPF (HP heating early replaceme	2014	2053	home	ton	$111.94	$0.00	$0.00	$111.94	15	1	1	$111.94	1	1	1	1	1	1	9	ROB
VA Existing	2102	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early replacement)	2014	2053	home	ton	$197.04	$0.00	$0.00	$197.04	15	1	1	$197.04	1	1	1	1	1	1	9	ROB
VA Existing	2103	Ground Source Heat Pump with Desuperheater (HP heating early replacement)	2014	2053	home	ton	$1,230.90	$615.45	$0.00	$1,846.35	15	1	1	$1,846.35	1	1	1	1	1	1	9	ROB
VA Existing	2104	Heat pump tune up (heating)	2014	2053	home	unit	$0.00	$140.00	$0.00	$140.00	5	1	1	$140.00	1	1	1	1	1	1	9	RET
VA Existing	2105	Heat Pump Filter Replacement (heating)	2014	2053	home	unit	$20.00	$0.00	$0.00	$20.00	1	1	1	$20.00	1	1	1	1	1	1	9	RET
VA Existing	2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	9	RET
VA Existing	2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	2014	2053	home	sq.ft.	$0.87	$0.00	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	9	RET
VA Existing	2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	2014	2053	home	sq.ft.	$0.54	$0.00	$0.00	$0.54	20	1	1	$0.54	1	1	1	1	1	1	9	RET
VA Existing	2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	9	RET
VA Existing	2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	2014	2053	home	sq.ft.	$0.41	$0.00	$0.00	$0.41	20	1	1	$0.41	1	1	1	1	1	1	9	RET
VA Existing	2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	2014	2053	home	sq.ft.	$0.58	$0.00	$0.00	$0.58	20	1	1	$0.58	1	1	1	1	1	1	9	RET
VA Existing	2112	Crawlspace insulation (HP heating early replacement)	2014	2053	home	sq.ft.	$0.23	$0.00	$0.00	$0.23	20	1	1	$0.23	1	1	1	1	1	1	9	RET
VA Existing	2113	Basement insulation R-13 (HP heating early replacement)	2014	2053	home	sq.ft.	$0.29	$0.58	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	9	RET
VA Existing	2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replacement)	2014	2053	home	sq.ft.	$0.38	$0.51	$0.00	$0.89	20	1	1	$0.89	1	1	1	1	1	1	9	RET
VA Existing	2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacement)	2014	2053	home	sq.ft.	$0.15	$1.17	$0.00	$1.32	20	1	1	$1.32	1	1	1	1	1	1	9	RET
VA Existing	2116	Duct Insulation (HP heating early replacement)	2014	2053	home	linear foot	$0.75	$0.00	$0.00	$0.75	20	1	1	$0.75	1	1	1	1	1	1	9	RET
VA Existing	2117	Duct Testing and Sealing (HP heating early replacement)	2014	2053	home	home	$346.85	$0.00	$0.00	$346.85	18	1	1	$346.85	1	1	1	1	1	1	9	RET
VA Existing	2118	Heat Recovery Ventilators (HP heating early replacement)	2014	2053	home	unit	$1,200.00	$500.00	$0.00	$1,700.00	20	1	1	$1,700.00	1	1	1	1	1	1	9	ROB
VA Existing	2119	Programmable Thermostat (HP heating early replacement)	2014	2053	home	unit	$49.25	$14.82	$0.00	$64.07	12	1	1	$64.07	1	1	1	1	1	1	9	RET
VA Existing	2120	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating early replacement)	2014	2053	home	home	$265.63	$0.00	$0.00	$265.63	10	1	1	$265.63	1	1	1	1	1	1	9	RET
VA Existing	2121	Self Install Weatherization (HP heating early replacement)	2014	2053	home	home	$15.00	$0.00	$0.00	$15.00	10	1	1	$15.00	1	1	1	1	1	1	9	RET
VA Existing	2122	Door Weatherization (HP heating early replacement)	2014	2053	home	unit	$11.97	$0.00	$0.00	$11.97	5	1	1	$11.97	1	1	1	1	1	1	9	RET

Residential Electric Measure Inputs

Segment	Measure #	Measure Description	Start Year	End Year	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	Relative Energy Reduction Factors SS	S-ON	S-MD	S-OFF	W-ON	W-OFF	End Use	Implementation Type ROB = Replace on Burnout RET = Retrofit
VA Existing	2123	WINDOWS - Double-Glazed Clear to Energy Star (HP heating early replacement	2014	2053	home	sq.ft.	$1.50	$0.00	$0.00	$1.50	20	1	1	$1.50	1	1	1	1	1	1	9	ROB
VA Existing	2200	Base Resistance Space Heating (Primary)	2014	2053	home	ton	$0.00	$0.00	$0.00	$0.00	15	1	1	$0.00	1	1	1	1	1	1	9	ROB
VA Existing	2201	Air Source Heat Pump (resistance heating)	2014	2053	home	ton	$60.00	$0.00	$0.00	$60.00	15	1	1	$60.00	1	1	1	1	1	1	9	ROB
VA Existing	2202	Ground Source Heat Pump with Desuperheater (resistance heating)	2014	2053	home	ton	$1,230.90	$615.45	$0.00	$1,846.35	15	1	1	$1,846.35	1	1	1	1	1	1	9	ROB
VA Existing	2203	Ceiling R-0 to R-38 Insulation (resistance heating)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	9	RET
VA Existing	2204	Ceiling R-0 to R-49 Insulation (resistance heating)	2014	2053	home	sq.ft.	$0.87	$0.00	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	9	RET
VA Existing	2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	2014	2053	home	sq.ft.	$0.54	$0.00	$0.00	$0.54	20	1	1	$0.54	1	1	1	1	1	1	9	RET
VA Existing	2206	Ceiling R-11 to R-49 Insulation (resistance heating)	2014	2053	home	sq.ft.	$0.70	$0.00	$0.00	$0.70	20	1	1	$0.70	1	1	1	1	1	1	9	RET
VA Existing	2207	Ceiling R-19 to R-38 Insulation (resistance heating)	2014	2053	home	sq.ft.	$0.41	$0.00	$0.00	$0.41	20	1	1	$0.41	1	1	1	1	1	1	9	RET
VA Existing	2208	Ceiling R-19 to R-49 Insulation (resistance heating)	2014	2053	home	sq.ft.	$0.58	$0.00	$0.00	$0.58	20	1	1	$0.58	1	1	1	1	1	1	9	RET
VA Existing	2209	Crawlspace insulation (resistance heating)	2014	2053	home	sq.ft.	$0.23	$0.00	$0.00	$0.23	20	1	1	$0.23	1	1	1	1	1	1	9	RET
VA Existing	2210	Basement insulation R-13 (resistance heating)	2014	2053	home	sq.ft.	$0.29	$0.58	$0.00	$0.87	20	1	1	$0.87	1	1	1	1	1	1	9	RET
VA Existing	2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	2014	2053	home	sq.ft.	$0.38	$0.51	$0.00	$0.89	20	1	1	$0.89	1	1	1	1	1	1	9	RET
VA Existing	2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	2014	2053	home	sq.ft.	$0.15	$1.17	$0.00	$1.32	20	1	1	$1.32	1	1	1	1	1	1	9	RET
VA Existing	2213	Heat Recovery Ventilators (resistance heating)	2014	2053	home	unit	$1,200.00	$500.00	$0.00	$1,700.00	20	1	1	$1,700.00	1	1	1	1	1	1	9	ROB
VA Existing	2214	Programmable Thermostat (resistance heating)	2014	2053	home	unit	$49.25	$14.82	$0.00	$64.07	12	1	1	$64.07	1	1	1	1	1	1	9	RET
VA Existing	2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance heating)	2014	2053	home	home	$265.63	$0.00	$0.00	$265.63	10	1	1	$265.63	1	1	1	1	1	1	9	RET
VA Existing	2216	Self Install Weatherization	2014	2053	home	home	$15.00	$0.00	$0.00	$15.00	10	1	1	$15.00	1	1	1	1	1	1	9	RET
VA Existing	2217	Door Weatherization (resistance heating)	2014	2053	home	unit	$11.97	$0.00	$0.00	$11.97	5	1	1	$11.97	1	1	1	1	1	1	9	RET
VA Existing	2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance heating)	2014	2053	home	sq.ft.	$1.50	$0.00	$0.00	$1.50	20	1	1	$1.50	1	1	1	1	1	1	9	ROB
VA Existing	3000	Base Halogen Lighting - 0.5 hrs/day 2014-2015	2014	2015	home	lamp	$1.57	$0.00	$0.00	$1.57	1000	0	1	$1.57	1	1	1	1	1	1	2	RET
VA Existing	3001	CFL (base Halogen 0.5 hrs/day) 2014-2015	2014	2015	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	ROB
VA Existing	3002	LEDs (base Halogen 0.5 hrs/day) 2014-2015	2014	2015	home	lamp	$11.00	$0.00	$0.00	$11.00	35000	0	0	$11.00	1	1	1	1	1	1	2	ROB
VA Existing	3010	Base Halogen Lighting - 0.5 hrs/day 2016-2017	2016	2017	home	lamp	$1.57	$0.00	$0.00	$1.57	1000	0	1	$1.57	1	1	1	1	1	1	2	RET
VA Existing	3011	CFL (base Halogen 0.5 hrs/day) 2016-2017	2016	2017	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	ROB
VA Existing	3012	LEDs (base Halogen 0.5 hrs/day) 2016-2017	2016	2017	home	lamp	$8.00	$0.00	$0.00	$8.00	35000	0	0	$8.00	1	1	1	1	1	1	2	ROB
VA Existing	3020	Base Halogen Lighting - 0.5 hrs/day 2018-2019	2018	2019	home	lamp	$1.57	$0.00	$0.00	$1.57	1000	0	1	$1.57	1	1	1	1	1	1	2	RET
VA Existing	3021	CFL (base Halogen 0.5 hrs/day) 2018-2019	2018	2019	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	ROB
VA Existing	3022	LEDs (base Halogen 0.5 hrs/day) 2018-2019	2018	2019	home	lamp	$5.00	$0.00	$0.00	$5.00	35000	0	0	$5.00	1	1	1	1	1	1	2	ROB
VA Existing	3030	Base Halogen Lighting - 0.5 hrs/day 2020	2020	2053	home	lamp	$1.57	$0.00	$0.00	$1.57	1000	0	1	$1.57	1	1	1	1	1	1	2	RET
VA Existing	3032	LEDs (base Halogen 0.5 hrs/day) 2020	2020	2053	home	lamp	$4.00	$0.00	$0.00	$4.00	35000	0	0	$4.00	1	1	1	1	1	1	2	ROB
VA Existing	3100	Base Halogen Lighting - 2.5 hrs/day 2014-2015	2014	2015	home	lamp	$1.57	$0.00	$0.00	$1.57	1000	0	1	$1.57	1	1	1	1	1	1	2	RET
VA Existing	3101	CFL (base Halogen 2.5 hrs/day) 2014-2015	2014	2015	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	ROB
VA Existing	3102	LEDs (base Halogen 2.5 hrs/day) 2014-2015	2014	2015	home	lamp	$11.00	$0.00	$0.00	$11.00	35000	0	0	$11.00	1	1	1	1	1	1	2	ROB
VA Existing	3110	Base Halogen Lighting - 2.5 hrs/day 2016-2017	2016	2017	home	lamp	$1.57	$0.00	$0.00	$1.57	1000	0	1	$1.57	1	1	1	1	1	1	2	RET
VA Existing	3111	CFL (base Halogen 2.5 hrs/day) 2016-2017	2016	2017	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	ROB
VA Existing	3112	LEDs (base Halogen 2.5 hrs/day) 2016-2017	2016	2017	home	lamp	$8.00	$0.00	$0.00	$8.00	35000	0	0	$8.00	1	1	1	1	1	1	2	ROB
VA Existing	3120	Base Halogen Lighting - 2.5 hrs/day 2018-2019	2018	2019	home	lamp	$1.57	$0.00	$0.00	$1.57	1000	0	1	$1.57	1	1	1	1	1	1	2	RET
VA Existing	3121	CFL (base Halogen 2.5 hrs/day) 2018-2019	2018	2019	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	ROB
VA Existing	3122	LEDs (base Halogen 2.5 hrs/day) 2018-2019	2018	2019	home	lamp	$5.00	$0.00	$0.00	$5.00	35000	0	0	$5.00	1	1	1	1	1	1	2	ROB
VA Existing	3130	Base Halogen Lighting - 2.5 hrs/day 2020	2020	2053	home	lamp	$1.57	$0.00	$0.00	$1.57	1000	0	1	$1.57	1	1	1	1	1	1	2	RET
VA Existing	3132	LEDs (base Halogen 2.5 hrs/day) 2020	2020	2053	home	lamp	$4.00	$0.00	$0.00	$4.00	35000	0	0	$4.00	1	1	1	1	1	1	2	ROB
VA Existing	3200	Base Halogen Lighting - 6 hrs/day 2014-2015	2014	2015	home	lamp	$1.57	$0.00	$0.00	$1.57	1000	0	1	$1.57	1	1	1	1	1	1	2	RET
VA Existing	3201	CFL (base Halogen 6 hrs/day) 2014-2015	2014	2015	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	ROB
VA Existing	3202	LEDs (base Halogen 6 hrs/day) 2014-2015	2014	2015	home	lamp	$11.00	$0.00	$0.00	$11.00	35000	0	0	$11.00	1	1	1	1	1	1	2	ROB
VA Existing	3210	Base Halogen Lighting - 6 hrs/day 2016-2017	2016	2017	home	lamp	$1.57	$0.00	$0.00	$1.57	1000	0	1	$1.57	1	1	1	1	1	1	2	RET
VA Existing	3211	CFL (base Halogen 6 hrs/day) 2016-2017	2016	2017	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	ROB
VA Existing	3212	LEDs (base Halogen 6 hrs/day) 2016-2017	2016	2017	home	lamp	$8.00	$0.00	$0.00	$8.00	35000	0	0	$8.00	1	1	1	1	1	1	2	ROB
VA Existing	3220	Base Halogen Lighting - 6 hrs/day 2018-2019	2018	2019	home	lamp	$1.57	$0.00	$0.00	$1.57	1000	0	1	$1.57	1	1	1	1	1	1	2	RET
VA Existing	3221	CFL (base Halogen 6 hrs/day) 2018-2019	2018	2019	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	ROB
VA Existing	3222	LEDs (base Halogen 6 hrs/day) 2018-2019	2018	2019	home	lamp	$5.00	$0.00	$0.00	$5.00	35000	0	0	$5.00	1	1	1	1	1	1	2	ROB
VA Existing	3230	Base Halogen Lighting - 6 hrs/day 2020	2020	2053	home	lamp	$1.57	$0.00	$0.00	$1.57	1000	0	1	$1.57	1	1	1	1	1	1	2	RET
VA Existing	3232	LEDs (base Halogen 6 hrs/day) 2020	2020	2053	home	lamp	$4.00	$0.00	$0.00	$4.00	35000	0	0	$4.00	1	1	1	1	1	1	2	ROB
VA Existing	3300	Base CFL Lighting - 0.5 hrs/day 2014-2015	2014	2015	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	RET
VA Existing	3301	LEDs (base CFL 0.5 hrs/day) 2014-2015	2014	2015	home	lamp	$11.00	$0.00	$0.00	$11.00	35000	0	0	$11.00	1	1	1	1	1	1	2	ROB
VA Existing	3310	Base CFL Lighting - 0.5 hrs/day 2016-2017	2016	2017	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	RET
VA Existing	3311	LEDs (base CFL 0.5 hrs/day) 2016-2017	2016	2017	home	lamp	$8.00	$0.00	$0.00	$8.00	35000	0	0	$8.00	1	1	1	1	1	1	2	ROB
VA Existing	3320	Base CFL Lighting - 0.5 hrs/day 2018-2019	2018	2019	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	RET
VA Existing	3321	LEDs (base CFL 0.5 hrs/day) 2018-2019	2018	2019	home	lamp	$5.00	$0.00	$0.00	$5.00	35000	0	0	$5.00	1	1	1	1	1	1	2	ROB
VA Existing	3330	Base CFL Lighting - 0.5 hrs/day 2020	2020	2053	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	RET
VA Existing	3331	LEDs (base CFL 0.5 hrs/day) 2020	2020	2053	home	lamp	$4.00	$0.00	$0.00	$4.00	35000	0	0	$4.00	1	1	1	1	1	1	2	ROB
VA Existing	3400	Base CFL Lighting - 2.5 hrs/day 2014-2015	2014	2015	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	RET
VA Existing	3401	LEDs (base CFL 2.5 hrs/day) 2014-2015	2014	2015	home	lamp	$11.00	$0.00	$0.00	$11.00	35000	0	0	$11.00	1	1	1	1	1	1	2	ROB

Residential Electric Measure Inputs

Segment	Measure #	Measure Description	Start Year	End Year	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	Relative Energy Reduction Factors SS	S-ON	S-MD	S-OFF	W-ON	W-OFF	End Use	Implementation Type ROB = Replace on Burnout RET = Retrofit
VA Existing	3410	Base CFL Lighting - 2.5 hrs/day 2016-2017	2016	2017	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	RET
VA Existing	3411	LEDs (base CFL 2.5 hrs/day) 2016-2017	2016	2017	home	lamp	$8.00	$0.00	$0.00	$8.00	35000	0	0	$8.00	1	1	1	1	1	1	2	ROB
VA Existing	3420	Base CFL Lighting - 2.5 hrs/day 2018-2019	2018	2019	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	RET
VA Existing	3421	LEDs (base CFL 2.5 hrs/day) 2018-2019	2018	2019	home	lamp	$5.00	$0.00	$0.00	$5.00	35000	0	0	$5.00	1	1	1	1	1	1	2	ROB
VA Existing	3430	Base CFL Lighting - 2.5 hrs/day 2020	2020	2053	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	RET
VA Existing	3431	LEDs (base CFL 2.5 hrs/day) 2020	2020	2053	home	lamp	$4.00	$0.00	$0.00	$4.00	35000	0	0	$4.00	1	1	1	1	1	1	2	ROB
VA Existing	3500	Base CFL Lighting - 6 hrs/day 2014-2015	2014	2015	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	RET
VA Existing	3501	LEDs (base CFL 6 hrs/day) 2014-2015	2014	2015	home	lamp	$11.00	$0.00	$0.00	$11.00	35000	0	0	$11.00	1	1	1	1	1	1	2	ROB
VA Existing	3510	Base CFL Lighting - 6 hrs/day 2016-2017	2016	2017	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	RET
VA Existing	3511	LEDs (base CFL 6 hrs/day) 2016-2017	2016	2017	home	lamp	$8.00	$0.00	$0.00	$8.00	35000	0	0	$8.00	1	1	1	1	1	1	2	ROB
VA Existing	3520	Base CFL Lighting - 6 hrs/day 2018-2019	2018	2019	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	RET
VA Existing	3521	LEDs (base CFL 6 hrs/day) 2018-2019	2018	2019	home	lamp	$5.00	$0.00	$0.00	$5.00	35000	0	0	$5.00	1	1	1	1	1	1	2	ROB
VA Existing	3530	Base CFL Lighting - 6 hrs/day 2020	2020	2053	home	lamp	$1.82	$0.00	$0.00	$1.82	8000	0	1	$1.82	1	1	1	1	1	1	2	RET
VA Existing	3531	LEDs (base CFL 6 hrs/day) 2020	2020	2053	home	lamp	$4.00	$0.00	$0.00	$4.00	35000	0	0	$4.00	1	1	1	1	1	1	2	ROB
VA Existing	3600	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2014-2015	2014	2015	home	lamp	$2.74	$0.00	$0.00	$2.74	1000	0	1	$2.74	1	1	1	1	1	1	2	RET
VA Existing	3601	CFL (base Halogen (Specialty) 0.5 hrs/day 2014-2015	2014	2015	home	lamp	$5.00	$0.00	$0.00	$5.00	8000	0	1	$5.00	1	1	1	1	1	1	2	ROB
VA Existing	3602	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2014-2015	2014	2015	home	lamp	$11.00	$0.00	$0.00	$11.00	35000	0	0	$11.00	1	1	1	1	1	1	2	ROB
VA Existing	3610	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2016-2017	2016	2017	home	lamp	$2.74	$0.00	$0.00	$2.74	1000	0	1	$2.74	1	1	1	1	1	1	2	RET
VA Existing	3611	CFL (base Halogen (Specialty) 0.5 hrs/day) 2016-2017	2016	2017	home	lamp	$5.00	$0.00	$0.00	$5.00	8000	0	1	$5.00	1	1	1	1	1	1	2	ROB
VA Existing	3612	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2016-2017	2016	2017	home	lamp	$8.00	$0.00	$0.00	$8.00	35000	0	0	$8.00	1	1	1	1	1	1	2	ROB
VA Existing	3620	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2018-2019	2018	2019	home	lamp	$2.74	$0.00	$0.00	$2.74	1000	0	1	$2.74	1	1	1	1	1	1	2	RET
VA Existing	3621	CFL (base Halogen (Specialty) 0.5 hrs/day) 2018-2019	2018	2019	home	lamp	$5.00	$0.00	$0.00	$5.00	8000	0	1	$5.00	1	1	1	1	1	1	2	ROB

Residential Electric Measure Inputs			Applicability Factor (percent)		Incomplete Factor (percent)		Feasibility Factor (percent)		Applicable x Incomplete x Feasible	
Segment	Measure #	Measure Description	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily
VA Existing	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	41.4%	37.7%	100.00%	100.00%	100.00%	100.00%	41.44%	37.69%
VA Existing	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	41.4%	37.7%	84.00%	89.00%	100.00%	100.00%	34.81%	33.54%
VA Existing	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	41.4%	37.7%	84.00%	89.00%	100.00%	100.00%	34.81%	33.54%
VA Existing	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	41.4%	37.7%	84.00%	89.00%	100.00%	100.00%	34.81%	33.54%
VA Existing	1004	Proper Refrigerant Charging and Air Flow (CAC)	41.4%	37.7%	72.00%	72.00%	100.00%	100.00%	29.84%	27.14%
VA Existing	1005	Proper Sizing and Quality Install (CAC)	41.4%	37.7%	72.00%	72.00%	100.00%	100.00%	29.84%	27.14%
VA Existing	1006	AC Maintenance and/or tune-up (CAC)	41.4%	37.7%	44.28%	31.14%	100.00%	100.00%	18.35%	11.74%
VA Existing	1007	AC Filter Changes (CAC)	41.4%	37.7%	42.35%	29.96%	100.00%	100.00%	17.55%	11.29%
VA Existing	1008	Ceiling R-0 to R-38 Insulation (CAC)	8.5%	22.8%	100.00%	100.00%	75.00%	75.00%	6.34%	17.07%
VA Existing	1009	Ceiling R-0 to R-49 Insulation (CAC)	8.5%	22.8%	100.00%	100.00%	50.00%	50.00%	4.23%	11.38%
VA Existing	1010	Ceiling R-11 to R-38 Insulaton (CAC)	18.3%	11.9%	100.00%	100.00%	75.00%	75.00%	13.74%	8.90%
VA Existing	1011	Ceiling R-11 to R-49 Insulation (CAC)	18.3%	11.9%	100.00%	100.00%	50.00%	50.00%	9.16%	5.94%
VA Existing	1012	Ceiling R-19 to R-38 Insulation (CAC)	10.5%	3.1%	100.00%	100.00%	75.00%	75.00%	7.86%	2.32%
VA Existing	1013	Ceiling R-19 to R-49 Insulation (CAC)	10.5%	3.1%	100.00%	100.00%	50.00%	50.00%	5.24%	1.55%
VA Existing	1014	Crawlspace insulation (CAC)	17.0%	4.5%	74.00%	74.00%	100.00%	100.00%	12.57%	3.35%
VA Existing	1015	Basement insulation R-13 (CAC)	17.8%	4.5%	74.00%	74.00%	65.00%	65.00%	8.57%	2.18%
VA Existing	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	0.8%	9.0%	74.00%	74.00%	75.00%	75.00%	0.46%	5.02%
VA Existing	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	41.4%	37.7%	12.86%	30.63%	75.00%	75.00%	4.00%	8.66%
VA Existing	1018	Cool Roof (CAC)	41.4%	37.7%	80.70%	80.70%	100.00%	100.00%	33.44%	30.41%
VA Existing	1019	Duct Insulation (CAC)	41.4%	37.7%	5.00%	5.00%	100.00%	100.00%	2.07%	1.88%
VA Existing	1020	Duct Testing and Sealing (CAC)	41.4%	37.7%	20.00%	65.00%	100.00%	100.00%	8.29%	24.50%
VA Existing	1021	Return Duct Modification (CAC)	41.4%	37.7%	5.00%	5.00%	50.00%	50.00%	1.04%	0.94%
VA Existing	1022	Programmable Thermostat (CAC)	41.4%	37.7%	28.97%	38.37%	100.00%	100.00%	12.01%	14.46%
VA Existing	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	41.4%	37.7%	74.00%	74.00%	100.00%	100.00%	30.66%	27.89%
VA Existing	1024	Self Install Weatherization (CAC)	41.4%	37.7%	55.22%	79.25%	100.00%	100.00%	22.88%	29.87%
VA Existing	1025	Door Weatherization (CAC)	41.4%	37.7%	55.22%	79.25%	100.00%	100.00%	22.88%	29.87%
VA Existing	1026	Ceiling Fans (CAC)	41.4%	37.7%	17.86%	50.93%	100.00%	100.00%	7.40%	19.20%
VA Existing	1027	Whole House Fans (CAC)	41.4%	37.7%	89.72%	96.92%	100.00%	100.00%	37.18%	36.53%
VA Existing	1028	Window Film (CAC)	41.4%	37.7%	100.00%	100.00%	100.00%	100.00%	41.44%	37.69%
VA Existing	1029	WINDOWS - Default With Sunscreen (CAC)	41.4%	37.7%	90.20%	90.20%	100.00%	100.00%	37.38%	34.00%
VA Existing	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	41.4%	37.7%	27.00%	46.00%	100.00%	100.00%	11.19%	17.34%
VA Existing	1100	Base Split-System Air Conditioner - Early Replacement (11 SEER)	7.3%	6.7%	100.00%	100.00%	100.00%	100.00%	7.31%	6.65%
VA Existing	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality Install - Early R	7.3%	6.7%	84.00%	89.00%	100.00%	100.00%	6.14%	5.92%
VA Existing	1102	Proper Refrigerant Charging and Air Flow (CAC early replacement)	7.3%	6.7%	84.00%	89.00%	100.00%	100.00%	6.14%	5.92%
VA Existing	1103	Proper Sizing and Quality Install (CAC early replacement)	7.3%	6.7%	84.00%	89.00%	100.00%	100.00%	6.14%	5.92%
VA Existing	1104	AC Maintenance and/or tune-up (CAC early replacement)	7.3%	6.7%	44.28%	31.14%	100.00%	100.00%	3.24%	2.07%
VA Existing	1105	AC Filter Changes (CAC early replacement)	7.3%	6.7%	42.35%	29.96%	100.00%	100.00%	3.10%	1.99%
VA Existing	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	1.5%	4.0%	100.00%	100.00%	75.00%	75.00%	1.12%	3.01%
VA Existing	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	1.5%	4.0%	100.00%	100.00%	50.00%	50.00%	0.75%	2.01%
VA Existing	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	3.2%	2.1%	100.00%	100.00%	75.00%	75.00%	2.42%	1.57%
VA Existing	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	3.2%	2.1%	100.00%	100.00%	50.00%	50.00%	1.62%	1.05%
VA Existing	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	1.9%	0.5%	100.00%	100.00%	75.00%	75.00%	1.39%	0.41%
VA Existing	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	1.9%	0.5%	100.00%	100.00%	50.00%	50.00%	0.93%	0.27%
VA Existing	1112	Crawlspace insulation (CAC early replacement)	3.0%	0.8%	74.00%	74.00%	100.00%	100.00%	2.21%	0.59%
VA Existing	1113	Basement insulation R-13 (CAC early replacement)	3.1%	0.8%	74.00%	74.00%	65.00%	65.00%	1.51%	0.39%
VA Existing	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	0.1%	1.6%	74.00%	74.00%	75.00%	75.00%	0.08%	0.89%
VA Existing	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	7.3%	6.7%	12.86%	30.63%	75.00%	75.00%	0.71%	1.53%

Residential Electric Measure Inputs			Applicability Factor (percent)		Incomplete Factor (percent)		Feasibility Factor (percent)		Applicable x Incomplete x Feasible	
Segment	Measure #	Measure Description	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily
VA Existing	1116	Cool Roof (CAC early replacement)	7.3%	6.7%	80.70%	80.70%	100.00%	100.00%	5.90%	5.37%
VA Existing	1117	Duct Insulation (CAC early replacement)	7.3%	6.7%	5.00%	5.00%	100.00%	100.00%	0.37%	0.33%
VA Existing	1118	Duct Testing and Sealing (CAC early replacement)	7.3%	6.7%	20.00%	65.00%	100.00%	100.00%	1.46%	4.32%
VA Existing	1119	Return Duct Modification (CAC early replacement)	7.3%	6.7%	5.00%	5.00%	50.00%	50.00%	0.18%	0.17%
VA Existing	1120	Programmable Thermostat (CAC early replacement)	7.3%	6.7%	28.97%	38.37%	100.00%	100.00%	2.12%	2.55%
VA Existing	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early replacement)	7.3%	6.7%	74.00%	74.00%	100.00%	100.00%	5.41%	4.92%
VA Existing	1122	Self Install Weatherization (CAC early replacement)	7.3%	6.7%	84.00%	84.00%	100.00%	100.00%	6.14%	5.59%
VA Existing	1123	Door Weatherization (CAC early replacement)	7.3%	6.7%	55.22%	79.25%	100.00%	100.00%	4.04%	5.27%
VA Existing	1124	Ceiling Fans (CAC early replacement)	7.3%	6.7%	17.86%	50.93%	100.00%	100.00%	1.31%	3.39%
VA Existing	1125	Whole House Fans (CAC early replacement)	7.3%	6.7%	89.72%	96.92%	100.00%	100.00%	6.56%	6.45%
VA Existing	1126	Window Film (CAC early replacement)	7.3%	6.7%	100.00%	100.00%	100.00%	100.00%	7.31%	6.65%
VA Existing	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	7.3%	6.7%	90.20%	90.20%	100.00%	100.00%	6.60%	6.00%
VA Existing	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early replacement)	7.3%	6.7%	27.00%	46.00%	100.00%	100.00%	1.97%	3.06%
VA Existing	1200	Base Heat Pump Cooling (13 SEER)	36.9%	41.5%	100.00%	100.00%	100.00%	100.00%	36.87%	41.54%
VA Existing	1201	Heat pump upgrade to (14.5-15.9 SEER, 8.2+ HSPF) (HP cooling)	36.9%	41.5%	68.00%	68.00%	100.00%	100.00%	25.07%	28.25%
VA Existing	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	36.9%	41.5%	68.00%	68.00%	100.00%	100.00%	25.07%	28.25%
VA Existing	1203	Ground Source Heat Pump with Desuperheater (HP cooling)	36.9%	41.5%	97.35%	100.00%	100.00%	100.00%	35.90%	41.54%
VA Existing	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	36.9%	41.5%	72.00%	72.00%	100.00%	100.00%	26.55%	29.91%
VA Existing	1205	Proper Sizing and Quality Install (HP cooling)	36.9%	41.5%	72.00%	72.00%	100.00%	100.00%	26.55%	29.91%
VA Existing	1206	Heat pump tune up	36.9%	41.5%	44.28%	31.14%	100.00%	100.00%	16.33%	12.94%
VA Existing	1207	Heat Pump Filter Replacement	36.9%	41.5%	42.35%	29.96%	100.00%	100.00%	15.61%	12.44%
VA Existing	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	7.5%	25.1%	100.00%	100.00%	75.00%	75.00%	5.64%	18.82%
VA Existing	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	7.5%	25.1%	100.00%	100.00%	50.00%	50.00%	3.76%	12.54%
VA Existing	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	16.3%	13.1%	100.00%	100.00%	75.00%	75.00%	12.22%	9.81%
VA Existing	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	16.3%	13.1%	100.00%	100.00%	50.00%	50.00%	8.15%	6.54%
VA Existing	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	9.3%	3.4%	100.00%	100.00%	75.00%	75.00%	7.00%	2.55%
VA Existing	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	9.3%	3.4%	100.00%	100.00%	50.00%	50.00%	4.66%	1.70%
VA Existing	1214	Crawlspace insulation (HP cooling)	15.1%	5.0%	74.00%	74.00%	100.00%	100.00%	11.20%	3.69%
VA Existing	1215	Basement insulation R-13 (HP cooling)	15.9%	5.0%	74.00%	74.00%	65.00%	65.00%	7.63%	2.40%
VA Existing	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	0.7%	10.0%	74.00%	74.00%	75.00%	75.00%	0.41%	5.53%
VA Existing	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	36.9%	41.5%	12.86%	30.63%	75.00%	75.00%	3.56%	9.54%
VA Existing	1218	Cool Roof (HP cooling)	36.9%	41.5%	80.70%	80.70%	100.00%	100.00%	29.76%	33.52%
VA Existing	1219	Duct Insulation (HP cooling)	36.9%	41.5%	5.00%	5.00%	100.00%	100.00%	1.84%	2.08%
VA Existing	1220	Duct Testing and Sealing (HP cooling)	36.9%	41.5%	20.00%	65.00%	100.00%	100.00%	7.37%	27.00%
VA Existing	1221	Programmable Thermostat (HP cooling)	36.9%	41.5%	28.97%	38.37%	100.00%	100.00%	10.68%	15.94%
VA Existing	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	36.9%	41.5%	74.00%	74.00%	100.00%	100.00%	27.29%	30.74%
VA Existing	1223	Self Install Weatherization (HP cooling)	36.9%	41.5%	55.22%	79.25%	100.00%	100.00%	20.36%	32.92%
VA Existing	1224	Door Weatherization (HP cooling)	36.9%	41.5%	55.22%	79.25%	100.00%	100.00%	20.36%	32.92%
VA Existing	1225	Ceiling Fans (HP cooling)	36.9%	41.5%	17.86%	50.93%	100.00%	100.00%	6.58%	21.16%
VA Existing	1226	Whole House Fans (HP cooling)	36.9%	41.5%	89.72%	96.92%	100.00%	100.00%	33.08%	40.26%
VA Existing	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	36.9%	41.5%	27.00%	46.00%	100.00%	100.00%	9.96%	19.11%
VA Existing	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	6.5%	7.3%	100.00%	100.00%	100.00%	100.00%	6.51%	7.33%
VA Existing	1301	Heat pump upgrade to (14.5-15.9 SEER, 8.2+ HSPF) (HP cooling Early Repl	6.5%	7.3%	68.00%	68.00%	100.00%	100.00%	4.42%	4.98%
VA Existing	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Early Replacem	6.5%	7.3%	68.00%	68.00%	100.00%	100.00%	4.42%	4.98%
VA Existing	1303	Ground Source Heat Pump with Desuperheater (HP cooling Early Replaceme	6.5%	7.3%	97.35%	100.00%	100.00%	100.00%	6.33%	7.33%
VA Existing	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Replacement)	6.5%	7.3%	72.00%	72.00%	100.00%	100.00%	4.69%	5.28%
VA Existing	1305	Proper Sizing and Quality Install (HP cooling Early Replacement)	6.5%	7.3%	72.00%	72.00%	100.00%	100.00%	4.69%	5.28%

Residential Electric Measure Inputs			Applicability Factor (percent)		Incomplete Factor (percent)		Feasibility Factor (percent)		Applicable x Incomplete x Feasible	
Segment	Measure #	Measure Description	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily
VA Existing	1306	Heat pump tune up	6.5%	7.3%	44.28%	31.14%	100.00%	100.00%	2.88%	2.28%
VA Existing	1307	Heat Pump Filter Replacement	6.5%	7.3%	42.35%	29.96%	100.00%	100.00%	2.76%	2.20%
VA Existing	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	1.3%	4.4%	100.00%	100.00%	75.00%	75.00%	1.00%	3.32%
VA Existing	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	1.3%	4.4%	100.00%	100.00%	50.00%	50.00%	0.66%	2.21%
VA Existing	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	2.9%	2.3%	100.00%	100.00%	75.00%	75.00%	2.16%	1.73%
VA Existing	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement)	2.9%	2.3%	100.00%	100.00%	50.00%	50.00%	1.44%	1.15%
VA Existing	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement)	1.6%	0.6%	100.00%	100.00%	75.00%	75.00%	1.23%	0.45%
VA Existing	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement)	1.6%	0.6%	100.00%	100.00%	50.00%	50.00%	0.82%	0.30%
VA Existing	1314	Crawlspace insulation (HP cooling Early Replacement)	2.7%	0.9%	74.00%	74.00%	100.00%	100.00%	1.97%	0.65%
VA Existing	1315	Basement insulation R-13 (HP cooling Early Replacement)	2.8%	0.9%	74.00%	74.00%	65.00%	65.00%	1.34%	0.42%
VA Existing	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacement)	0.1%	1.8%	74.00%	74.00%	75.00%	75.00%	0.07%	0.97%
VA Existing	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacement)	6.5%	7.3%	12.86%	30.63%	75.00%	75.00%	0.63%	1.68%
VA Existing	1318	Cool Roof (HP cooling Early Replacement)	6.5%	7.3%	80.70%	80.70%	100.00%	100.00%	5.25%	5.92%
VA Existing	1319	Duct Insulation (HP cooling Early Replacement)	6.5%	7.3%	5.00%	5.00%	100.00%	100.00%	0.33%	0.37%
VA Existing	1320	Duct Testing and Sealing (HP cooling Early Replacement)	6.5%	7.3%	20.00%	65.00%	100.00%	100.00%	1.30%	4.76%
VA Existing	1321	Programmable Thermostat (HP cooling Early Replacement)	6.5%	7.3%	28.97%	38.37%	100.00%	100.00%	1.89%	2.81%
VA Existing	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling Early Replacer	6.5%	7.3%	74.00%	74.00%	100.00%	100.00%	4.82%	5.42%
VA Existing	1323	Self Install Weatherization (HP cooling Early Replacement)	6.5%	7.3%	55.22%	79.25%	100.00%	100.00%	3.59%	5.81%
VA Existing	1324	Door Weatherization (HP cooling Early Replacement)	6.5%	7.3%	55.22%	79.25%	100.00%	100.00%	3.59%	5.81%
VA Existing	1325	Ceiling Fans (HP cooling early replacement)	6.5%	7.3%	17.86%	50.93%	100.00%	100.00%	1.16%	3.73%
VA Existing	1326	Whole House Fans (HP cooling early replacement)	6.5%	7.3%	89.72%	96.92%	100.00%	100.00%	5.84%	7.10%
VA Existing	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling Early Replace	6.5%	7.3%	27.00%	46.00%	100.00%	100.00%	1.76%	3.37%
VA Existing	1400	Base Room Air Conditioner - EER 10.6	4.7%	1.6%	100.00%	100.00%	100.00%	100.00%	4.69%	1.64%
VA Existing	1401	Energy Star Room Air Conditioner - EER 10.8	4.7%	1.6%	90.00%	95.00%	100.00%	100.00%	4.22%	1.56%
VA Existing	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	4.7%	1.6%	90.00%	95.00%	100.00%	100.00%	4.22%	1.56%
VA Existing	1403	Room AC Filter Replacement	4.7%	1.6%	42.35%	29.96%	100.00%	100.00%	1.98%	0.49%
VA Existing	1404	Ceiling R-0 to R-38 Insulation (RAC)	1.0%	1.0%	100.00%	100.00%	75.00%	75.00%	0.72%	0.74%
VA Existing	1405	Ceiling R-0 to R-49 Insulation (RAC)	1.0%	1.0%	100.00%	100.00%	50.00%	50.00%	0.48%	0.50%
VA Existing	1406	Ceiling R-11 to R-38 Insulaton (RAC)	2.1%	0.5%	100.00%	100.00%	75.00%	75.00%	1.55%	0.39%
VA Existing	1407	Ceiling R-11 to R-49 Insulation (RAC)	2.1%	0.5%	100.00%	100.00%	50.00%	50.00%	1.04%	0.26%
VA Existing	1408	Ceiling R-19 to R-38 Insulation (RAC)	1.2%	0.1%	100.00%	100.00%	75.00%	75.00%	0.89%	0.10%
VA Existing	1409	Ceiling R-19 to R-49 Insulation (RAC)	1.2%	0.1%	100.00%	100.00%	50.00%	50.00%	0.59%	0.07%
VA Existing	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	4.7%	1.6%	13.01%	30.62%	75.00%	75.00%	0.46%	0.38%
VA Existing	1411	Cool Roof (RAC)	4.7%	1.6%	80.70%	80.70%	100.00%	100.00%	3.78%	1.32%
VA Existing	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	4.7%	1.6%	74.00%	74.00%	100.00%	100.00%	3.47%	1.21%
VA Existing	1413	Self Install Weatherization (RAC)	4.7%	1.6%	55.22%	79.25%	100.00%	100.00%	2.59%	1.30%
VA Existing	1414	Door Weatherization (RAC)	4.7%	1.6%	55.22%	79.25%	100.00%	100.00%	2.59%	1.30%
VA Existing	1415	Ceiling Fans (RAC)	4.7%	1.6%	17.86%	50.93%	100.00%	100.00%	0.84%	0.84%
VA Existing	1416	Whole House Fans (RAC)	4.7%	1.6%	89.72%	96.92%	100.00%	100.00%	4.20%	1.59%
VA Existing	1417	Window Film (RAC)	4.7%	1.6%	100.00%	100.00%	100.00%	100.00%	4.69%	1.64%
VA Existing	1418	WINDOWS - Default With Sunscreen (RAC)	4.7%	1.6%	90.20%	90.20%	100.00%	100.00%	4.23%	1.48%
VA Existing	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	4.7%	1.6%	27.00%	46.00%	100.00%	100.00%	1.27%	0.75%
VA Existing	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	0.8%	0.3%	100.00%	100.00%	100.00%	100.00%	0.83%	0.29%
VA Existing	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early replacement)	0.8%	0.3%	100.00%	100.00%	100.00%	100.00%	0.83%	0.29%
VA Existing	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	29.4%	13.7%	100.00%	100.00%	100.00%	100.00%	29.40%	13.70%
VA Existing	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/day)	29.4%	13.7%	98.00%	100.00%	100.00%	100.00%	28.81%	13.70%
VA Existing	1700	Base Furnace Fan - Furnace & CAC	89.9%	99.5%	100.00%	100.00%	100.00%	100.00%	89.92%	99.51%

Residential Electric Measure Inputs			Applicability Factor (percent)		Incomplete Factor (percent)		Feasibility Factor (percent)		Applicable x Incomplete x Feasible	
Segment	Measure #	Measure Description	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily
VA Existing	1701	ECM Furnace Fan (variable speed motor) - Cooling	89.9%	99.5%	80.00%	80.00%	100.00%	100.00%	71.94%	79.61%
VA Existing	2000	Base Heat Pump Space Heating (7.7 HSPF)	31.2%	48.0%	100.00%	100.00%	100.00%	100.00%	31.24%	48.04%
VA Existing	2001	Heat pump upgrade to 14.5-15.9 SEER/8.2+ HSPF (HP heating)	31.2%	48.0%	68.00%	68.00%	100.00%	100.00%	21.24%	32.67%
VA Existing	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	31.2%	48.0%	68.00%	68.00%	100.00%	100.00%	21.24%	32.67%
VA Existing	2003	Ground Source Heat Pump with Desuperheater (HP heating)	31.2%	48.0%	97.35%	100.00%	100.00%	100.00%	30.41%	48.04%
VA Existing	2004	Heat pump tune up	31.2%	48.0%	44.28%	31.14%	100.00%	100.00%	13.83%	14.96%
VA Existing	2005	Heat Pump Filter Replacement	31.2%	48.0%	42.35%	29.96%	100.00%	100.00%	13.23%	14.39%
VA Existing	2006	Ceiling R-0 to R-38 Insulation (HP heating)	6.4%	29.0%	100.00%	100.00%	75.00%	75.00%	4.78%	21.76%
VA Existing	2007	Ceiling R-0 to R-49 Insulation (HP heating)	6.4%	29.0%	100.00%	100.00%	50.00%	50.00%	3.19%	14.51%
VA Existing	2008	Ceiling R-11 to R-38 Insulaton (HP heating)	13.8%	15.1%	100.00%	100.00%	75.00%	75.00%	10.36%	11.35%
VA Existing	2009	Ceiling R-11 to R-49 Insulation (HP heating)	13.8%	15.1%	100.00%	100.00%	50.00%	50.00%	6.90%	7.57%
VA Existing	2010	Ceiling R-19 to R-38 Insulation (HP heating)	7.9%	3.9%	100.00%	100.00%	75.00%	75.00%	5.93%	2.95%
VA Existing	2011	Ceiling R-19 to R-49 Insulation (HP heating)	7.9%	3.9%	100.00%	100.00%	50.00%	50.00%	3.95%	1.97%
VA Existing	2012	Crawlspace insulation (HP heating)	12.8%	5.8%	74.00%	74.00%	100.00%	100.00%	9.47%	4.26%
VA Existing	2013	Basement insulation R-13 (HP heating)	13.4%	5.8%	74.00%	74.00%	65.00%	65.00%	6.45%	2.77%
VA Existing	2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	0.6%	11.5%	74.00%	74.00%	75.00%	75.00%	0.35%	6.39%
VA Existing	2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	31.2%	48.0%	12.86%	30.63%	75.00%	75.00%	3.01%	11.04%
VA Existing	2016	Duct Insulation (HP heating)	31.2%	48.0%	5.00%	5.00%	100.00%	100.00%	1.56%	2.40%
VA Existing	2017	Duct Testing and Sealing (HP heating)	31.2%	48.0%	20.00%	65.00%	100.00%	100.00%	6.25%	31.23%
VA Existing	2018	Heat Recovery Ventilators (HP heating)	31.2%	48.0%	95.00%	95.00%	75.00%	75.00%	22.26%	34.23%
VA Existing	2019	Programmable Thermostat (HP heating)	31.2%	48.0%	28.97%	38.37%	100.00%	100.00%	9.05%	18.43%
VA Existing	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	31.2%	48.0%	74.00%	74.00%	100.00%	100.00%	23.12%	35.55%
VA Existing	2021	Self Install Weatherization (HP heating)	31.2%	48.0%	55.22%	79.25%	100.00%	100.00%	17.25%	38.07%
VA Existing	2022	Door Weatherization (HP heating)	31.2%	48.0%	55.22%	79.25%	100.00%	100.00%	17.25%	38.07%
VA Existing	2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	31.2%	48.0%	27.00%	46.00%	100.00%	100.00%	8.43%	22.10%
VA Existing	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSPF)	5.5%	8.5%	100.00%	100.00%	100.00%	100.00%	5.51%	8.48%
VA Existing	2101	Heat pump upgrade to 14.5-15.9 SEER/8.2+ HSPF (HP heating early replace	5.5%	8.5%	68.00%	68.00%	100.00%	100.00%	3.75%	5.77%
VA Existing	2102	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early replacement	5.5%	8.5%	68.00%	68.00%	100.00%	100.00%	3.75%	5.77%
VA Existing	2103	Ground Source Heat Pump with Desuperheater (HP heating early replaceme	5.5%	8.5%	97.35%	100.00%	100.00%	100.00%	5.37%	8.48%
VA Existing	2104	Heat pump tune up (heating)	5.5%	8.5%	44.28%	31.14%	100.00%	100.00%	2.44%	2.64%
VA Existing	2105	Heat Pump Filter Replacement (heating)	5.5%	8.5%	42.35%	29.96%	100.00%	100.00%	2.33%	2.54%
VA Existing	2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	1.1%	5.1%	100.00%	100.00%	75.00%	75.00%	0.84%	3.84%
VA Existing	2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	1.1%	5.1%	100.00%	100.00%	50.00%	50.00%	0.56%	2.56%
VA Existing	2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	2.4%	2.7%	100.00%	100.00%	75.00%	75.00%	1.83%	2.00%
VA Existing	2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	2.4%	2.7%	100.00%	100.00%	50.00%	50.00%	1.22%	1.34%
VA Existing	2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	1.4%	0.7%	100.00%	100.00%	75.00%	75.00%	1.05%	0.52%
VA Existing	2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	1.4%	0.7%	100.00%	100.00%	50.00%	50.00%	0.70%	0.35%
VA Existing	2112	Crawlspace insulation (HP heating early replacement)	2.3%	1.0%	74.00%	74.00%	100.00%	100.00%	1.67%	0.75%
VA Existing	2113	Basement insulation R-13 (HP heating early replacement)	2.4%	1.0%	74.00%	74.00%	65.00%	65.00%	1.14%	0.49%
VA Existing	2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replacement)	0.1%	2.0%	74.00%	74.00%	75.00%	75.00%	0.06%	1.13%
VA Existing	2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacement)	5.5%	8.5%	12.86%	30.63%	75.00%	75.00%	0.53%	1.95%
VA Existing	2116	Duct Insulation (HP heating early replacement)	5.5%	8.5%	5.00%	5.00%	100.00%	100.00%	0.28%	0.42%
VA Existing	2117	Duct Testing and Sealing (HP heating early replacement)	5.5%	8.5%	20.00%	65.00%	100.00%	100.00%	1.10%	5.51%
VA Existing	2118	Heat Recovery Ventilators (HP heating early replacement)	5.5%	8.5%	95.00%	95.00%	75.00%	75.00%	3.93%	6.04%
VA Existing	2119	Programmable Thermostat (HP heating early replacement)	5.5%	8.5%	28.97%	38.37%	100.00%	100.00%	1.60%	3.25%
VA Existing	2120	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating early replacem	5.5%	8.5%	74.00%	74.00%	100.00%	100.00%	4.08%	6.27%
VA Existing	2121	Self Install Weatherization (HP heating early replacement)	5.5%	8.5%	55.22%	79.25%	100.00%	100.00%	3.04%	6.72%

Residential Electric Measure Inputs			Applicability Factor (percent)		Incomplete Factor (percent)		Feasibility Factor (percent)		Applicable x Incomplete x Feasible	
Segment	Measure #	Measure Description	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily
VA Existing	2122	Door Weatherization (HP heating early replacement)	5.5%	8.5%	55.22%	79.25%	100.00%	100.00%	3.04%	6.72%
VA Existing	2123	WINDOWS - Double-Glazed Clear to Energy Star (HP heating early replacer	5.5%	8.5%	27.00%	46.00%	100.00%	100.00%	1.49%	3.90%
VA Existing	2200	Base Resistance Space Heating (Primary)	13.0%	29.8%	100.00%	100.00%	100.00%	100.00%	13.03%	29.85%
VA Existing	2201	Air Source Heat Pump (resistance heating)	13.0%	29.8%	100.00%	100.00%	100.00%	100.00%	13.03%	29.85%
VA Existing	2202	Ground Source Heat Pump with Desuperheater (resistance heating)	13.0%	29.8%	100.00%	100.00%	100.00%	100.00%	13.03%	29.85%
VA Existing	2203	Ceiling R-0 to R-38 Insulation (resistance heating)	2.7%	18.0%	100.00%	100.00%	75.00%	75.00%	1.99%	13.52%
VA Existing	2204	Ceiling R-0 to R-49 Insulation (resistance heating)	2.7%	18.0%	100.00%	100.00%	50.00%	50.00%	1.33%	9.01%
VA Existing	2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	5.8%	9.4%	100.00%	100.00%	75.00%	75.00%	4.32%	7.05%
VA Existing	2206	Ceiling R-11 to R-49 Insulation (resistance heating)	5.8%	9.4%	100.00%	100.00%	50.00%	50.00%	2.88%	4.70%
VA Existing	2207	Ceiling R-19 to R-38 Insulation (resistance heating)	3.3%	2.4%	100.00%	100.00%	75.00%	75.00%	2.47%	1.84%
VA Existing	2208	Ceiling R-19 to R-49 Insulation (resistance heating)	3.3%	2.4%	100.00%	100.00%	50.00%	50.00%	1.65%	1.22%
VA Existing	2209	Crawlspace insulation (resistance heating)	5.3%	3.6%	74.00%	74.00%	100.00%	100.00%	3.95%	2.65%
VA Existing	2210	Basement insulation R-13 (resistance heating)	5.6%	3.6%	74.00%	74.00%	100.00%	100.00%	4.15%	2.65%
VA Existing	2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	0.3%	7.2%	74.00%	74.00%	75.00%	75.00%	0.14%	3.98%
VA Existing	2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	13.0%	29.8%	12.86%	30.63%	75.00%	75.00%	1.26%	6.86%
VA Existing	2213	Heat Recovery Ventilators (resistance heating)	13.0%	29.8%	95.00%	95.00%	75.00%	75.00%	9.28%	21.27%
VA Existing	2214	Programmable Thermostat (resistance heating)	13.0%	29.8%	28.97%	38.37%	100.00%	100.00%	3.77%	11.45%
VA Existing	2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance heating)	13.0%	29.8%	74.00%	74.00%	100.00%	100.00%	9.64%	22.09%
VA Existing	2216	Self Install Weatherization	13.0%	29.8%	55.22%	79.25%	100.00%	100.00%	7.19%	23.65%
VA Existing	2217	Door Weatherization (resistance heating)	13.0%	29.8%	55.22%	79.25%	100.00%	100.00%	7.19%	23.65%
VA Existing	2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance heating)	13.0%	29.8%	27.00%	46.00%	100.00%	100.00%	3.52%	13.73%
VA Existing	3000	Base Halogen Lighting - 0.5 hrs/day 2014-2015	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3001	CFL (base Halogen 0.5 hrs/day) 2014-2015	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3002	LEDs (base Halogen 0.5 hrs/day) 2014-2015	100.0%	100.0%	100.00%	100.00%	80.00%	80.00%	80.00%	80.00%
VA Existing	3010	Base Halogen Lighting - 0.5 hrs/day 2016-2017	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3011	CFL (base Halogen 0.5 hrs/day) 2016-2017	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3012	LEDs (base Halogen 0.5 hrs/day) 2016-2017	100.0%	100.0%	100.00%	100.00%	85.00%	85.00%	85.00%	85.00%
VA Existing	3020	Base Halogen Lighting - 0.5 hrs/day 2018-2019	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3021	CFL (base Halogen 0.5 hrs/day) 2018-2019	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3022	LEDs (base Halogen 0.5 hrs/day) 2018-2019	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3030	Base Halogen Lighting - 0.5 hrs/day 2020	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3032	LEDs (base Halogen 0.5 hrs/day) 2020	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3100	Base Halogen Lighting - 2.5 hrs/day 2014-2015	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3101	CFL (base Halogen 2.5 hrs/day) 2014-2015	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3102	LEDs (base Halogen 2.5 hrs/day) 2014-2015	100.0%	100.0%	100.00%	100.00%	80.00%	80.00%	80.00%	80.00%
VA Existing	3110	Base Halogen Lighting - 2.5 hrs/day 2016-2017	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3111	CFL (base Halogen 2.5 hrs/day) 2016-2017	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3112	LEDs (base Halogen 2.5 hrs/day) 2016-2017	100.0%	100.0%	100.00%	100.00%	85.00%	85.00%	85.00%	85.00%
VA Existing	3120	Base Halogen Lighting - 2.5 hrs/day 2018-2019	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3121	CFL (base Halogen 2.5 hrs/day) 2018-2019	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3122	LEDs (base Halogen 2.5 hrs/day) 2018-2019	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3130	Base Halogen Lighting - 2.5 hrs/day 2020	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3132	LEDs (base Halogen 2.5 hrs/day) 2020	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3200	Base Halogen Lighting - 6 hrs/day 2014-2015	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3201	CFL (base Halogen 6 hrs/day) 2014-2015	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3202	LEDs (base Halogen 6 hrs/day) 2014-2015	100.0%	100.0%	100.00%	100.00%	80.00%	80.00%	80.00%	80.00%
VA Existing	3210	Base Halogen Lighting - 6 hrs/day 2016-2017	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Residential Electric Measure Inputs			Applicability Factor (percent)		Incomplete Factor (percent)		Feasibility Factor (percent)		Applicable x Incomplete x Feasible	
Segment	Measure #	Measure Description	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily
VA Existing	3211	CFL (base Halogen 6 hrs/day) 2016-2017	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3212	LEDs (base Halogen 6 hrs/day) 2016-2017	100.0%	100.0%	100.00%	100.00%	85.00%	85.00%	85.00%	85.00%
VA Existing	3220	Base Halogen Lighting - 6 hrs/day 2018-2019	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3221	CFL (base Halogen 6 hrs/day) 2018-2019	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3222	LEDs (base Halogen 6 hrs/day) 2018-2019	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3230	Base Halogen Lighting - 6 hrs/day 2020	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3232	LEDs (base Halogen 6 hrs/day) 2020	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90.00%	90.00%
VA Existing	3300	Base CFL Lighting - 0.5 hrs/day 2014-2015	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3301	LEDs (base CFL 0.5 hrs/day) 2014-2015	100.0%	100.0%	100.00%	100.00%	80.00%	80.00%	80.00%	80.00%
VA Existing	3310	Base CFL Lighting - 0.5 hrs/day 2016-2017	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3311	LEDs (base CFL 0.5 hrs/day) 2016-2017	100.0%	100.0%	100.00%	100.00%	85.00%	85.00%	85%	85%
VA Existing	3320	Base CFL Lighting - 0.5 hrs/day 2018-2019	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3321	LEDs (base CFL 0.5 hrs/day) 2018-2019	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90%	90%
VA Existing	3330	Base CFL Lighting - 0.5 hrs/day 2020	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3331	LEDs (base CFL 0.5 hrs/day) 2020	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90%	90%
VA Existing	3400	Base CFL Lighting - 2.5 hrs/day 2014-2015	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3401	LEDs (base CFL 2.5 hrs/day) 2014-2015	100.0%	100.0%	100.00%	100.00%	80.00%	80.00%	80%	80%
VA Existing	3410	Base CFL Lighting - 2.5 hrs/day 2016-2017	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3411	LEDs (base CFL 2.5 hrs/day) 2016-2017	100.0%	100.0%	100.00%	100.00%	85.00%	85.00%	85%	85%
VA Existing	3420	Base CFL Lighting - 2.5 hrs/day 2018-2019	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3421	LEDs (base CFL 2.5 hrs/day) 2018-2019	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90%	90%
VA Existing	3430	Base CFL Lighting - 2.5 hrs/day 2020	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3431	LEDs (base CFL 2.5 hrs/day) 2020	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90%	90%
VA Existing	3500	Base CFL Lighting - 6 hrs/day 2014-2015	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3501	LEDs (base CFL 6 hrs/day) 2014-2015	100.0%	100.0%	100.00%	100.00%	80.00%	80.00%	80%	80%
VA Existing	3510	Base CFL Lighting - 6 hrs/day 2016-2017	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3511	LEDs (base CFL 6 hrs/day) 2016-2017	100.0%	100.0%	100.00%	100.00%	85.00%	85.00%	85%	85%
VA Existing	3520	Base CFL Lighting - 6 hrs/day 2018-2019	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3521	LEDs (base CFL 6 hrs/day) 2018-2019	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90%	90%
VA Existing	3530	Base CFL Lighting - 6 hrs/day 2020	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3531	LEDs (base CFL 6 hrs/day) 2020	100.0%	100.0%	100.00%	100.00%	90.00%	90.00%	90%	90%
VA Existing	3600	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2014-2015	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3601	CFL (base Halogen (Specialty) 0.5 hrs/day 2014-2015	100.0%	100.0%	75.00%	75.00%	90.00%	90.00%	67.50%	67.50%
VA Existing	3602	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2014-2015	100.0%	100.0%	100.00%	100.00%	50.00%	50.00%	50%	50%
VA Existing	3610	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2016-2017	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100%	100%
VA Existing	3611	CFL (base Halogen (Specialty) 0.5 hrs/day) 2016-2017	100.0%	100.0%	75.00%	75.00%	90.00%	90.00%	67.50%	67.50%
VA Existing	3612	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2016-2017	100.0%	100.0%	100.00%	100.00%	60.00%	60.00%	60%	60%
VA Existing	3620	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2018-2019	100.0%	100.0%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
VA Existing	3621	CFL (base Halogen (Specialty) 0.5 hrs/day) 2018-2019	100.0%	100.0%	75.00%	75.00%	90.00%	90.00%	68%	68%

Residential Electric Measure Inputs			Energy Savings (percent)		Standards Adjustment Factor (percent)		Technology Saturation (units/home)	
Segment	Measure #	Measure Description	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily
VA Existing	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1004	Proper Refrigerant Charging and Air Flow (CAC)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1005	Proper Sizing and Quality Install (CAC)	100.00%	100.00%	100.00%	100.00%	1.2	1.1
VA Existing	1006	AC Maintenance and/or tune-up (CAC)	100.00%	100.00%	100.00%	100.00%	1.2	1.1
VA Existing	1007	AC Filter Changes (CAC)	100.00%	100.00%	100.00%	100.00%	1.2	1.1
VA Existing	1008	Ceiling R-0 to R-38 Insulation (CAC)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1009	Ceiling R-0 to R-49 Insulation (CAC)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1010	Ceiling R-11 to R-38 Insulaton (CAC)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1011	Ceiling R-11 to R-49 Insulation (CAC)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1012	Ceiling R-19 to R-38 Insulation (CAC)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1013	Ceiling R-19 to R-49 Insulation (CAC)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1014	Crawlspace insulation (CAC)	100.00%	100.00%	100.00%	100.00%	482.7	419.3
VA Existing	1015	Basement insulation R-13 (CAC)	100.00%	100.00%	100.00%	100.00%	1,287.3	1,118.0
VA Existing	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	100.00%	100.00%	100.00%	100.00%	1,897.2	1,043.9
VA Existing	1018	Cool Roof (CAC)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1019	Duct Insulation (CAC)	100.00%	100.00%	100.00%	100.00%	78.8	86.8
VA Existing	1020	Duct Testing and Sealing (CAC)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	1021	Return Duct Modification (CAC)	100.00%	100.00%	100.00%	100.00%	1.2	1.1
VA Existing	1022	Programmable Thermostat (CAC)	100.00%	100.00%	100.00%	100.00%	1.2	1.1
VA Existing	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	1024	Self Install Weatherization (CAC)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	1025	Door Weatherization (CAC)	100.00%	100.00%	100.00%	100.00%	2.0	1.5
VA Existing	1026	Ceiling Fans (CAC)	100.00%	100.00%	100.00%	100.00%	3.9	2.1
VA Existing	1027	Whole House Fans (CAC)	100.00%	100.00%	100.00%	100.00%	1.3	1.0
VA Existing	1028	Window Film (CAC)	100.00%	100.00%	100.00%	100.00%	388.6	213.8
VA Existing	1029	WINDOWS - Default With Sunscreen (CAC)	100.00%	100.00%	100.00%	100.00%	388.6	213.8
VA Existing	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	100.00%	100.00%	100.00%	100.00%	388.6	213.8
VA Existing	1100	Base Split-System Air Conditioner - Early Replacement (11 SEER)	100.00%	100.00%	100.00%	100.00%	1.3	1.0
VA Existing	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality Install - Early R	100.00%	100.00%	100.00%	100.00%	1.3	1.0
VA Existing	1102	Proper Refrigerant Charging and Air Flow (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1103	Proper Sizing and Quality Install (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1.2	1.1
VA Existing	1104	AC Maintenance and/or tune-up (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1.2	1.1
VA Existing	1105	AC Filter Changes (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1.2	1.1
VA Existing	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1112	Crawlspace insulation (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	482.7	419.3
VA Existing	1113	Basement insulation R-13 (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1,287.3	1,118.0
VA Existing	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1,897.2	1,043.9
VA Existing	1116	Cool Roof (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1117	Duct Insulation (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	78.8	86.8
VA Existing	1118	Duct Testing and Sealing (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1.0	0.5

Residential Electric Measure Inputs			Energy Savings (percent)		Standards Adjustment Factor (percent)		Technology Saturation (units/home)	
Segment	Measure #	Measure Description	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily
VA Existing	1119	Return Duct Modification (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1.2	1.1
VA Existing	1120	Programmable Thermostat (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1.2	1.1
VA Existing	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	1122	Self Install Weatherization (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	1123	Door Weatherization (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	2.0	1.5
VA Existing	1124	Ceiling Fans (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	3.9	2.1
VA Existing	1125	Whole House Fans (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	1.3	1.0
VA Existing	1126	Window Film (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	388.6	213.8
VA Existing	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	388.6	213.8
VA Existing	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early replacement)	100.00%	100.00%	100.00%	100.00%	388.6	213.8
VA Existing	1200	Base Heat Pump Cooling (13 SEER)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1201	Heat pump upgrade to (14.5-15.9 SEER, 8.2+ HSPF) (HP cooling)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1203	Ground Source Heat Pump with Desuperheater (HP cooling)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1205	Proper Sizing and Quality Install (HP cooling)	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	1206	Heat pump tune up	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	1207	Heat Pump Filter Replacement	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1214	Crawlspace insulation (HP cooling)	100.00%	100.00%	100.00%	100.00%	482.7	419.3
VA Existing	1215	Basement insulation R-13 (HP cooling)	100.00%	100.00%	100.00%	100.00%	1,287.3	1,118.0
VA Existing	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	100.00%	100.00%	100.00%	100.00%	1,897.2	1,043.9
VA Existing	1218	Cool Roof (HP cooling)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1219	Duct Insulation (HP cooling)	100.00%	100.00%	100.00%	100.00%	78.8	86.8
VA Existing	1220	Duct Testing and Sealing (HP cooling)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	1221	Programmable Thermostat (HP cooling)	100.00%	100.00%	100.00%	100.00%	1.0	1.0
VA Existing	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	1223	Self Install Weatherization (HP cooling)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	1224	Door Weatherization (HP cooling)	100.00%	100.00%	100.00%	100.00%	2.0	1.5
VA Existing	1225	Ceiling Fans (HP cooling)	100.00%	100.00%	100.00%	100.00%	3.9	2.1
VA Existing	1226	Whole House Fans (HP cooling)	100.00%	100.00%	100.00%	100.00%	1.3	1.0
VA Existing	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	100.00%	100.00%	100.00%	100.00%	388.6	213.8
VA Existing	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1301	Heat pump upgrade to (14.5-15.9 SEER, 8.2+ HSPF) (HP cooling Early Repla	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Early Replaceme	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1303	Ground Source Heat Pump with Desuperheater (HP cooling Early Replaceme	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	1305	Proper Sizing and Quality Install (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	1306	Heat pump tune up	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	1307	Heat Pump Filter Replacement	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0

Residential Electric Measure Inputs			Energy Savings (percent)		Standards Adjustment Factor (percent)		Technology Saturation (units/home)	
Segment	Measure #	Measure Description	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily
VA Existing	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1314	Crawlspace insulation (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	482.7	419.3
VA Existing	1315	Basement insulation R-13 (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1,287.3	1,118.0
VA Existing	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1,897.2	1,043.9
VA Existing	1318	Cool Roof (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	1319	Duct Insulation (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	78.8	86.8
VA Existing	1320	Duct Testing and Sealing (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	1321	Programmable Thermostat (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling Early Replacem	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	1323	Self Install Weatherization (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	1324	Door Weatherization (HP cooling Early Replacement)	100.00%	100.00%	100.00%	100.00%	2.0	1.5
VA Existing	1325	Ceiling Fans (HP cooling early replacement)	100.00%	100.00%	100.00%	100.00%	3.9	2.1
VA Existing	1326	Whole House Fans (HP cooling early replacement)	100.00%	100.00%	100.00%	100.00%	1.3	1.0
VA Existing	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling Early Replacer	100.00%	100.00%	100.00%	100.00%	388.6	213.8
VA Existing	1400	Base Room Air Conditioner - EER 10.6	90.50%	90.50%	90.50%	90.50%	1.2	1.1
VA Existing	1401	Energy Star Room Air Conditioner - EER 10.8	90.50%	90.50%	90.50%	90.50%	1.2	1.1
VA Existing	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	90.50%	90.50%	90.50%	90.50%	1.2	1.1
VA Existing	1403	Room AC Filter Replacement	90.50%	90.50%	90.50%	90.50%	1.2	1.1
VA Existing	1404	Ceiling R-0 to R-38 Insulation (RAC)	90.50%	90.50%	90.50%	90.50%	1,441.9	1,085.0
VA Existing	1405	Ceiling R-0 to R-49 Insulation (RAC)	90.50%	90.50%	90.50%	90.50%	1,441.9	1,085.0
VA Existing	1406	Ceiling R-11 to R-38 Insulaton (RAC)	90.50%	90.50%	90.50%	90.50%	1,441.9	1,085.0
VA Existing	1407	Ceiling R-11 to R-49 Insulation (RAC)	90.50%	90.50%	90.50%	90.50%	1,441.9	1,085.0
VA Existing	1408	Ceiling R-19 to R-38 Insulation (RAC)	90.50%	90.50%	90.50%	90.50%	1,441.9	1,085.0
VA Existing	1409	Ceiling R-19 to R-49 Insulation (RAC)	90.50%	90.50%	90.50%	90.50%	1,441.9	1,085.0
VA Existing	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	90.50%	90.50%	90.50%	90.50%	1,897.2	1,043.9
VA Existing	1411	Cool Roof (RAC)	90.50%	90.50%	90.50%	90.50%	1,441.9	1,085.0
VA Existing	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	90.50%	90.50%	90.50%	90.50%	1.0	0.5
VA Existing	1413	Self Install Weatherization (RAC)	90.50%	90.50%	90.50%	90.50%	1.0	0.5
VA Existing	1414	Door Weatherization (RAC)	90.50%	90.50%	90.50%	90.50%	2.0	1.5
VA Existing	1415	Ceiling Fans (RAC)	90.50%	90.50%	90.50%	90.50%	3.9	2.1
VA Existing	1416	Whole House Fans (RAC)	90.50%	90.50%	90.50%	90.50%	1.3	1.0
VA Existing	1417	Window Film (RAC)	90.50%	90.50%	90.50%	90.50%	388.6	213.8
VA Existing	1418	WINDOWS - Default With Sunscreen (RAC)	90.50%	90.50%	90.50%	90.50%	388.6	213.8
VA Existing	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	90.50%	90.50%	90.50%	90.50%	388.6	213.8
VA Existing	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	100.00%	100.00%	100.00%	100.00%	1.2	1.1
VA Existing	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early replacement)	100.00%	100.00%	100.00%	100.00%	1.2	1.1
VA Existing	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	86.00%	86.00%	86.00%	86.00%	1.1	1.2
VA Existing	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/day)	86.00%	86.00%	86.00%	86.00%	1.1	1.2
VA Existing	1700	Base Furnace Fan - Furnace & CAC	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	1701	ECM Furnace Fan (variable speed motor) - Cooling	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	2000	Base Heat Pump Space Heating (7.7 HSPF)	100.00%	100.00%	100.00%	100.00%	1.0	1.0
VA Existing	2001	Heat pump upgrade to 14.5-15.9 SEER/8.2+ HSPF (HP heating)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	2003	Ground Source Heat Pump with Desuperheater (HP heating)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	2004	Heat pump tune up	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	2005	Heat Pump Filter Replacement	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	2006	Ceiling R-0 to R-38 Insulation (HP heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2007	Ceiling R-0 to R-49 Insulation (HP heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0

Residential Electric Measure Inputs			Energy Savings (percent)		Standards Adjustment Factor (percent)		Technology Saturation (units/home)	
Segment	Measure #	Measure Description	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily
VA Existing	2008	Ceiling R-11 to R-38 Insulaton (HP heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2009	Ceiling R-11 to R-49 Insulation (HP heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2010	Ceiling R-19 to R-38 Insulation (HP heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2011	Ceiling R-19 to R-49 Insulation (HP heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2012	Crawlspace insulation (HP heating)	100.00%	100.00%	100.00%	100.00%	482.7	419.3
VA Existing	2013	Basement insulation R-13 (HP heating)	100.00%	100.00%	100.00%	100.00%	1,287.3	1,118.0
VA Existing	2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	100.00%	100.00%	100.00%	100.00%	1,897.2	1,043.9
VA Existing	2016	Duct Insulation (HP heating)	100.00%	100.00%	100.00%	100.00%	78.8	86.8
VA Existing	2017	Duct Testing and Sealing (HP heating)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	2018	Heat Recovery Ventilators (HP heating)	100.00%	100.00%	100.00%	100.00%	1.0	1.0
VA Existing	2019	Programmable Thermostat (HP heating)	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	2021	Self Install Weatherization (HP heating)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	2022	Door Weatherization (HP heating)	100.00%	100.00%	100.00%	100.00%	2.0	1.5
VA Existing	2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	100.00%	100.00%	100.00%	100.00%	388.6	213.8
VA Existing	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSPF)	100.00%	100.00%	100.00%	100.00%	1.0	1.0
VA Existing	2101	Heat pump upgrade to 14.5-15.9 SEER/8.2+ HSPF (HP heating early replace	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	2102	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	2103	Ground Source Heat Pump with Desuperheater (HP heating early replacemer	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	2104	Heat pump tune up (heating)	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	2105	Heat Pump Filter Replacement (heating)	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2112	Crawlspace insulation (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	482.7	419.3
VA Existing	2113	Basement insulation R-13 (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1,287.3	1,118.0
VA Existing	2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1,897.2	1,043.9
VA Existing	2116	Duct Insulation (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	78.8	86.8
VA Existing	2117	Duct Testing and Sealing (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	2118	Heat Recovery Ventilators (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1.0	1.0
VA Existing	2119	Programmable Thermostat (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1.4	1.3
VA Existing	2120	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating early replaceme	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	2121	Self Install Weatherization (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	2122	Door Weatherization (HP heating early replacement)	100.00%	100.00%	100.00%	100.00%	2.0	1.5
VA Existing	2123	WINDOWS - Double-Glazed Clear to Energy Star (HP heating early replacem	100.00%	100.00%	100.00%	100.00%	388.6	213.8
VA Existing	2200	Base Resistance Space Heating (Primary)	100.00%	100.00%	100.00%	100.00%	1.0	1.0
VA Existing	2201	Air Source Heat Pump (resistance heating)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	2202	Ground Source Heat Pump with Desuperheater (resistance heating)	100.00%	100.00%	100.00%	100.00%	2.4	1.1
VA Existing	2203	Ceiling R-0 to R-38 Insulation (resistance heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2204	Ceiling R-0 to R-49 Insulation (resistance heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2206	Ceiling R-11 to R-49 Insulation (resistance heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2207	Ceiling R-19 to R-38 Insulation (resistance heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2208	Ceiling R-19 to R-49 Insulation (resistance heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2209	Crawlspace insulation (resistance heating)	100.00%	100.00%	100.00%	100.00%	482.7	419.3

Residential Electric Measure Inputs			Energy Savings (percent)		Standards Adjustment Factor (percent)		Technology Saturation (units/home)	
Segment	Measure #	Measure Description	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily
VA Existing	2210	Basement insulation R-13 (resistance heating)	100.00%	100.00%	100.00%	100.00%	1,287.3	1,118.0
VA Existing	2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	100.00%	100.00%	100.00%	100.00%	1,441.9	1,085.0
VA Existing	2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	100.00%	100.00%	100.00%	100.00%	1,897.2	1,043.9
VA Existing	2213	Heat Recovery Ventilators (resistance heating)	100.00%	100.00%	100.00%	100.00%	1.0	1.0
VA Existing	2214	Programmable Thermostat (resistance heating)	100.00%	100.00%	100.00%	100.00%	1.0	1.0
VA Existing	2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance heating)	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	2216	Self Install Weatherization	100.00%	100.00%	100.00%	100.00%	1.0	0.5
VA Existing	2217	Door Weatherization (resistance heating)	100.00%	100.00%	100.00%	100.00%	2.0	1.5
VA Existing	2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance heating)	100.00%	100.00%	100.00%	100.00%	388.6	213.8
VA Existing	3000	Base Halogen Lighting - 0.5 hrs/day 2014-2015	70.00%	70.00%	70.00%	70.00%	14.8	6.9
VA Existing	3001	CFL (base Halogen 0.5 hrs/day) 2014-2015	100.00%	100.00%	100.00%	100.00%	14.8	6.9
VA Existing	3002	LEDs (base Halogen 0.5 hrs/day) 2014-2015	70.00%	70.00%	70.00%	70.00%	14.8	6.9
VA Existing	3010	Base Halogen Lighting - 0.5 hrs/day 2016-2017	70.00%	70.00%	70.00%	70.00%	14.8	6.9
VA Existing	3011	CFL (base Halogen 0.5 hrs/day) 2016-2017	70.00%	70.00%	70.00%	70.00%	14.8	6.9
VA Existing	3012	LEDs (base Halogen 0.5 hrs/day) 2016-2017	70.00%	70.00%	70.00%	70.00%	14.8	6.9
VA Existing	3020	Base Halogen Lighting - 0.5 hrs/day 2018-2019	70.00%	70.00%	70.00%	70.00%	14.8	6.9
VA Existing	3021	CFL (base Halogen 0.5 hrs/day) 2018-2019	70.00%	70.00%	70.00%	70.00%	14.8	6.9
VA Existing	3022	LEDs (base Halogen 0.5 hrs/day) 2018-2019	70.00%	70.00%	70.00%	70.00%	14.8	6.9
VA Existing	3030	Base Halogen Lighting - 0.5 hrs/day 2020	70.00%	70.00%	70.00%	70.00%	14.8	6.9
VA Existing	3032	LEDs (base Halogen 0.5 hrs/day) 2020	70.00%	70.00%	70.00%	70.00%	14.8	6.9
VA Existing	3100	Base Halogen Lighting - 2.5 hrs/day 2014-2015	70.00%	70.00%	70.00%	70.00%	12.2	5.7
VA Existing	3101	CFL (base Halogen 2.5 hrs/day) 2014-2015	70.00%	70.00%	70.00%	70.00%	12.2	5.7
VA Existing	3102	LEDs (base Halogen 2.5 hrs/day) 2014-2015	70.00%	70.00%	70.00%	70.00%	12.2	5.7
VA Existing	3110	Base Halogen Lighting - 2.5 hrs/day 2016-2017	70.00%	70.00%	70.00%	70.00%	12.2	5.7
VA Existing	3111	CFL (base Halogen 2.5 hrs/day) 2016-2017	70.00%	70.00%	70.00%	70.00%	12.2	5.7
VA Existing	3112	LEDs (base Halogen 2.5 hrs/day) 2016-2017	70.00%	70.00%	70.00%	70.00%	12.2	5.7
VA Existing	3120	Base Halogen Lighting - 2.5 hrs/day 2018-2019	70.00%	70.00%	70.00%	70.00%	12.2	5.7
VA Existing	3121	CFL (base Halogen 2.5 hrs/day) 2018-2019	70.00%	70.00%	70.00%	70.00%	12.2	5.7
VA Existing	3122	LEDs (base Halogen 2.5 hrs/day) 2018-2019	70.00%	70.00%	70.00%	70.00%	12.2	5.7
VA Existing	3130	Base Halogen Lighting - 2.5 hrs/day 2020	70.00%	70.00%	70.00%	70.00%	12.2	5.7
VA Existing	3132	LEDs (base Halogen 2.5 hrs/day) 2020	70.00%	70.00%	70.00%	70.00%	12.2	5.7
VA Existing	3200	Base Halogen Lighting - 6 hrs/day 2014-2015	70.00%	70.00%	70.00%	70.00%	3.4	1.5
VA Existing	3201	CFL (base Halogen 6 hrs/day) 2014-2015	70.00%	70.00%	70.00%	70.00%	3.4	1.5
VA Existing	3202	LEDs (base Halogen 6 hrs/day) 2014-2015	70.00%	70.00%	70.00%	70.00%	3.4	1.5
VA Existing	3210	Base Halogen Lighting - 6 hrs/day 2016-2017	70.00%	70.00%	70.00%	70.00%	3.4	1.5
VA Existing	3211	CFL (base Halogen 6 hrs/day) 2016-2017	70.00%	70.00%	70.00%	70.00%	3.4	1.5
VA Existing	3212	LEDs (base Halogen 6 hrs/day) 2016-2017	70.00%	70.00%	70.00%	70.00%	3.4	1.5
VA Existing	3220	Base Halogen Lighting - 6 hrs/day 2018-2019	70.00%	70.00%	70.00%	70.00%	3.4	1.5
VA Existing	3221	CFL (base Halogen 6 hrs/day) 2018-2019	70.00%	70.00%	70.00%	70.00%	3.4	1.5
VA Existing	3222	LEDs (base Halogen 6 hrs/day) 2018-2019	70.00%	70.00%	70.00%	70.00%	3.4	1.5
VA Existing	3230	Base Halogen Lighting - 6 hrs/day 2020	70.00%	70.00%	70.00%	70.00%	3.4	1.5
VA Existing	3232	LEDs (base Halogen 6 hrs/day) 2020	70.00%	70.00%	70.00%	70.00%	3.4	1.5
VA Existing	3300	Base CFL Lighting - 0.5 hrs/day 2014-2015	100.00%	100.00%	100.00%	100.00%	7.3	3.3
VA Existing	3301	LEDs (base CFL 0.5 hrs/day) 2014-2015	100.00%	100.00%	100.00%	100.00%	7.3	3.3
VA Existing	3310	Base CFL Lighting - 0.5 hrs/day 2016-2017	100.00%	100.00%	100.00%	100.00%	7.3	3.3
VA Existing	3311	LEDs (base CFL 0.5 hrs/day) 2016-2017	100.00%	100.00%	100.00%	100.00%	7.3	3.3
VA Existing	3320	Base CFL Lighting - 0.5 hrs/day 2018-2019	100.00%	100.00%	100.00%	100.00%	7.3	3.3
VA Existing	3321	LEDs (base CFL 0.5 hrs/day) 2018-2019	100.00%	100.00%	100.00%	100.00%	7.3	3.3
VA Existing	3330	Base CFL Lighting - 0.5 hrs/day 2020	100.00%	100.00%	100.00%	100.00%	7.3	3.3
VA Existing	3331	LEDs (base CFL 0.5 hrs/day) 2020	100.00%	100.00%	100.00%	100.00%	7.3	3.3

Residential Electric Measure Inputs			Energy Savings (percent)		Standards Adjustment Factor (percent)		Technology Saturation (units/home)	
Segment	Measure #	Measure Description	Single Family	Multifamily	Single Family	Multifamily	Single Family	Multifamily
VA Existing	3400	Base CFL Lighting - 2.5 hrs/day 2014-2015	100.00%	100.00%	100.00%	100.00%	6.0	2.7
VA Existing	3401	LEDs (base CFL 2.5 hrs/day) 2014-2015	100.00%	100.00%	100.00%	100.00%	6.0	2.7
VA Existing	3410	Base CFL Lighting - 2.5 hrs/day 2016-2017	100.00%	100.00%	100.00%	100.00%	6.0	2.7
VA Existing	3411	LEDs (base CFL 2.5 hrs/day) 2016-2017	100.00%	100.00%	100.00%	100.00%	6.0	2.7
VA Existing	3420	Base CFL Lighting - 2.5 hrs/day 2018-2019	100.00%	100.00%	100.00%	100.00%	6.0	2.7
VA Existing	3421	LEDs (base CFL 2.5 hrs/day) 2018-2019	100.00%	100.00%	100.00%	100.00%	6.0	2.7
VA Existing	3430	Base CFL Lighting - 2.5 hrs/day 2020	100.00%	100.00%	100.00%	100.00%	6.0	2.7
VA Existing	3431	LEDs (base CFL 2.5 hrs/day) 2020	100.00%	100.00%	100.00%	100.00%	6.0	2.7
VA Existing	3500	Base CFL Lighting - 6 hrs/day 2014-2015	100.00%	100.00%	100.00%	100.00%	1.6	0.8
VA Existing	3501	LEDs (base CFL 6 hrs/day) 2014-2015	100.00%	100.00%	100.00%	100.00%	1.6	0.8
VA Existing	3510	Base CFL Lighting - 6 hrs/day 2016-2017	100.00%	100.00%	100.00%	100.00%	1.6	0.8
VA Existing	3511	LEDs (base CFL 6 hrs/day) 2016-2017	100.00%	100.00%	100.00%	100.00%	1.6	0.8
VA Existing	3520	Base CFL Lighting - 6 hrs/day 2018-2019	100.00%	100.00%	100.00%	100.00%	1.6	0.8
VA Existing	3521	LEDs (base CFL 6 hrs/day) 2018-2019	100.00%	100.00%	100.00%	100.00%	1.6	0.8
VA Existing	3530	Base CFL Lighting - 6 hrs/day 2020	100.00%	100.00%	100.00%	100.00%	1.6	0.8
VA Existing	3531	LEDs (base CFL 6 hrs/day) 2020	100.00%	100.00%	100.00%	100.00%	1.6	0.8
VA Existing	3600	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2014-2015	100.00%	100.00%	100.00%	100.00%	5.9	1.9
VA Existing	3601	CFL (base Halogen (Specialty) 0.5 hrs/day 2014-2015	100.00%	100.00%	100.00%	100.00%	5.9	1.9
VA Existing	3602	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2014-2015	100.00%	100.00%	100.00%	100.00%	5.9	1.9
VA Existing	3610	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2016-2017	100.00%	100.00%	100.00%	100.00%	5.9	1.9
VA Existing	3611	CFL (base Halogen (Specialty) 0.5 hrs/day) 2016-2017	100.00%	100.00%	100.00%	100.00%	5.9	1.9
VA Existing	3612	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2016-2017	100.00%	100.00%	100.00%	100.00%	5.9	1.9
VA Existing	3620	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2018-2019	100.00%	100.00%	100.00%	100.00%	5.9	1.9
VA Existing	3621	CFL (base Halogen (Specialty) 0.5 hrs/day) 2018-2019	100.00%	100.00%	100.00%	100.00%	5.9	1.9

Commercial Electric Measure Inputs			BASE TECHNOLOGY EUIs (kWh/square foot)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	Non-Jurisdictional	Religious Worship	Misc
VA Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	7.8	7.8	5.2	7.4	2.1	3.4	3.1	1.6	6.1	4.9	1.6	4.9
VA Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	7.8	7.8	5.2	7.4	2.1	3.4	3.1	1.6	6.1	4.9	1.6	4.9
VA Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	7.8	7.8	5.2	7.4	2.1	3.4	3.1	1.6	6.1	4.9	1.6	4.9
VA Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	7.8	7.8	5.2	7.4	2.1	3.4	3.1	1.6	6.1	4.9	1.6	4.9
VA Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	4.3	3.5	2.9	5.6	1.9	2.2	1.4	1.1	3.4	3.4	1.2	3.7
VA Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	4.3	3.5	2.9	5.6	1.9	2.2	1.4	1.1	3.4	3.4	1.2	3.7
VA Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	4.3	3.5	2.9	5.6	1.9	2.2	1.4	1.1	3.4	3.4	1.2	3.7
VA Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	4.3	3.5	2.9	5.6	1.9	2.2	1.4	1.1	3.4	3.4	1.2	3.7
VA Existing	1200	Base Other Fluorescent Fixture	3.5		1.5		3.0	0.4	1.1	0.5	2.8	1.3	0.3	1.0
VA Existing	1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	30.1	4.8	7.8	4.7		0.2	1.3	2.5	24.1	9.8	1.9	7.6
VA Existing	1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	30.1	4.8	7.8	4.7		0.2	1.3	2.5	24.1	9.8	1.9	7.6
VA Existing	1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	30.1	4.8	7.8	4.7		0.2	1.3	2.5	24.1	9.8	1.9	7.6
VA Existing	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	30.1	4.8	7.8	4.7		0.2	1.3	2.5	24.1	9.8	1.9	7.6
VA Existing	1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	21.7	3.5	5.6	3.4	3.5	0.1	0.9	1.8	17.3	7.1	1.3	5.4
VA Existing	1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	21.7	3.5	5.6	3.4	3.5	0.1	0.9	1.8	17.3	7.1	1.3	5.4
VA Existing	1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	21.7	3.5	5.6	3.4	3.5	0.1	0.9	1.8	17.3	7.1	1.3	5.4
VA Existing	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	21.7	3.5	5.6	3.4	3.5	0.1	0.9	1.8	17.3	7.1	1.3	5.4
VA Existing	1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	15.9	2.6	4.1	2.5	2.5	0.1	0.7	1.3	12.8	5.2	1.0	4.0
VA Existing	1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	15.9	2.6	4.1	2.5	2.5	0.1	0.7	1.3	12.8	5.2	1.0	4.0
VA Existing	1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	15.9	2.6	4.1	2.5	2.5	0.1	0.7	1.3	12.8	5.2	1.0	4.0
VA Existing	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	15.9	2.6	4.1	2.5	2.5	0.1	0.7	1.3	12.8	5.2	1.0	4.0
VA Existing	1600	Base CFL 18W to screw-in replacement 2014-2015	1.2	0.9	0.9	4.2	0.9	1.3	0.3	0.3	1.0	1.2	0.2	1.0
VA Existing	1610	Base CFL 18W to screw-in replacement 2016-2017	1.2	0.9	0.9	4.2	0.9	1.3	0.3	0.3	1.0	1.2	0.2	1.0
VA Existing	1620	Base CFL 18W to screw-in replacement 2018-2019	1.2	0.9	0.9	4.2	0.9	1.3	0.3	0.3	1.0	1.2	0.2	1.0
VA Existing	1630	Base CFL 18W to screw-in replacement 2020	1.2	0.9	0.9	4.2	0.9	1.3	0.3	0.3	1.0	1.2	0.2	1.0
VA Existing	1700	Base CFL 23W to screw-in replacement 2014-2015	1.6	1.1	1.2	5.3	1.1	1.7	0.4	0.4	1.3	1.6	0.3	1.2
VA Existing	1710	Base CFL 23W to screw-in replacement 2016-2017	1.6	1.1	1.2	5.3	1.1	1.7	0.4	0.4	1.3	1.6	0.3	1.2
VA Existing	1720	Base CFL 23W to screw-in replacement 2018-2019	1.6	1.1	1.2	5.3	1.1	1.7	0.4	0.4	1.3	1.6	0.3	1.2
VA Existing	1730	Base CFL 23W to screw-in replacement 2020	1.6	1.1	1.2	5.3	1.1	1.7	0.4	0.4	1.3	1.6	0.3	1.2
VA Existing	1800	BaseMetal Halide, 465W		0.1		14.4	2.8	5.1		2.6		3.5	0.9	2.9
VA Existing	1850	Base CFL Exit Sign	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VA Existing	1900	Base Outdoor High Pressure Sodium 250W Lamp	0.8	1.6	0.7	0.2	0.4	0.5	0.2	0.2	0.7	0.5	0.1	0.3
VA Existing	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	4.4	5.8	2.7	2.7	1.6	1.5	3.0	2.8	10.7	2.5	1.0	2.1
VA Existing	2100	Base DX Packaged System, EER=10.3, 10 tons	4.4	5.8	2.7	2.7	1.6	1.5	3.0	2.8	10.7	2.5	1.0	2.1
VA Existing	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	4.4	5.8	2.7	2.7	1.6	1.5	3.0	2.8	10.7	2.5	1.0	2.1
VA Existing	2300	Base PTAC, EER=8.3, 1 ton	4.4	5.8	2.7	2.7	1.6	1.5	3.0	2.8	10.7	2.5	1.0	2.1
VA Existing	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	3.3	2.9	2.1	2.3	1.1	1.0	3.0	1.9	5.5	1.7	0.7	1.4
VA Existing	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	3.3	2.9	2.1	2.3	1.1	1.0	3.0	1.9	5.5	1.7	0.7	1.4
VA Existing	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	3.3	2.9	2.1	2.3	1.1	1.0	3.0	1.9	5.5	1.7	0.7	1.4
VA Existing	4000	Base Built-Up Refrigeration System				10.1	2.1							
VA Existing	4100	Base Self-Contained Refrigeration	0.6	6.9	1.0	1.1	0.2	0.5	0.5	0.9	0.6	0.8	0.5	1.0
VA Existing	5000	Base Desktop PC	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1
VA Existing	5100	Base Laptop PC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VA Existing	5200	Base Monitor, CRT	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
VA Existing	5300	Base Monitor, LCD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VA Existing	5400	Base Copier	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VA Existing	5500	Base Multifunction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VA Existing	5600	Base Printer	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VA Existing	5700	Base Data Center/Server Room	149.0	104.3	119.2	119.2	119.2	119.2	119.2	119.2	119.2	119.2	82.0	119.2
VA Existing	6000	Base Water Heating	0.4	1.6	0.2	0.3	0.1	0.2	0.3	1.0	0.1	0.3	0.2	0.4
VA Existing	7000	Base Refrigerated Vending Machines	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
VA Existing	7100	Base Non-Refrigerated Vending Machines	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VA Existing	7200	Base Oven	1.1	1.9	0.6	0.4	0.1	0.6	1.9	0.1		0.6	0.3	0.3
VA Existing	7300	Base Fryer	0.9	1.9	0.3	0.6	0.2	0.1	3.2	0.2		0.5	0.5	0.5
VA Existing	7400	Base Steamer	2.5	2.9	1.3	1.0	0.1	0.2	1.6	0.1		0.8	0.2	0.2
VA Existing	8000	Base Heating, Heat Pump (7.7 HSPF)	0.7	0.2	0.3	0.3	0.4	0.2	0.7	0.5	0.2	0.4	0.2	0.4
VA Existing	8100	Base Heating, Other Electric	0.7	0.2	0.3	0.3	0.4	0.2	0.7	0.5	0.2	0.4	0.2	0.4
VA Existing	9500	Base Miscellaneous	2.2	2.6	2.2	2.4	0.9	0.6	3.3	1.4	0.6	1.5	1.7	1.7
NC Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	8.0	7.3	5.6	5.9	4.4	3.6	2.8	1.6	5.2		1.2	4.7
NC Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	8.0	7.3	5.6	5.9	4.4	3.6	2.8	1.6	5.2		1.2	4.7
NC Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	8.0	7.3	5.6	5.9	4.4	3.6	2.8	1.6	5.2		1.2	4.7
NC Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	8.0	7.3	5.6	5.9	4.4	3.6	2.8	1.6	5.2		1.2	4.7
NC Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	4.3	3.5	3.0	4.6	3.8	2.4	1.2	1.0	2.9		1.0	3.6

MEASURE COSTS

Segment	Measure #	Measure Description	Start Year	End Year	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	SS	S-ON	S-MD	S-OFF	W-ON	W-OFF	End Use	Implementation Type RET = Retrofit ROB = Replace on Burnout
VA Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	2014	2015	sqft	fixture	$0.00	$0.00		$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	2014	2015	sqft	fixture	$7.00	$0.00		$7.00	30,000	1	1	$7.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	2014	2015	sqft	fixture	$23.00			$23.00	30,000	1	1	$23.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1003	ROB 4L4'T5, 2014-2015	2014	2015	sqft	fixture	$70.00	$15.00		$85.00	20,000	1	1	$85.00		1.00		1.00	1.00	1.00	1	RET
VA Existing	1004	ROB 4L4' LED Tube, 2014-2015	2014	2015	sqft	fixture	$308.00	$0.00	($12.73)	$308.00	50,000	1	1	$295.27		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	2014	2015	sqft	fixture	$375.00	$15.00	($12.73)	$390.00	50,000	1	1	$377.27		1.00		1.00	1.00	1.00	1	RET
VA Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	2014	2015	sqft	sqft		$0.01		$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
VA Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	2014	2015	sqft	fixture	$55.00			$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
VA Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	2014	2015	sqft	sqft	$0.20			$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
VA Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	2016	2017	sqft	fixture	$0.00	$0.00		$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	2016	2017	sqft	fixture	$7.00	$0.00		$7.00	30,000	1	1	$7.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	2016	2017	sqft	fixture	$23.00			$23.00	30,000	1	1	$23.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1013	ROB 4L4'T5, 2016-2017	2016	2017	sqft	fixture	$70.00	$15.00		$85.00	20,000	1	1	$85.00		1.00		1.00	1.00	1.00	1	RET
VA Existing	1014	ROB 4L4' LED Tube, 2016-2017	2016	2017	sqft	fixture	$215.60	$0.00	($12.73)	$215.60	50,000	1	1	$202.87		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	2016	2017	sqft	fixture	$262.50	$15.00	($12.73)	$277.50	50,000	1	1	$264.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	2016	2017	sqft	sqft		$0.01		$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
VA Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	2016	2017	sqft	fixture	$55.00			$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
VA Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	2016	2017	sqft	sqft	$0.20			$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
VA Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	2018	2019	sqft	fixture	$0.00	$0.00		$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	2018	2019	sqft	fixture	$7.00	$0.00		$7.00	30,000	1	1	$7.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	2018	2019	sqft	fixture	$23.00			$23.00	30,000	1	1	$23.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1023	ROB 4L4'T5, 2018-2019	2018	2019	sqft	fixture	$70.00	$15.00		$85.00	20,000	1	1	$85.00		1.00		1.00	1.00	1.00	1	RET
VA Existing	1024	ROB 4L4' LED Tube, 2018-2019	2018	2019	sqft	fixture	$195.27	$0.00	($12.73)	$195.27	50,000	1	1	$182.54		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	2018	2019	sqft	fixture	$237.75	$15.00	($12.73)	$252.75	50,000	1	1	$240.02		1.00		1.00	1.00	1.00	1	RET
VA Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	2018	2019	sqft	sqft		$0.01		$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
VA Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	2018	2019	sqft	fixture	$55.00			$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
VA Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	2018	2019	sqft	sqft	$0.20			$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
VA Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	2020	2054	sqft	fixture	$0.00	$0.00		$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	2020	2054	sqft	fixture	$7.00	$0.00		$7.00	30,000	1	1	$7.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	2020	2054	sqft	fixture	$23.00			$23.00	30,000	1	1	$23.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1033	ROB 4L4'T5, 2020	2020	2054	sqft	fixture	$70.00	$15.00		$85.00	20,000	1	1	$85.00		1.00		1.00	1.00	1.00	1	RET
VA Existing	1034	ROB 4L4' LED Tube, 2020	2020	2054	sqft	fixture	$184.80	$0.00	($12.73)	$184.80	50,000	1	1	$172.07		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1035	LED Troffer (base 4L4'T8), 2020	2020	2054	sqft	fixture	$225.00	$15.00	($12.73)	$240.00	50,000	1	1	$227.27		1.00		1.00	1.00	1.00	1	RET
VA Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	2020	2054	sqft	sqft		$0.01		$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
VA Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	2020	2054	sqft	fixture	$55.00			$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
VA Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	2020	2054	sqft	sqft	$0.20			$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
VA Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	2014	2015	sqft	fixture	$0.00	$0.00		$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	2014	2015	sqft	fixture	$5.00	$0.00		$5.00	30,000	1	1	$5.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	2014	2015	sqft	fixture	$16.43	$0.00		$16.43	30,000	1	1	$16.43		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1103	ROB 2L4'T5, 2014-2015	2014	2015	sqft	fixture	$40.00	$15.00		$55.00	20,000	1	1	$55.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1104	ROB 2L4' LED Tube, 2014-2015	2014	2015	sqft	fixture	$154.00	$0.00	($12.73)	$154.00	50,000	1	1	$141.27		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	2014	2015	sqft	fixture	$202.00	$15.00	($12.73)	$217.00	50,000	1	1	$204.27		1.00		1.00	1.00	1.00	1	RET
VA Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	2014	2015	sqft	sqft		$0.01		$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
VA Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	2014	2015	sqft	fixture	$55.00			$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
VA Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	2014	2015	sqft	sqft	$0.20			$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
VA Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	2016	2017	sqft	fixture	$0.00	$0.00		$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	2016	2017	sqft	fixture	$5.00	$0.00		$5.00	30,000	1	1	$5.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	2016	2017	sqft	fixture	$16.43	$0.00		$16.43	30,000	1	1	$16.43		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1113	ROB 2L4'T5, 2016-2017	2016	2017	sqft	fixture	$40.00	$15.00		$55.00	20,000	1	1	$55.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1114	ROB 2L4' LED Tube, 2016-2017	2016	2017	sqft	fixture	$107.80	$0.00	($7.43)	$107.80	50,000	1	1	$100.37		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	2016	2017	sqft	fixture	$141.40	$15.00	($7.43)	$156.40	50,000	1	1	$148.97		1.00		1.00	1.00	1.00	1	RET
VA Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	2016	2017	sqft	sqft		$0.01		$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
VA Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	2016	2017	sqft	fixture	$55.00			$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
VA Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	2016	2017	sqft	sqft	$0.20			$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
VA Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	2018	2019	sqft	fixture	$0.00	$0.00		$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	2018	2019	sqft	fixture	$5.00	$0.00		$5.00	30,000	1	1	$5.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	2018	2019	sqft	fixture	$16.43	$0.00		$16.43	30,000	1	1	$16.43		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1123	ROB 2L4'T5, 2018-2019	2018	2019	sqft	fixture	$40.00	$15.00		$55.00	20,000	1	1	$55.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1124	ROB 2L4' LED Tube, 2018-2019	2018	2019	sqft	fixture	$97.64	$0.00	($7.43)	$97.64	50,000	1	1	$90.21		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	2018	2019	sqft	fixture	$128.07	$15.00	($7.43)	$143.07	50,000	1	1	$135.64		1.00		1.00	1.00	1.00	1	RET
VA Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	2018	2019	sqft	sqft		$0.01		$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
VA Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	2018	2019	sqft	fixture	$55.00			$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
VA Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	2018	2019	sqft	sqft	$0.20			$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
VA Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	2020	2054	sqft	fixture	$0.00	$0.00		$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1131	ROB 2L4' High Performance T8 (86 W), 2020	2020	2054	sqft	fixture	$5.00	$0.00		$5.00	30,000	1	1	$5.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	2020	2054	sqft	fixture	$16.43	$0.00		$16.43	30,000	1	1	$16.43		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1133	ROB 2L4'T5, 2020	2020	2054	sqft	fixture	$40.00	$15.00		$55.00	20,000	1	1	$55.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1134	ROB 2L4' LED Tube, 2020	2020	2054	sqft	fixture	$92.40	$0.00	($7.43)	$92.40	50,000	1	1	$84.97		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1135	LED Troffer (base 2L4'T8), 2020	2020	2054	sqft	fixture	$121.20	$15.00	($7.43)	$136.20	50,000	1	1	$128.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1136	Lighting Control Tuneup (base 2L4'T8), 2020	2020	2054	sqft	sqft		$0.01		$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
VA Existing	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	2020	2054	sqft	fixture	$55.00			$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
VA Existing	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	2020	2054	sqft	sqft	$0.20			$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
VA Existing	1200	Base Other Fluorescent Fixture	2014	2054	sqft	fixture	$0.00	$0.00		$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1201	ROB High Performance T8 (base other fluorescent)	2014	2054	sqft	fixture	$8.00	$0.00		$8.00	30,000	1	1	$8.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1202	ROB Low Watt High Performance T8 (base other fluorescent)	2014	2054	sqft	fixture	$26.29			$26.29	30,000	1	1	$26.29		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1203	Lighting Control Tuneup (base other fluorescent fixture)	2014	2054	sqft	sqft	$0.00	$0.01		$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
VA Existing	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	2014	2054	sqft	fixture	$55.00	$0.00		$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET

MEASURE COSTS

Segment	Measure #	Measure Description	Start Year	End Year	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	SS	S-ON	S-MD	S-OFF	W-ON	W-OFF	End Use	Implementation Type RET = Retrofit ROB = Replace on Burnout
VA Existing	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	2014	2054	sqft	sqft	$0.20	$0.00		$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	RET
VA Existing	1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	2014	2015	sqft	lamp	$4.00	$3.77		$7.77	3,500	1	1	$7.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1301	CFLs (base incandescent flood) 2014-2015	2014	2015	sqft	lamp	$5.00	$3.77	$0.00	$8.77	12,000	1	1	$8.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1302	LEDs (base incandescent flood) 2014-2015	2014	2015	sqft	lamp	$30.00	$3.77	$0.00	$33.77	25,000	1	1	$33.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	2016	2017	sqft	lamp	$4.00	$3.77		$7.77	3,500	1	1	$7.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1311	CFLs (base incandescent flood) 2016-2017	2016	2017	sqft	lamp	$5.00	$3.77	$0.00	$8.77	12,000	1	1	$8.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1312	LEDs (base incandescent flood) 2016-2017	2016	2017	sqft	lamp	$21.80	$3.77	$0.00	$25.57	25,000	1	1	$25.57		1.00		1.00	1.00	1.00	1	RET
VA Existing	1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	2018	2019	sqft	lamp	$4.00	$3.77		$7.77	3,500	1	1	$7.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1321	CFLs (base incandescent flood) 2018-2019	2018	2019	sqft	lamp	$5.00	$3.77	$0.00	$8.77	12,000	1	1	$8.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1322	LEDs (base incandescent flood) 2018-2019	2018	2019	sqft	lamp	$9.90	$3.77	$0.00	$13.67	25,000	1	1	$13.67		1.00		1.00	1.00	1.00	1	RET
VA Existing	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	2020	2054	sqft	lamp	$4.00	$3.77		$7.77	3,500	1	1	$7.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1331	CFLs (base incandescent flood) 2020	2020	2054	sqft	lamp	$5.00	$3.77	$0.00	$8.77	12,000	1	1	$8.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1332	LEDs (base incandescent flood) 2020	2020	2054	sqft	lamp	$3.60	$3.77	$0.00	$7.37	25,000	1	1	$7.37		1.00		1.00	1.00	1.00	1	RET
VA Existing	1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	2014	2015	sqft	lamp	$4.00	$3.77		$7.77	3,500	1	1	$7.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1401	CFLs (base incandescent A-line 72W) 2014-2015	2014	2015	sqft	lamp	$3.00	$3.77	$0.00	$6.77	12,000	1	1	$6.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1402	LEDs (base incandescent A-line 72W) 2014-2015	2014	2015	sqft	lamp	$20.00	$3.77	$0.00	$23.77	25,000	1	1	$23.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	2016	2017	sqft	lamp	$4.00	$3.77		$7.77	3,500	1	1	$7.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1411	CFLs (base incandescent A-line 72W) 2016-2017	2016	2017	sqft	lamp	$3.00	$3.77	$0.00	$6.77	12,000	1	1	$6.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1412	LEDs (base incandescent A-line 72W) 2016-2017	2016	2017	sqft	lamp	$14.50	$3.77	$0.00	$18.27	25,000	1	1	$18.27		1.00		1.00	1.00	1.00	1	RET
VA Existing	1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	2018	2019	sqft	lamp	$4.00	$3.77		$7.77	3,500	1	1	$7.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1421	CFLs (base incandescent A-line 72W) 2018-2019	2018	2019	sqft	lamp	$3.00	$3.77	$0.00	$6.77	12,000	1	1	$6.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1422	LEDs (base incandescent A-line 72W) 2018-2019	2018	2019	sqft	lamp	$6.60	$3.77	$0.00	$10.37	25,000	1	1	$10.37		1.00		1.00	1.00	1.00	1	RET
VA Existing	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	2020	2054	sqft	lamp	$4.00	$3.77		$7.77	3,500	1	1	$7.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1431	CFLs (base incandescent A-line 72W) 2020	2020	2054	sqft	lamp	$3.00	$3.77	$0.00	$6.77	12,000	1	1	$6.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1432	LEDs (base incandescent A-line 72W) 2020	2020	2054	sqft	lamp	$2.40	$3.77	$0.00	$6.17	25,000	1	1	$6.17		1.00		1.00	1.00	1.00	1	RET
VA Existing	1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	2014	2015	sqft	lamp	$4.00	$3.77		$7.77	3,500	1	1	$7.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1501	CFLs (base incandescent A-line 53W) 2014-2015	2014	2015	sqft	lamp	$2.50	$3.77	$0.00	$6.27	12,000	1	1	$6.27		1.00		1.00	1.00	1.00	1	RET
VA Existing	1502	LEDs (base incandescent A-line 53W) 2014-2015	2014	2015	sqft	lamp	$15.00	$3.77	$0.00	$18.77	25,000	1	1	$18.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	2016	2017	sqft	lamp	$4.00	$3.77		$7.77	3,500	1	1	$7.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1511	CFLs (base incandescent A-line 53W) 2016-2017	2016	2017	sqft	lamp	$2.50	$3.77	$0.00	$6.27	12,000	1	1	$6.27		1.00		1.00	1.00	1.00	1	RET
VA Existing	1512	LEDs (base incandescent A-line 53W) 2016-2017	2016	2017	sqft	lamp	$10.90	$3.77	$0.00	$14.67	25,000	1	1	$14.67		1.00		1.00	1.00	1.00	1	RET
VA Existing	1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	2018	2019	sqft	lamp	$4.00	$3.77		$7.77	3,500	1	1	$7.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1521	CFLs (base incandescent A-line 53W) 2018-2019	2018	2019	sqft	lamp	$2.50	$3.77	$0.00	$6.27	12,000	1	1	$6.27		1.00		1.00	1.00	1.00	1	RET
VA Existing	1522	LEDs (base incandescent A-line 53W) 2018-2019	2018	2019	sqft	lamp	$5.00	$3.77	$0.00	$8.77	25,000	1	1	$8.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	2020	2054	sqft	lamp	$4.00	$3.77		$7.77	3,500	1	1	$7.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1531	CFLs (base incandescent A-line 53W) 2020	2020	2054	sqft	lamp	$2.50	$3.77	$0.00	$6.27	12,000	1	1	$6.27		1.00		1.00	1.00	1.00	1	RET
VA Existing	1532	LEDs (base incandescent A-line 53W) 2020	2020	2054	sqft	lamp	$1.80	$3.77	$0.00	$5.57	25,000	1	1	$5.57		1.00		1.00	1.00	1.00	1	RET
VA Existing	1600	Base CFL 18W to screw-in replacement 2014-2015	2014	2015	sqft	lamp	$10.00	$3.77		$13.77	12,000	1	1	$13.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1601	LED screw-in replacement (base CFL 18W) 2014-2015	2014	2015	sqft	lamp	$20.00	$3.77	$0.00	$23.77	25,000	1	1	$23.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1610	Base CFL 18W to screw-in replacement 2016-2017	2016	2017	sqft	lamp	$10.00	$3.77		$13.77	12,000	1	1	$13.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1611	LED screw-in replacement (base CFL 18W) 2016-2017	2016	2017	sqft	lamp	$14.50	$3.77	$0.00	$18.27	25,000	1	1	$18.27		1.00		1.00	1.00	1.00	1	RET
VA Existing	1620	Base CFL 18W to screw-in replacement 2018-2019	2018	2019	sqft	lamp	$10.00	$3.77		$13.77	12,000	1	1	$13.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1621	LED screw-in replacement (base CFL 18W) 2018-2019	2018	2019	sqft	lamp	$6.60	$3.77	$0.00	$10.37	25,000	1	1	$10.37		1.00		1.00	1.00	1.00	1	RET
VA Existing	1630	Base CFL 18W to screw-in replacement 2020	2020	2054	sqft	lamp	$10.00	$3.77		$13.77	12,000	1	1	$13.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1631	LED screw-in replacement (base CFL 18W) 2020	2020	2054	sqft	lamp	$2.40	$3.77	$0.00	$6.17	25,000	1	1	$6.17		1.00		1.00	1.00	1.00	1	RET
VA Existing	1700	Base CFL 23W to screw-in replacement 2014-2015	2014	2015	sqft	lamp	$10.00	$3.77		$13.77	12,000	1	1	$13.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1701	LED screw-in replacement (base CFL 23W) 2014-2015	2014	2015	sqft	lamp	$15.00	$3.77	$0.00	$18.77	25,000	1	1	$18.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1710	Base CFL 23W to screw-in replacement 2016-2017	2016	2017	sqft	lamp	$10.00	$3.77		$13.77	12,000	1	1	$13.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1711	LED screw-in replacement (base CFL 23W) 2016-2017	2016	2017	sqft	lamp	$10.90	$3.77	$0.00	$14.67	25,000	1	1	$14.67		1.00		1.00	1.00	1.00	1	RET
VA Existing	1720	Base CFL 23W to screw-in replacement 2018-2019	2018	2019	sqft	lamp	$10.00	$3.77		$13.77	12,000	1	1	$13.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1721	LED screw-in replacement (base CFL 23W) 2018-2019	2018	2019	sqft	lamp	$5.00	$3.77	$0.00	$8.77	25,000	1	1	$8.77		1.00		1.00	1.00	1.00	1	RET
VA Existing	1730	Base CFL 23W to screw-in replacement 2020	2020	2054	sqft	lamp	$10.00	$3.77		$13.77	12,000	1	1	$13.77		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1731	LED screw-in replacement (base CFL 23W) 2020	2020	2054	sqft	lamp	$1.80	$3.77	$0.00	$5.57	25,000	1	1	$5.57		1.00		1.00	1.00	1.00	1	RET
VA Existing	1800	BaseMetal Halide, 465W	2014	2054	sqft	fixture	$200.00	$60.00		$260.00	18	1	1	$260.00		1.00		1.00	1.00	1.00	1	ROB
VA Existing	1801	T5 (240W) (base metal halide)	2014	2054	sqft	fixture	$100.00	$0.00		$100.00	18	1	1	$100.00		1.00		1.00	1.00	1.00	1	RET
VA Existing	1802	Induction High Bay Lighting	2014	2054	sqft	fixture	$480.00	$60.00		$540.00	20	1	1	$540.00		1.00		1.00	1.00	1.00	1	RET
VA Existing	1803	PSMH + electronic ballast	2014	2054	sqft	fixture	$144.00	$60.00		$204.00	16	1	1	$204.00		1.00		1.00	1.00	1.00	1	RET
VA Existing	1804	PSMH, magnetic ballast, 320 W	2014	2054	sqft	fixture	$213.60	$60.00		$273.60		1	1	$273.60		1.00		1.00	1.00	1.00	1	RET
VA Existing	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	2014	2054	sqft	sqft	$0.20			$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
VA Existing	1806	Occupancy Sensor, High Bay T5	2014	2054	sqft	fixture	$55.00			$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	ROB
VA Existing	1850	Base CFL Exit Sign	2014	2054	sqft	unit	$0.00	$0.00		$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	RET
VA Existing	1851	LED Exit Sign	2014	2054	sqft	unit	$25.00			$25.00	7	1	1	$25.00		1.00		1.00	1.00	1.00	1	RET
VA Existing	1900	Base Outdoor High Pressure Sodium 250W Lamp	2014	2054	sqft	fixture	$0.00	$0.00		$0.00	15	1	1	$0.00		1.00		1.00	1.00	1.00	2	ROB
VA Existing	1901	Outdoor Lighting Controls (Photocell/Timeclock)	2014	2054	sqft	fixture	$51.00	$57.00		$108.00	18	1	1	$108.00		3.31		0.10	3.31	0.60	2	RET
VA Existing	1902	LED Outdoor Area Lighting	2014	2054	sqft	fixture	$400.00	$57.00	($49.81)	$457.00	60,000	1	1	$407.19		1.00		1.00	1.00	1.00	2	RET
VA Existing	1903	Bi-Level LED Outdoor Lighting	2014	2054	sqft	fixture	$1,300.00	$57.00	($49.81)	$1,357.00	60,000	1	1	$1,307.19		0.90		1.02	0.90	1.02	2	RET
VA Existing	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	2014	2054	sqft	ton	$220.00			$220.00	20	1	1	$220.00		1.00		1.00	1.00	1.00	3	ROB
VA Existing	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	2014	2054	sqft	ton	$54.00			$54.00	20	1	1	$54.00		1.00		1.00	1.00	1.00	3	ROB
VA Existing	2002	Window Film (Standard) - Chiller	2014	2054	sqft	sf-window	$2.60			$2.60	10	1	1	$2.60		1.00		1.00	1.00	1.00	3	RET
VA Existing	2003	EMS - Chiller	2014	2054	sqft	ton	$60.00			$60.00	15	1	1	$60.00		0.25		1.44	0.80	1.44	3	RET
VA Existing	2004	Cool Roof - Chiller	2014	2054	sqft	sf-roof	$0.25			$0.25	10	1	1	$0.25		1.00		1.00	1.00	1.00	3	RET
VA Existing	2005	Chiller Tune Up/Diagnostics	2014	2054	sqft	ton	$17.00			$17.00	10	1	1	$17.00		0.50		1.28	0.90	1.28	3	RET
VA Existing	2006	VSD for Chiller Pumps and Towers	2014	2054	sqft	ton	$32.00	$10.00		$42.00	15	1	1	$42.00		0.50		1.28	0.90	1.28	3	RET
VA Existing	2007	EMS Optimization - Chiller	2014	2054	sqft	sqft	$0.00		$0.06	$0.00	5	1	1	$0.06		0.25		1.44	0.80	1.44	3	RET
VA Existing	2008	New Economizer - Chiller	2014	2054	sqft	ton	$126.76	$43.34		$170.10	10	1	1	$170.10		0.25		1.44	0.80	1.44	3	RET
VA Existing	2009	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - Chiller	2014	2054	sqft	unit	$400.00	$0.00		$400.00	10	1	1	$400.00		0.25		1.44	0.80	1.44	3	RET
VA Existing	2010	Ceiling/roof Insulation - Chiller	2014	2054	sqft	sf-ceiling	$0.12			$0.12	20	1	1	$0.12		1.00		1.00	1.00	1.00	3	RET

MEASURE COSTS

Segment	Measure #	Measure Description	Start Year	End Year	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	SS	S-ON	S-MD	S-OFF	W-ON	W-OFF	End Use	Implementation Type RET = Retrofit ROB = Replace on Burnout
VA Existing	2011	Duct/Pipe Insulation - Chiller	2014	2054	sqft	sqft-insulation	$3.08			$3.08	10	1	1	$3.08		1.00		1.00	1.00	1.00	3	RET
VA Existing	2012	Duct Testing/Sealing - Chiller	2014	2054	sqft	ton	$338.00			$338.00	18	1	1	$338.00		1.00		1.00	1.00	1.00	3	RET
VA Existing	2013	High Efficiency Chiller Motors	2014	2054	sqft	ton	$19.49			$19.49	20	1	1	$19.49		1.00		1.00	1.00	1.00	3	RET
VA Existing	2100	Base DX Packaged System, EER=10.3, 10 tons	2014	2054	sqft	ton	$672.40			$672.40	15	1	1	$672.40		1.00		1.00	1.00	1.00	3	ROB
VA Existing	2101	DX Packaged System, EER=10.9, 10 tons	2014	2054	sqft	ton	$54.78	$0.00		$54.78	15	1	1	$54.78		1.00		1.00	1.00	1.00	3	ROB
VA Existing	2102	DX Packaged System, EER=13.4, 10 tons	2014	2054	sqft	ton	$74.30	$0.00		$74.30	15	1	1	$74.30		1.00		1.00	1.00	1.00	3	ROB
VA Existing	2103	Geothermal Heat Pump, EER=13, 10 tons - DX	2014	2054	sqft	ton	$800.00			$800.00	15	1	1	$800.00		1.00		1.00	1.00	1.00	3	RET
VA Existing	2104	DX Coil Cleaning	2014	2054	sqft	ton	$8.77			$8.77		1	1	$8.77		1.00		1.00	1.00	1.00	3	RET
VA Existing	2105	DX Tune Up/ Advanced Diagnostics	2014	2054	sqft	ton		$34.00		$34.00	10	1	1	$34.00		0.50		1.28	0.90	1.28	3	RET
VA Existing	2106	Prog. Thermostat - DX	2014	2054	sqft	ton	$28.00			$28.00	8	1	1	$28.00		0.25		1.44	0.80	1.44	3	RET
VA Existing	2107	Cool Roof - DX	2014	2054	sqft	sf-roof	$0.25			$0.25	10	1	1	$0.25		1.00		1.00	1.00	1.00	3	RET
VA Existing	2108	Optimize Controls - DX	2014	2054	sqft	sqft			$0.04	$0.00	5	1	1	$0.04		0.25		1.44	0.80	1.44	3	RET
VA Existing	2109	Economizer - DX	2014	2054	sqft	ton	$126.76	$43.34		$170.10	10	1	1	$170.10		0.25		1.44	0.80	1.44	3	RET
VA Existing	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	2014	2054	sqft	unit	$400.00	$0.00		$400.00	10	1	1	$400.00		0.25		1.44	0.80	1.44	3	RET
VA Existing	2111	Economizer Repair - DX	2014	2054	sqft	unit	$800.00			$800.00	5	1	1	$800.00		1.50		1.20	0.60	0.60	3	RET
VA Existing	2112	Duct Testing/Sealing - DX	2014	2054	sqft	ton	$338.00			$338.00	18	1	1	$338.00		1.00		1.00	1.00	1.00	3	RET
VA Existing	2113	Ceiling/roof Insulation - DX	2014	2054	sqft	sf-ceiling	$0.12			$0.12	20	1	1	$0.12		1.00		1.00	1.00	1.00	3	RET
VA Existing	2114	Duct/Pipe Insulation - DX	2014	2054	sqft	sqft-insulation	$3.08			$3.08	10	1	1	$3.08		1.00		1.00	1.00	1.00	3	RET
VA Existing	2115	Window Film (Standard) - DX	2014	2054	sqft	sf-window	$2.60			$2.60	10	1	1	$2.60		1.00		1.00	1.00	1.00	3	RET
VA Existing	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	2014	2054	sqft	unit	$0.00	$0.00		$0.00	15	1	1	$0.00		1.00		1.00	1.00	1.00	3	ROB
VA Existing	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	2014	2054	sqft	unit	$930.00			$930.00	15	1	1	$930.00		1.00		1.00	1.00	1.00	3	ROB
VA Existing	2300	Base PTAC, EER=8.3, 1 ton	2014	2054	sqft	ton	$0.00	$0.00		$0.00	15	1	1	$0.00		1.00		1.00	1.00	1.00	3	ROB
VA Existing	2301	HE PTAC, EER=9.6, 1 ton	2014	2054	sqft	ton	$117.00			$117.00	15	1	1	$117.00		1.00		1.00	1.00	1.00	3	ROB
VA Existing	2302	Occupancy Sensor (hotels)	2014	2054	sqft	ton	$280.00			$280.00	10	1	1	$280.00		1.30		0.78	1.30	0.78	3	RET
VA Existing	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	2014	2054	sqft	HP	$52.00			$52.00	20	1	1	$52.00		1.00		1.00	1.00	1.00	4	ROB
VA Existing	3001	Fan Motor, 5hp, 1800rpm, 89.5%	2014	2054	sqft	HP	$43.00			$43.00	20	1	1	$43.00		1.00		1.00	1.00	1.00	4	ROB
VA Existing	3002	Variable Speed Drive Control, 5 HP	2014	2054	sqft	HP	$214.00	$171.00		$385.00	15	1	1	$385.00		0.25		1.21	0.90	1.21	4	RET
VA Existing	3003	Demand Controlled Ventilation	2014	2054	sqft	sqft	$0.33		$2.03	$0.33	15	1	1	$2.36		1.90		0.52	1.50	0.70	4	RET
VA Existing	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	2014	2054	sqft	HP	$43.00			$43.00	20	1	1	$43.00		1.00		1.00	1.00	1.00	4	ROB
VA Existing	3101	Fan Motor, 15hp, 1800rpm, 92.4%	2014	2054	sqft	HP	$29.00			$29.00	20	1	1	$29.00		1.00		1.00	1.00	1.00	4	ROB
VA Existing	3102	Variable Speed Drive Control, 15 HP	2014	2054	sqft	HP	$129.00	$102.00		$231.00	15	1	1	$231.00		0.25		1.21	0.90	1.21	4	RET
VA Existing	3103	Air Handler Optimization, 15 HP	2014	2054	sqft	sqft	$0.00		$0.03	$0.00	8	1	1	$0.03		0.25		1.21	0.90	1.21	4	RET
VA Existing	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	2014	2054	sqft	ton	$27.76			$27.76	15	1	1	$27.76		0.90		1.05	0.90	1.05	4	ROB
VA Existing	3105	Energy Recovery Ventilation (ERV)	2014	2054	sqft	ton	$130.95			$130.95	20	1	1	$130.95		1.90		0.52	1.50	0.70	4	RET
VA Existing	3106	Separate Makeup Air / Exhaust Hoods AC	2014	2054	sqft	HP	$3.00			$3.00	15	1	1	$3.00		1.00		1.00	1.00	1.00	4	RET
VA Existing	3107	Demand Controlled Ventilation	2014	2054	sqft	sqft	$0.33		$2.03	$0.33	15	1	1	$2.36		1.90		0.52	1.50	0.70	4	RET
VA Existing	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	2014	2054	sqft	HP	$37.00			$37.00	20	1	1	$37.00		1.00		1.00	1.00	1.00	4	ROB
VA Existing	3201	Fan Motor, 40hp, 1800rpm, 94.1%	2014	2054	sqft	HP	$23.00			$23.00	20	1	1	$23.00		1.00		1.00	1.00	1.00	4	ROB
VA Existing	3202	Variable Speed Drive Control, 40 HP	2014	2054	sqft	HP	$120.00	$37.00		$157.00	15	1	1	$157.00		0.25		1.21	0.90	1.21	4	RET
VA Existing	3203	Air Handler Optimization, 40 HP	2014	2054	sqft	sqft	$0.00		$0.03	$0.00	8	1	1	$0.03		0.25		1.21	0.90	1.21	4	RET
VA Existing	3204	Demand Controlled Ventilation	2014	2054	sqft	sqft	$0.33		$2.03	$0.33	15	1	1	$2.36		1.90		0.52	1.50	0.70	4	RET
VA Existing	4000	Base Built-Up Refrigeration System	2014	2054	sqft	40,000 sqft store	$0.00	$0.00		$0.00	10	1	1	$0.00		1.00		1.00	1.00	1.00	5	ROB
VA Existing	4001	High-efficiency fan motors	2014	2054	sqft	40,000 sqft store	$46,429.20	$0.00		$46,429.20	20	1	1	$46,429.20		1.00		1.00	1.00	1.00	5	RET
VA Existing	4002	Strip curtains for walk-ins (built-up)	2014	2054	sqft	40,000 sqft store	$1,995.00	$0.00		$1,995.00	4	1	1	$1,995.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4003	Auto-closer on main door to walk-in freezer (built-up)	2014	2054	sqft	unit	$150.00			$150.00	8	1	1	$150.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4004	Night covers for display cases	2014	2054	sqft	linear ft. display	$9.25	$0.00		$9.25	5	1	1	$9.25		0.50		1.11	0.90	1.11	5	RET
VA Existing	4005	Evaporator fan controller for MT walk-ins	2014	2054	sqft	controller	$1,050.00	$0.00		$1,050.00	16	1	1	$1,050.00		0.50		1.11	0.90	1.11	5	RET
VA Existing	4006	Electronically commutated evaporator fan motor	2014	2054	sqft	motor	$50.00			$50.00	15	1	1	$50.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4007	Efficient compressor motor	2014	2054	sqft	40,000 sqft store	$3,510.00	$0.00		$3,510.00	10	1	1	$3,510.00		1.00		1.00	1.00	1.00	5	ROB
VA Existing	4008	Compressor VSD retrofit	2014	2054	sqft	40,000 sqft store	$16,200.00	$0.00		$16,200.00	13	1	1	$16,200.00		0.50		1.11	0.90	1.11	5	RET
VA Existing	4009	Floating head pressure controls	2014	2054	sqft	40,000 sqft store	$4,995.00	$0.00		$4,995.00	14	1	1	$4,995.00		0.50		1.11	0.90	1.11	5	RET
VA Existing	4010	Refrigeration Commissioning	2014	2054	sqft	Ton of Load	$113.00	$0.00		$113.00	3	1	1	$113.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4011	Demand Hot Gas Defrost	2014	2054	sqft	HP	$25.00	$0.00		$25.00	10	1	1	$25.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4012	Demand Defrost Electric	2014	2054	sqft	HP	$25.00	$0.00		$25.00	10	1	1	$25.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4013	Anti-sweat (humidistat) controls	2014	2054	sqft	40,000 sqft store	$6,500.00	$0.00		$6,500.00	12	1	1	$6,500.00		0.50		1.11	0.90	1.11	5	RET
VA Existing	4014	Freezer-Cooler Replacement Gaskets	2014	2054	sqft	lin ft doors	$8.00	$0.00		$8.00	4	1	1	$8.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4015	High R-Value Glass Doors	2014	2054	sqft	lin ft glass doors	$100.28	$0.00		$100.28	10	1	1	$100.28		1.00		1.00	1.00	1.00	5	RET
VA Existing	4016	LED Display Lighting	2014	2054	sqft	lin ft glass doors	$100.00	$0.00		$100.00	8	1	1	$100.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4017	Multiplex Compressor System	2014	2054	sqft	tons	$1,750.00	$0.00		$1,750.00	14	1	1	$1,750.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4018	Oversized Air Cooled Condenser	2014	2054	sqft	tons	$350.00	$0.00		$350.00	16	1	1	$350.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4019	Insulated suction lines	2014	2054	sqft	ft. of suction line	$6.00	$0.00		$6.00	11	1	1	$6.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4100	Base Self-Contained Refrigeration	2014	2054	sqft	refrigerator	$0.00	$0.00		$0.00	10	1	1	$0.00		1.00		1.00	1.00	1.00	5	ROB
VA Existing	4101	Strip curtains for walk-ins (self-contained)	2014	2054	sqft	sq. ft. doorway	$22.00			$22.00	4	1	1	$22.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4102	Auto-closer on main door to walk-in freezer (self-contained)	2014	2054	sqft	unit	$150.00			$150.00	8	1	1	$150.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4103	Night covers for display cases (self-contained)	2014	2054	sqft	lin. ft. cover	$42.00			$42.00	5	1	1	$42.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4104	Freezer-Cooler Replacement Gaskets (self-contained)	2014	2054	sqft	lin ft doors	$8.00	$0.00		$8.00	4	1	1	$8.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4105	Bi-level LED Case Lighting (self-contained units) 2014	2014	2054	sqft	lin ft glass doors	$100.00	$0.00		$100.00	8	1	1	$100.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4106	Energy-Star Refrigerator, solid door	2014	2054	sqft	unit	$164.00	$0.00		$164.00	10	1	1	$164.00		1.00		1.00	1.00	1.00	5	ROB
VA Existing	4107	Energy-Star Freezer, solid door	2014	2054	sqft	unit	$166.00	$0.00		$166.00	9	1	1	$166.00		1.00		1.00	1.00	1.00	5	ROB
VA Existing	4108	Energy-Star Refrigerator, glass door	2014	2054	sqft	unit	$164.00	$0.00		$164.00	10	1	1	$164.00		1.00		1.00	1.00	1.00	5	ROB
VA Existing	4109	Energy-Star Freezer, glass door	2014	2054	sqft	unit	$166.00	$0.00		$166.00	9	1	1	$166.00		1.00		1.00	1.00	1.00	5	ROB
VA Existing	4110	Energy Star Ice Machines	2014	2054	sqft	unit	$312.00	$0.00		$312.00	10	1	1	$312.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	4111	Hydraulic-type door closer on reach-in cooler glass doors	2014	2054	sqft	unit	$85.00	$36.82		$121.82	8	1	1	$121.82		1.00		1.00	1.00	1.00	5	RET
VA Existing	4112	Reach-in unit occupancy sensors	2014	2054	sqft	unit	$68.00	$0.00		$68.00	10	1	1	$68.00		1.00		1.00	1.00	1.00	5	RET
VA Existing	5000	Base Desktop PC	2014	2054	sqft	PC	$0.00	$0.00		$0.00	4	1	1	$0.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	5001	PC Network Power Management Enabling	2014	2054	sqft	PC	$0.00	$20.00		$20.00	4	1	1	$20.00		0.50		1.19	0.75	1.15	6	RET
VA Existing	5002	Energy Star or Better PC	2014	2054	sqft	PC	$10.00	$0.00		$10.00	4	1	1	$10.00		1.00		1.00	1.00	1.00	6	ROB

MEASURE COSTS

Segment	Measure #	Measure Description	Start Year	End Year	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	SS	S-ON	S-MD	S-OFF	W-ON	W-OFF	End Use	Implementation Type RET = Retrofit ROB = Replace on Burnout
VA Existing	5003	Plug-load controls - Commercial Smart Strip (base desktop PC)	2014	2054	sqft	unit	$15.00			$15.00	4	1	1	$15.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	5100	Base Laptop PC	2014	2054	sqft	PC	$0.00	$0.00		$0.00	4	1	1	$0.00		1.00		1.00	1.00	1.00	6	ROB
VA Existing	5101	Laptop Network Power Management Enabling	2014	2054	sqft	PC	$0.00	$20.00		$20.00	4	1	1	$20.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	5102	Energy Star or Better Laptop	2014	2054	sqft	PC	$1.00	$0.00		$1.00	4	1	1	$1.00		1.00		1.00	1.00	1.00	6	ROB
VA Existing	5103	Plug-load controls - Commercial Smart Strip (base Laptop PC)	2014	2054	sqft	unit	$15.00			$15.00	4	1	1	$15.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	5200	Base Monitor, CRT	2014	2054	sqft	Monitor	$0.00	$0.00		$0.00	4	1	1	$0.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	5201	Energy Star or Better Monitor - CRT	2014	2054	sqft	Monitor	$1.00	$0.00		$1.00	4	1	1	$1.00		1.00		1.00	1.00	1.00	6	ROB
VA Existing	5202	Monitor Power Management Enabling - CRT	2014	2054	sqft	Monitor	$0.00	$8.00		$8.00	4	1	1	$8.00		0.50		1.19	0.75	1.15	6	RET
VA Existing	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	2014	2054	sqft	unit	$15.00			$15.00	4	1	1	$15.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	5300	Base Monitor, LCD	2014	2054	sqft	Monitor	$0.00	$0.00		$0.00	4	1	1	$0.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	5301	Energy Star or Better Monitor - LCD	2014	2054	sqft	Monitor	$1.00	$0.00		$1.00	4	1	1	$1.00		1.00		1.00	1.00	1.00	6	ROB
VA Existing	5302	Monitor Power Management Enabling - LCD	2014	2054	sqft	Monitor	$0.00	$8.00		$8.00	4	1	1	$8.00		0.50		1.19	0.75	1.15	6	RET
VA Existing	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	2014	2054	sqft	unit	$15.00			$15.00	4	1	1	$15.00		0.25		1.28	0.50	1.28	6	RET
VA Existing	5400	Base Copier	2014	2054	sqft	Copier	$0.00	$0.00		$0.00	6	1	1	$0.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	5401	Energy Star or Better Copier	2014	2054	sqft	Copier	$1.00	$0.00		$1.00	6	1	1	$1.00		1.00		1.00	1.00	1.00	6	ROB
VA Existing	5402	Copier Power Management Enabling	2014	2054	sqft	Copier	$0.00	$45.00		$45.00	6	1	1	$45.00		0.50		1.19	0.75	1.15	6	RET
VA Existing	5500	Base Multifunction	2014	2054	sqft	Printer	$0.00	$0.00		$0.00	5	1	1	$0.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	5501	Multifunction Power Management Enabling	2014	2054	sqft	Printer	$0.00	$45.00		$45.00	5	1	1	$45.00		0.50		1.19	0.75	1.15	6	RET
VA Existing	5502	ENERGY STAR Multi-Function Printer	2014	2054	sqft	Printer	$1.00	$0.00		$1.00	5	1	1	$1.00		1.00		1.00	1.00	1.00	6	ROB
VA Existing	5600	Base Printer	2014	2054	sqft	Printer	$0.00	$0.00		$0.00	5	1	1	$0.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	5601	Printer Power Management Enabling	2014	2054	sqft	Printer	$0.00	$45.00		$45.00	5	1	1	$45.00		0.50		1.19	0.75	1.15	6	RET
VA Existing	5602	ENERGY STAR Printer	2014	2054	sqft	Printer	$1.00	$0.00		$1.00	5	1	1	$1.00		1.00		1.00	1.00	1.00	6	ROB
VA Existing	5700	Base Data Center/Server Room	2014	2054	sqft	data center sqft	$0.00	$0.00		$0.00	10	1	1	$0.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	5701	Data Center Improved Operations	2014	2054	sqft	data center sqft	$0.10			$0.10	10	1	1	$0.10		1.00		1.00	1.00	1.00	6	RET
VA Existing	5702	Data Center Best Practices	2014	2054	sqft	data center sqft	$0.50			$0.50	10	1	1	$0.50		1.00		1.00	1.00	1.00	6	RET
VA Existing	5703	Data Center State of the Art practices	2014	2054	sqft	data center sqft	$1.00			$1.00	10	1	1	$1.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	5704	Data Center Airflow Management	2014	2054	sqft					$0.00		1	1	$0.00		1.00		1.00	1.00	1.00	6	RET
VA Existing	6000	Base Water Heating	2014	2054	sqft	kBtu/hr	$0.00	$0.00		$0.00	15	1	1	$0.00		1.00		1.00	1.00	1.00	7	RET
VA Existing	6001	Demand controlled circulating systems	2014	2054	sqft	unit	$59.00	$165.00		$224.00	15	1	1	$224.00		1.00		1.00	1.00	1.00	7	RET
VA Existing	6002	High Efficiency Water Heater (electric)	2014	2054	sqft	kBtu/hr	$1.31	$0.00		$1.31	15	1	1	$1.31		1.00		1.00	1.00	1.00	7	ROB
VA Existing	6003	Hot Water Pipe Insulation	2014	2054	sqft	Lin Ft Pipe	$0.37	$2.44		$2.81	15	1	1	$2.81		1.00		1.00	1.00	1.00	7	RET
VA Existing	6004	Tankless Water Heater	2014	2054	sqft	kBtu/hr	$6.73	$4.54		$11.27	20	1	1	$11.27		1.00		1.00	1.00	1.00	7	ROB
VA Existing	6005	Heat Pump Water Heater (air source)	2014	2054	sqft	kBtu/hr	$30.13	$0.00		$30.13	10	1	1	$30.13		1.00		1.00	1.00	1.00	7	ROB
VA Existing	6006	Heat Recovery Unit	2014	2054	sqft	sqft	$0.08	$0.00		$0.08	10	1	1	$0.08		1.00		1.00	1.00	1.00	7	RET
VA Existing	6007	Heat Trap	2014	2054	sqft	kBtu/hr	$0.36	$2.00		$2.36	10	1	1	$2.36		1.00		1.00	1.00	1.00	7	RET
VA Existing	6008	Solar Water Heater	2014	2054	sqft	kBtu/hr	$85.19	$0.00		$85.19	20	1	1	$85.19		1.00		1.00	1.00	1.00	7	ROB
VA Existing	7000	Base Refrigerated Vending Machines	2014	2054	sqft	machine	$0.00	$0.00		$0.00	10	1	1	$0.00		1.00		1.00	1.00	1.00	8	RET
VA Existing	7001	Vending Misers (Refrigerated units)	2014	2054	sqft	machine	$175.00	$0.00		$175.00	5	1	1	$175.00		0.50		1.25	0.75	1.15	8	RET
VA Existing	7002	Vending Misers (Refrigerated glass-front units)	2014	2054	sqft	machine	$175.00	$0.00		$175.00	5	1	1	$175.00		0.50		1.25	0.75	1.15	8	RET
VA Existing	7100	Base Non-Refrigerated Vending Machines	2014	2054	sqft	machine	$0.00	$0.00		$0.00	10	1	1	$0.00		1.00		1.00	1.00	1.00	8	RET
VA Existing	7101	Vending Misers (Non-Refrigerated)	2014	2054	sqft	machine	$150.00	$0.00		$150.00	5	1	1	$150.00		0.50		1.25	0.75	1.15	8	RET
VA Existing	7200	Base Oven	2014	2054	sqft	single oven	$0.00	$0.00		$0.00	10	1	1	$0.00		1.00		1.00	1.00	1.00	9	ROB
VA Existing	7201	Convection Oven	2014	2054	sqft	single oven	$3,000.00	$0.00		$3,000.00	12	1	1	$3,000.00		1.00		1.00	1.00	1.00	9	ROB
VA Existing	7300	Base Fryer	2014	2054	sqft	fryer	$0.00	$0.00		$0.00	10	1	1	$0.00		1.00		1.00	1.00	1.00	9	ROB
VA Existing	7301	Efficient Fryer	2014	2054	sqft	fryer	$4,000.00	$0.00		$4,000.00	12	1	1	$4,000.00		1.00		1.00	1.00	1.00	9	ROB
VA Existing	7400	Base Steamer	2014	2054	sqft	steamer	$0.00	$0.00		$0.00	10	1	1	$0.00		1.00		1.00	1.00	1.00	9	ROB
VA Existing	7401	Efficient Steamer	2014	2054	sqft	steamer	$5,000.00	$0.00		$5,000.00	12	1	1	$5,000.00		1.00		1.00	1.00	1.00	9	ROB
VA Existing	8000	Base Heating, Heat Pump (7.7 HSPF)	2014	2054	sqft	unit	$0.00	$0.00		$0.00	15	1	1	$0.00		1.00		1.00	1.00	1.00	10	ROB
VA Existing	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	2014	2054	sqft	unit	$70.00			$70.00	15	1	1	$70.00		1.00		1.00	1.00	1.00	10	ROB
VA Existing	8100	Base Heating, Other Electric	2014	2054	sqft	sqft	$12.00	$0.00		$12.00	10	1	1	$12.00		1.00		1.00	1.00	1.00	10	RET
VA Existing	9500	Base Miscellaneous	2014	2054	sqft	sqft	$1.25	$0.00		$1.25	10	1	1	$1.25		1.00		1.00	1.00	1.00	12	RET
VA Existing	9501	Xmisc	2014	2054	sqft	sqft	$1.25	$0.00		$1.25	10	1	1	$1.25		1.00		1.00	1.00	1.00	12	RET
NC Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	2014	2015	sqft	fixture	$0.00	$0.00	$0.00	$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	2014	2015	sqft	fixture	$7.00	$0.00	$0.00	$7.00	30000	1	1	$7.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	2014	2015	sqft	fixture	$23.00	$0.00	$0.00	$23.00	30000	1	1	$23.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1003	ROB 4L4'T5, 2014-2015	2014	2015	sqft	fixture	$70.00	$15.00	$0.00	$85.00	20000	1	1	$85.00		1.00		1.00	1.00	1.00	1	RET
NC Existing	1004	ROB 4L4' LED Tube, 2014-2015	2014	2015	sqft	fixture	$308.00	$0.00	($12.73)	$308.00	50000	1	1	$295.27		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	2014	2015	sqft	fixture	$375.00	$15.00	($12.73)	$390.00	50000	1	1	$377.27		1.00		1.00	1.00	1.00	1	RET
NC Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	2014	2015	sqft	sqft	$0.00	$0.01	$0.00	$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
NC Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	2014	2015	sqft	fixture	$55.00	$0.00	$0.00	$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
NC Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	2014	2015	sqft	sqft	$0.20	$0.00	$0.00	$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
NC Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	2016	2017	sqft	fixture	$0.00	$0.00	$0.00	$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	2016	2017	sqft	fixture	$7.00	$0.00	$0.00	$7.00	30000	1	1	$7.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	2016	2017	sqft	fixture	$23.00	$0.00	$0.00	$23.00	30000	1	1	$23.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1013	ROB 4L4'T5, 2016-2017	2016	2017	sqft	fixture	$70.00	$15.00	$0.00	$85.00	20000	1	1	$85.00		1.00		1.00	1.00	1.00	1	RET
NC Existing	1014	ROB 4L4' LED Tube, 2016-2017	2016	2017	sqft	fixture	$215.60	$0.00	($12.73)	$215.60	50000	1	1	$202.87		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	2016	2017	sqft	fixture	$262.50	$15.00	($12.73)	$277.50	50000	1	1	$264.77		1.00		1.00	1.00	1.00	1	RET
NC Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	2016	2017	sqft	sqft	$0.00	$0.01	$0.00	$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
NC Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	2016	2017	sqft	fixture	$55.00	$0.00	$0.00	$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
NC Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	2016	2017	sqft	sqft	$0.20	$0.00	$0.00	$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
NC Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	2018	2019	sqft	fixture	$0.00	$0.00	$0.00	$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	2018	2019	sqft	fixture	$7.00	$0.00	$0.00	$7.00	30000	1	1	$7.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	2018	2019	sqft	fixture	$23.00	$0.00	$0.00	$23.00	30000	1	1	$23.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1023	ROB 4L4'T5, 2018-2019	2018	2019	sqft	fixture	$70.00	$15.00	$0.00	$85.00	20000	1	1	$85.00		1.00		1.00	1.00	1.00	1	RET
NC Existing	1024	ROB 4L4' LED Tube, 2018-2019	2018	2019	sqft	fixture	$195.27	$0.00	($12.73)	$195.27	50000	1	1	$182.54		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	2018	2019	sqft	fixture	$237.75	$15.00	($12.73)	$252.75	50000	1	1	$240.02		1.00		1.00	1.00	1.00	1	RET
NC Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	2018	2019	sqft	sqft	$0.00	$0.01	$0.00	$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET

MEASURE COSTS

Segment	Measure #	Measure Description	Start Year	End Year	Savings Units	Cost Units	Unit Equipment Cost	Unit Labor Cost	NPV of Lifetime O & M Cost	Implementation Cost Factor	Service Life	Full = 1 Incr. = 0 Initial Cost	Replace Cost	Full Unit Cost	SS	S-ON	S-MD	S-OFF	W-ON	W-OFF	End Use	Implementation Type RET = Retrofit ROB = Replace on Burnout
NC Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	2018	2019	sqft	fixture	$55.00	$0.00	$0.00	$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
NC Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	2018	2019	sqft	sqft	$0.20	$0.00	$0.00	$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
NC Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	2020	2054	sqft	fixture	$0.00	$0.00	$0.00	$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	2020	2054	sqft	fixture	$7.00	$0.00	$0.00	$7.00	30000	1	1	$7.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	2020	2054	sqft	fixture	$23.00	$0.00	$0.00	$23.00	30000	1	1	$23.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1033	ROB 4L4'T5, 2020	2020	2054	sqft	fixture	$70.00	$15.00	$0.00	$85.00	20000	1	1	$85.00		1.00		1.00	1.00	1.00	1	RET
NC Existing	1034	ROB 4L4' LED Tube, 2020	2020	2054	sqft	fixture	$184.80	$0.00	($12.73)	$184.80	50000	1	1	$172.07		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1035	LED Troffer (base 4L4'T8), 2020	2020	2054	sqft	fixture	$225.00	$15.00	($12.73)	$240.00	50000	1	1	$227.27		1.00		1.00	1.00	1.00	1	RET
NC Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	2020	2054	sqft	sqft	$0.00	$0.01	$0.00	$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
NC Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	2020	2054	sqft	fixture	$55.00	$0.00	$0.00	$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
NC Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	2020	2054	sqft	sqft	$0.20	$0.00	$0.00	$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
NC Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	2014	2015	sqft	fixture	$0.00	$0.00	$0.00	$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	2014	2015	sqft	fixture	$5.00	$0.00	$0.00	$5.00	30000	1	1	$5.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	2014	2015	sqft	fixture	$16.43	$0.00	$0.00	$16.43	30000	1	1	$16.43		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1103	ROB 2L4'T5, 2014-2015	2014	2015	sqft	fixture	$40.00	$15.00	$0.00	$55.00	20000	1	1	$55.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1104	ROB 2L4' LED Tube, 2014-2015	2014	2015	sqft	fixture	$154.00	$0.00	($12.73)	$154.00	50000	1	1	$141.27		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	2014	2015	sqft	fixture	$202.00	$15.00	($12.73)	$217.00	50000	1	1	$204.27		1.00		1.00	1.00	1.00	1	RET
NC Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	2014	2015	sqft	sqft	$0.00	$0.01	$0.00	$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
NC Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	2014	2015	sqft	fixture	$55.00	$0.00	$0.00	$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
NC Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	2014	2015	sqft	sqft	$0.20	$0.00	$0.00	$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
NC Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	2016	2017	sqft	fixture	$0.00	$0.00	$0.00	$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	2016	2017	sqft	fixture	$5.00	$0.00	$0.00	$5.00	30000	1	1	$5.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	2016	2017	sqft	fixture	$16.43	$0.00	$0.00	$16.43	30000	1	1	$16.43		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1113	ROB 2L4'T5, 2016-2017	2016	2017	sqft	fixture	$40.00	$15.00	$0.00	$55.00	20000	1	1	$55.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1114	ROB 2L4' LED Tube, 2016-2017	2016	2017	sqft	fixture	$107.80	$0.00	($7.43)	$107.80	50000	1	1	$100.37		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	2016	2017	sqft	fixture	$141.40	$15.00	($7.43)	$156.40	50000	1	1	$148.97		1.00		1.00	1.00	1.00	1	RET
NC Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	2016	2017	sqft	sqft	$0.00	$0.01	$0.00	$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
NC Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	2016	2017	sqft	fixture	$55.00	$0.00	$0.00	$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
NC Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	2016	2017	sqft	sqft	$0.20	$0.00	$0.00	$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
NC Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	2018	2019	sqft	fixture	$0.00	$0.00	$0.00	$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	2018	2019	sqft	fixture	$5.00	$0.00	$0.00	$5.00	30000	1	1	$5.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	2018	2019	sqft	fixture	$16.43	$0.00	$0.00	$16.43	30000	1	1	$16.43		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1123	ROB 2L4'T5, 2018-2019	2018	2019	sqft	fixture	$40.00	$15.00	$0.00	$55.00	20000	1	1	$55.00		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1124	ROB 2L4' LED Tube, 2018-2019	2018	2019	sqft	fixture	$97.64	$0.00	($7.43)	$97.64	50000	1	1	$90.21		1.00		1.00	1.00	1.00	1	ROB
NC Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	2018	2019	sqft	fixture	$128.07	$15.00	($7.43)	$143.07	50000	1	1	$135.64		1.00		1.00	1.00	1.00	1	RET
NC Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	2018	2019	sqft	sqft	$0.00	$0.01	$0.00	$0.01	6	1	1	$0.01		0.50		1.31	0.50	1.31	1	RET
NC Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	2018	2019	sqft	fixture	$55.00	$0.00	$0.00	$55.00	10	1	1	$55.00		0.25		1.46	0.25	1.46	1	RET
NC Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	2018	2019	sqft	sqft	$0.20	$0.00	$0.00	$0.20	15	1	1	$0.20		0.80		1.12	0.80	1.12	1	ROB
NC Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	2020	2054	sqft	fixture	$0.00	$0.00	$0.00	$0.00	18	1	1	$0.00		1.00		1.00	1.00	1.00	1	ROB

Commercial Elec Measure Inputs			APPLICABILITY FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Center	Non-Jurisdictional	Religious Worship	Misc
VA Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1003	ROB 4L4'T5, 2014-2015	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1004	ROB 4L4' LED Tube, 2014-2015	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	9.8%	0.1%	1.3%	0.8%	18.8%	10.8%	1.3%	0.3%	3.0%	10.5%	2.5%	2.0%
VA Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1013	ROB 4L4'T5, 2016-2017	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1014	ROB 4L4' LED Tube, 2016-2017	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	9.8%	0.1%	1.3%	0.8%	18.8%	10.8%	1.3%	0.3%	3.0%	10.5%	2.5%	2.0%
VA Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1023	ROB 4L4'T5, 2018-2019	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1024	ROB 4L4' LED Tube, 2018-2019	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	9.8%	0.1%	1.3%	0.8%	18.8%	10.8%	1.3%	0.3%	3.0%	10.5%	2.5%	2.0%
VA Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1033	ROB 4L4'T5, 2020	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1034	ROB 4L4' LED Tube, 2020	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1035	LED Troffer (base 4L4'T8), 2020	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	9.8%	0.1%	1.3%	0.8%	18.8%	10.8%	1.3%	0.3%	3.0%	10.5%	2.5%	2.0%
VA Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	61.7%	2.1%	29.3%	42.5%	57.5%	57.4%	47.5%	3.1%	45.8%	47.9%	25.1%	20.1%
VA Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1103	ROB 2L4'T5, 2014-2015	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1104	ROB 2L4' LED Tube, 2014-2015	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	0.3%	0.8%	0.5%	0.0%	0.1%	1.0%	0.3%	1.5%	0.1%	3.0%	2.4%	1.9%
VA Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1113	ROB 2L4'T5, 2016-2017	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1114	ROB 2L4' LED Tube, 2016-2017	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	0.3%	0.8%	0.5%	0.0%	0.1%	1.0%	0.3%	1.5%	0.1%	3.0%	2.4%	1.9%
VA Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1123	ROB 2L4'T5, 2018-2019	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1124	ROB 2L4' LED Tube, 2018-2019	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	0.3%	0.8%	0.5%	0.0%	0.1%	1.0%	0.3%	1.5%	0.1%	3.0%	2.4%	1.9%
VA Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%

Commercial Elec Measure Inputs			APPLICABILITY FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Center	Non-Jurisdictional	Religious Worship	Misc
VA Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1131	ROB 2L4' High Performance T8 (86 W), 2020	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1133	ROB 2L4'T5, 2020	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1134	ROB 2L4' LED Tube, 2020	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1135	LED Troffer (base 2L4'T8), 2020	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1136	Lighting Control Tuneup (base 2L4'T8), 2020	0.3%	0.8%	0.5%	0.0%	0.1%	1.0%	0.3%	1.5%	0.1%	3.0%	2.4%	1.9%
VA Existing	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	1.8%	25.5%	10.0%	0.2%	0.4%	5.3%	12.1%	17.4%	1.3%	13.7%	23.6%	18.9%
VA Existing	1200	Base Other Fluorescent Fixture	4.8%	0.0%	0.2%	0.0%	0.0%	2.2%	4.1%	0.8%	3.6%	3.4%	1.2%	1.0%
VA Existing	1201	ROB High Performance T8 (base other fluorescent)	4.8%	0.0%	0.2%	0.0%	0.0%	2.2%	4.1%	0.8%	3.6%	3.4%	1.2%	1.0%
VA Existing	1202	ROB Low Watt High Performance T8 (base other fluorescent)	4.8%	0.0%	0.2%	0.0%	0.0%	2.2%	4.1%	0.8%	3.6%	3.4%	1.2%	1.0%
VA Existing	1203	Lighting Control Tuneup (base other fluorescent fixture)	0.8%	0.0%	0.0%	0.0%	0.0%	0.4%	0.1%	0.1%	0.2%	0.7%	0.1%	0.1%
VA Existing	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	4.8%	0.0%	0.2%	0.0%	0.0%	2.2%	4.1%	0.8%	3.6%	3.4%	1.2%	1.0%
VA Existing	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	4.8%	0.0%	0.2%	0.0%	0.0%	2.2%	4.1%	0.8%	3.6%	3.4%	1.2%	1.0%
VA Existing	1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	7.2%	21.5%	9.8%	24.6%	2.9%	4.7%	8.9%	16.2%	4.9%	5.8%	10.8%	10.4%
VA Existing	1301	CFLs (base incandescent flood) 2014-2015	7.2%	21.5%	9.8%	24.6%	2.9%	4.7%	8.9%	16.2%	4.9%	5.8%	10.8%	10.4%
VA Existing	1302	LEDs (base incandescent flood) 2014-2015	7.2%	21.5%	9.8%	24.6%	2.9%	4.7%	8.9%	16.2%	4.9%	5.8%	10.8%	10.4%
VA Existing	1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	7.2%	21.5%	9.8%	24.6%	2.9%	4.7%	8.9%	16.2%	4.9%	5.8%	10.8%	10.4%
VA Existing	1311	CFLs (base incandescent flood) 2016-2017	7.2%	21.5%	9.8%	24.6%	2.9%	4.7%	8.9%	16.2%	4.9%	5.8%	10.8%	10.4%
VA Existing	1312	LEDs (base incandescent flood) 2016-2017	7.2%	21.5%	9.8%	24.6%	2.9%	4.7%	8.9%	16.2%	4.9%	5.8%	10.8%	10.4%
VA Existing	1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	7.2%	21.5%	9.8%	24.6%	2.9%	4.7%	8.9%	16.2%	4.9%	5.8%	10.8%	10.4%
VA Existing	1321	CFLs (base incandescent flood) 2018-2019	7.2%	21.5%	9.8%	24.6%	2.9%	4.7%	8.9%	16.2%	4.9%	5.8%	10.8%	10.4%
VA Existing	1322	LEDs (base incandescent flood) 2018-2019	7.2%	21.5%	9.8%	24.6%	2.9%	4.7%	8.9%	16.2%	4.9%	5.8%	10.8%	10.4%
VA Existing	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	7.2%	21.5%	9.8%	24.6%	2.9%	4.7%	8.9%	16.2%	4.9%	5.8%	10.8%	10.4%
VA Existing	1331	CFLs (base incandescent flood) 2020	7.2%	21.5%	9.8%	24.6%	2.9%	4.7%	8.9%	16.2%	4.9%	5.8%	10.8%	10.4%
VA Existing	1332	LEDs (base incandescent flood) 2020	7.2%	21.5%	9.8%	24.6%	2.9%	4.7%	8.9%	16.2%	4.9%	5.8%	10.8%	10.4%
VA Existing	1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1401	CFLs (base incandescent A-line 72W) 2014-2015	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1402	LEDs (base incandescent A-line 72W) 2014-2015	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1411	CFLs (base incandescent A-line 72W) 2016-2017	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1412	LEDs (base incandescent A-line 72W) 2016-2017	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1421	CFLs (base incandescent A-line 72W) 2018-2019	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1422	LEDs (base incandescent A-line 72W) 2018-2019	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1431	CFLs (base incandescent A-line 72W) 2020	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1432	LEDs (base incandescent A-line 72W) 2020	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1501	CFLs (base incandescent A-line 53W) 2014-2015	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1502	LEDs (base incandescent A-line 53W) 2014-2015	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1511	CFLs (base incandescent A-line 53W) 2016-2017	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1512	LEDs (base incandescent A-line 53W) 2016-2017	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1521	CFLs (base incandescent A-line 53W) 2018-2019	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1522	LEDs (base incandescent A-line 53W) 2018-2019	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1531	CFLs (base incandescent A-line 53W) 2020	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1532	LEDs (base incandescent A-line 53W) 2020	3.6%	10.8%	4.9%	12.3%	1.4%	2.3%	4.4%	8.1%	2.4%	2.9%	5.4%	5.2%
VA Existing	1600	Base CFL 18W to screw-in replacement 2014-2015	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1601	LED screw-in replacement (base CFL 18W) 2014-2015	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1610	Base CFL 18W to screw-in replacement 2016-2017	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1611	LED screw-in replacement (base CFL 18W) 2016-2017	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1620	Base CFL 18W to screw-in replacement 2018-2019	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1621	LED screw-in replacement (base CFL 18W) 2018-2019	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1630	Base CFL 18W to screw-in replacement 2020	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1631	LED screw-in replacement (base CFL 18W) 2020	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1700	Base CFL 23W to screw-in replacement 2014-2015	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1701	LED screw-in replacement (base CFL 23W) 2014-2015	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1710	Base CFL 23W to screw-in replacement 2016-2017	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1711	LED screw-in replacement (base CFL 23W) 2016-2017	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%

Commercial Elec Measure Inputs			APPLICABILITY FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Center	Non-Jurisdictional	Religious Worship	Misc
VA Existing	1720	Base CFL 23W to screw-in replacement 2018-2019	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1721	LED screw-in replacement (base CFL 23W) 2018-2019	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1730	Base CFL 23W to screw-in replacement 2020	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1731	LED screw-in replacement (base CFL 23W) 2020	8.0%	14.0%	17.3%	1.4%	5.7%	10.3%	8.9%	18.7%	16.7%	10.7%	8.7%	10.7%
VA Existing	1800	BaseMetal Halide, 465W	2.4%	2.7%	4.1%	1.0%	25.2%	5.2%	1.9%	5.8%	1.6%	8.8%	1.9%	6.2%
VA Existing	1801	T5 (240W) (base metal halide)	2.4%	2.7%	4.1%	1.0%	25.2%	5.2%	1.9%	5.8%	1.6%	8.8%	1.9%	6.2%
VA Existing	1802	Induction High Bay Lighting	2.4%	2.7%	4.1%	1.0%	25.2%	5.2%	1.9%	5.8%	1.6%	8.8%	1.9%	6.2%
VA Existing	1803	PSMH + electronic ballast	2.4%	2.7%	4.1%	1.0%	25.2%	5.2%	1.9%	5.8%	1.6%	8.8%	1.9%	6.2%
VA Existing	1804	PSMH, magnetic ballast, 320 W	2.4%	2.7%	4.1%	1.0%	25.2%	5.2%	1.9%	5.8%	1.6%	8.8%	1.9%	6.2%
VA Existing	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	2.4%	2.7%	4.1%	1.0%	25.2%	5.2%	1.9%	5.8%	1.6%	8.8%	1.9%	6.2%
VA Existing	1806	Occupancy Sensor, High Bay T5	2.4%	2.7%	4.1%	1.0%	25.2%	5.2%	1.9%	5.8%	1.6%	8.8%	1.9%	6.2%
VA Existing	1850	Base CFL Exit Sign	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
VA Existing	1851	LED Exit Sign	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
VA Existing	1900	Base Outdoor High Pressure Sodium 250W Lamp	43.3%	62.4%	40.9%	25.1%	72.0%	84.9%	63.9%	91.6%	93.1%	78.6%	88.8%	67.6%
VA Existing	1901	Outdoor Lighting Controls (Photocell/Timeclock)	43.3%	62.4%	40.9%	25.1%	72.0%	84.9%	63.9%	91.6%	93.1%	78.6%	88.8%	67.6%
VA Existing	1902	LED Outdoor Area Lighting	43.3%	62.4%	40.9%	25.1%	72.0%	84.9%	63.9%	91.6%	93.1%	78.6%	88.8%	67.6%
VA Existing	1903	Bi-Level LED Outdoor Lighting	43.3%	62.4%	40.9%	25.1%	72.0%	84.9%	63.9%	91.6%	93.1%	78.6%	88.8%	67.6%
VA Existing	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	12.8%	14.6%	1.4%	2.7%	0.0%	39.8%	19.3%	26.7%	65.8%	43.9%	14.7%	8.3%
VA Existing	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	12.8%	14.6%	1.4%	2.7%	0.0%	39.8%	19.3%	26.7%	65.8%	43.9%	14.7%	8.3%
VA Existing	2002	Window Film (Standard) - Chiller	12.8%	14.6%	1.4%	2.7%	0.0%	39.8%	19.3%	26.7%	65.8%	43.9%	14.7%	8.3%
VA Existing	2003	EMS - Chiller	12.8%	14.6%	1.4%	2.7%	0.0%	39.8%	19.3%	26.7%	65.8%	43.9%	14.7%	8.3%
VA Existing	2004	Cool Roof - Chiller	12.8%	14.6%	1.4%	2.7%	0.0%	39.8%	19.3%	26.7%	65.8%	43.9%	14.7%	8.3%
VA Existing	2005	Chiller Tune Up/Diagnostics	12.8%	14.6%	1.4%	2.7%	0.0%	39.8%	19.3%	26.7%	65.8%	43.9%	14.7%	8.3%
VA Existing	2006	VSD for Chiller Pumps and Towers	12.8%	14.6%	1.4%	2.7%	0.0%	39.8%	19.3%	26.7%	65.8%	43.9%	14.7%	8.3%
VA Existing	2007	EMS Optimization - Chiller	4.1%	2.7%	0.2%	0.1%	0.0%	16.8%	2.4%	6.6%	51.6%	27.9%	7.8%	0.9%
VA Existing	2008	New Economizer - Chiller	12.8%	14.6%	1.4%	2.7%	0.0%	39.8%	19.3%	26.7%	65.8%	43.9%	14.7%	8.3%
VA Existing	2009	Dual Enthalpy Economizer Replaced Dry Bulb Economizer - Chiller	10.4%	14.6%	1.4%	2.6%	0.0%	10.5%	9.0%	8.5%	6.8%	2.4%	0.6%	0.6%
VA Existing	2010	Ceiling/roof Insulation - Chiller	12.8%	14.6%	1.4%	2.7%	0.0%	39.8%	19.3%	26.7%	65.8%	43.9%	14.7%	8.3%
VA Existing	2011	Duct/Pipe Insulation - Chiller	12.8%	14.6%	1.4%	2.7%	0.0%	39.8%	19.3%	26.7%	65.8%	43.9%	14.7%	8.3%
VA Existing	2012	Duct Testing/Sealing	12.8%	14.6%	1.4%	2.7%	0.0%	39.8%	19.3%	26.7%	65.8%	43.9%	14.7%	8.3%
VA Existing	2013	High Efficiency Chiller Motors	12.8%	14.6%	1.4%	2.7%	0.0%	39.8%	19.3%	26.7%	65.8%	43.9%	14.7%	8.3%
VA Existing	2100	Base DX Packaged System, EER=10.3, 10 tons	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2101	DX Packaged System, EER=10.9, 10 tons	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2102	DX Packaged System, EER=13.4, 10 tons	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2103	Geothermal Heat Pump, EER=13, 10 tons - DX	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2104	DX Coil Cleaning	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2105	DX Tune Up/ Advanced Diagnostics	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2106	Prog. Thermostat - DX	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2107	Cool Roof - DX	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2108	Optimize Controls - DX	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2109	Economizer - DX	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	16.0%	53.6%	20.7%	82.8%	24.1%	73.1%	8.7%	16.4%	6.0%	9.8%	20.3%	20.3%
VA Existing	2111	Economizer Repair - DX	16.0%	53.6%	20.7%	82.8%	24.1%	73.1%	8.7%	16.4%	6.0%	9.8%	20.3%	20.3%
VA Existing	2112	Aerosol Duct Sealing - DX	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2113	Ceiling/roof Insulation - DX	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2114	Duct/Pipe Insulation - DX	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2115	Window Film (Standard) - DX	57.9%	77.1%	49.6%	83.6%	36.9%	95.4%	64.7%	68.1%	37.5%	54.1%	47.5%	31.8%
VA Existing	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	39.5%	24.2%	18.4%	7.5%	20.0%	75.1%	41.2%	52.8%	4.8%	23.5%	38.6%	30.2%
VA Existing	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	39.5%	24.2%	18.4%	7.5%	20.0%	75.1%	41.2%	52.8%	4.8%	23.5%	38.6%	30.2%
VA Existing	2300	Base PTAC, EER=8.3, 1 ton	6.3%	2.9%	3.2%	3.5%	0.9%	68.4%	9.2%	11.1%	0.0%	36.4%	38.3%	19.0%
VA Existing	2301	HE PTAC, EER=9.6, 1 ton	6.3%	2.9%	3.2%	3.5%	0.9%	68.4%	9.2%	11.1%	0.0%	36.4%	38.3%	19.0%
VA Existing	2302	Occupancy Sensor (hotels)	6.3%	2.9%	3.2%	3.5%	0.9%	68.4%	9.2%	11.1%	0.0%	36.4%	38.3%	19.0%
VA Existing	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	42.5%	50.4%	43.3%	96.7%	30.2%	33.4%	18.8%	65.4%	18.8%	48.0%	53.6%	53.6%
VA Existing	3001	Fan Motor, 5hp, 1800rpm, 89.5%	42.5%	50.4%	43.3%	96.7%	30.2%	33.4%	18.8%	65.4%	18.8%	48.0%	53.6%	53.6%
VA Existing	3002	Variable Speed Drive Control, 5 HP	42.5%	50.4%	43.3%	96.7%	30.2%	33.4%	18.8%	65.4%	18.8%	48.0%	53.6%	53.6%
VA Existing	3003	Demand Controlled Ventilation	42.5%	50.4%	43.3%	96.7%	30.2%	33.4%	18.8%	65.4%	18.8%	48.0%	53.6%	53.6%
VA Existing	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	7.4%	0.0%	1.5%	0.0%	0.0%	89.5%	65.4%	0.0%	65.4%	25.0%	42.7%	42.7%
VA Existing	3101	Fan Motor, 15hp, 1800rpm, 92.4%	7.4%	0.0%	1.5%	0.0%	0.0%	89.5%	65.4%	0.0%	65.4%	25.0%	42.7%	42.7%
VA Existing	3102	Variable Speed Drive Control, 15 HP	7.4%	0.0%	1.5%	0.0%	0.0%	89.5%	65.4%	0.0%	65.4%	25.0%	42.7%	42.7%
VA Existing	3103	Air Handler Optimization, 15 HP	7.4%	0.0%	1.5%	0.0%	0.0%	89.5%	65.4%	0.0%	65.4%	25.0%	42.7%	42.7%
VA Existing	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	7.4%	0.0%	1.5%	0.0%	0.0%	89.5%	65.4%	0.0%	65.4%	25.0%	42.7%	42.7%
VA Existing	3105	Energy Recovery Ventilation (ERV)	7.4%	0.0%	1.5%	0.0%	0.0%	89.5%	65.4%	0.0%	65.4%	25.0%	42.7%	42.7%
VA Existing	3106	Separate Makeup Air / Exhaust Hoods AC	7.4%	0.0%	1.5%	0.0%	0.0%	89.5%	65.4%	0.0%	65.4%	25.0%	42.7%	42.7%

Commercial Elec Measure Inputs			APPLICABILITY FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Center	Non-Jurisdictional	Religious Worship	Misc
VA Existing	3107	Demand Controlled Ventilation	7.4%	0.0%	1.5%	0.0%	0.0%	89.5%	65.4%	0.0%	65.4%	25.0%	42.7%	42.7%
VA Existing	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	4.6%	0.0%	1.5%	95.6%	10.0%	37.3%	69.5%	11.3%	69.5%	19.3%	33.9%	33.9%
VA Existing	3201	Fan Motor, 40hp, 1800rpm, 94.1%	4.6%	0.0%	1.5%	95.6%	10.0%	37.3%	69.5%	11.3%	69.5%	19.3%	33.9%	33.9%
VA Existing	3202	Variable Speed Drive Control, 40 HP	4.6%	0.0%	1.5%	95.6%	10.0%	37.3%	69.5%	11.3%	69.5%	19.3%	33.9%	33.9%
VA Existing	3203	Air Handler Optimization, 40 HP	4.6%	0.0%	1.5%	95.6%	10.0%	37.3%	69.5%	11.3%	69.5%	19.3%	33.9%	33.9%
VA Existing	3204	Demand Controlled Ventilation	4.6%	0.0%	1.5%	95.6%	10.0%	37.3%	69.5%	11.3%	69.5%	19.3%	33.9%	33.9%
VA Existing	4000	Base Built-Up Refrigeration System	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4001	High-efficiency fan motors	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4002	Strip curtains for walk-ins (built-up)	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4003	Auto-closer on main door to walk-in freezer (built-up)	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4004	Night covers for display cases	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4005	Evaporator fan controller for MT walk-ins	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4006	Electronically commutated evaporator fan motor	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4007	Efficient compressor motor	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4008	Compressor VSD retrofit	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4009	Floating head pressure controls	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4010	Refrigeration Commissioning	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4011	Demand Hot Gas Defrost	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4012	Demand Defrost Electric	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4013	Anti-sweat (humidistat) controls	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4014	Freezer-Cooler Replacement Gaskets	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4015	High R-Value Glass Doors	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4016	LED Display Lighting	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4017	Multiplex Compressor System	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4018	Oversized Air Cooled Condenser	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4019	Insulated suction lines	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40.4%	43.4%	18.2%
VA Existing	4100	Base Self-Contained Refrigeration	67.9%	91.2%	71.3%	93.7%	89.7%	83.2%	76.7%	77.9%	95.2%	84.7%	96.0%	62.1%
VA Existing	4101	Strip curtains for walk-ins (self-contained)	12.4%	91.2%	17.6%	93.7%	33.8%	22.1%	26.6%	58.9%	2.3%	55.0%	2.2%	27.3%
VA Existing	4102	Auto-closer on main door to walk-in freezer (self-contained)	12.4%	91.2%	17.6%	93.7%	33.8%	22.1%	26.6%	58.9%	2.3%	55.0%	2.2%	27.3%
VA Existing	4103	Night covers for display cases (self-contained)	7.1%	47.6%	15.2%	27.5%	1.8%	32.1%	14.5%	37.7%	0.0%	33.7%	10.3%	17.6%
VA Existing	4104	Freezer-Cooler Replacement Gaskets (self-contained)	67.9%	91.2%	71.3%	93.7%	89.7%	83.2%	76.7%	77.9%	95.2%	84.7%	96.0%	62.1%
VA Existing	4105	Bi-level LED Case Lighting (self-contained units) 2014	8.7%	67.0%	17.4%	91.4%	1.5%	36.6%	25.6%	29.6%	2.3%	40.4%	43.4%	18.2%
VA Existing	4106	Energy-Star Refrigerator, solid door	8.7%	67.0%	17.4%	91.4%	1.5%	36.6%	25.6%	29.6%	2.3%	40.4%	43.4%	18.2%
VA Existing	4107	Energy-Star Freezer, solid door	8.7%	67.0%	17.4%	91.4%	1.5%	36.6%	25.6%	29.6%	2.3%	40.4%	43.4%	18.2%
VA Existing	4108	Energy-Star Refrigerator, glass door	8.7%	67.0%	17.4%	91.4%	1.5%	36.6%	25.6%	29.6%	2.3%	40.4%	43.4%	18.2%
VA Existing	4109	Energy-Star Freezer, glass door	8.7%	67.0%	17.4%	91.4%	1.5%	36.6%	25.6%	29.6%	2.3%	40.4%	43.4%	18.2%
VA Existing	4110	Energy Star Ice Machines	17.2%	88.0%	16.6%	73.1%	39.5%	83.2%	34.4%	77.9%	6.3%	66.6%	81.9%	35.5%
VA Existing	4111	Hydraulic-type door closer on reach-in cooler glass doors	8.7%	67.0%	17.4%	91.4%	1.5%	36.6%	25.6%	29.6%	2.3%	40.4%	43.4%	18.2%
VA Existing	4112	Reach-in unit occupancy sensors	8.7%	67.0%	17.4%	91.4%	1.5%	36.6%	25.6%	29.6%	2.3%	40.4%	43.4%	18.2%
VA Existing	5000	Base Desktop PC	97.6%	63.7%	80.3%	84.9%	97.9%	99.6%	95.0%	96.9%	97.7%	97.6%	95.3%	89.5%
VA Existing	5001	PC Network Power Management Enabling	97.6%	63.7%	80.3%	84.9%	97.9%	99.6%	95.0%	96.9%	97.7%	97.6%	95.3%	89.5%
VA Existing	5002	Energy Star or Better PC	97.6%	63.7%	80.3%	84.9%	97.9%	99.6%	95.0%	96.9%	97.7%	97.6%	95.3%	89.5%
VA Existing	5003	Plug-load controls - Commercial Smart Strip (base desktop PC)	97.6%	63.7%	80.3%	84.9%	97.9%	99.6%	95.0%	96.9%	97.7%	97.6%	95.3%	89.5%
VA Existing	5100	Base Laptop PC	86.9%	44.0%	60.5%	65.7%	85.5%	97.5%	68.2%	86.6%	90.1%	83.0%	72.1%	70.6%
VA Existing	5101	Laptop Network Power Management Enabling	86.9%	44.0%	60.5%	65.7%	85.5%	97.5%	68.2%	86.6%	90.1%	83.0%	72.1%	70.6%
VA Existing	5102	Energy Star or Better Laptop	86.9%	44.0%	60.5%	65.7%	85.5%	97.5%	68.2%	86.6%	90.1%	83.0%	72.1%	70.6%
VA Existing	5103	Plug-load controls - Commercial Smart Strip (base laptop PC)	86.9%	44.0%	60.5%	65.7%	85.5%	97.5%	68.2%	86.6%	90.1%	83.0%	72.1%	70.6%
VA Existing	5200	Base Monitor, CRT	59.8%	46.8%	41.7%	28.1%	68.3%	93.6%	64.4%	83.7%	78.9%	60.2%	45.4%	50.8%
VA Existing	5201	Energy Star or Better Monitor - CRT	59.8%	46.8%	41.7%	28.1%	68.3%	93.6%	64.4%	83.7%	78.9%	60.2%	45.4%	50.8%
VA Existing	5202	Monitor Power Management Enabling - CRT	59.8%	46.8%	41.7%	28.1%	68.3%	93.6%	64.4%	83.7%	78.9%	60.2%	45.4%	50.8%
VA Existing	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	59.8%	46.8%	41.7%	28.1%	68.3%	93.6%	64.4%	83.7%	78.9%	60.2%	45.4%	50.8%
VA Existing	5300	Base Monitor, LCD	78.6%	42.2%	48.4%	91.8%	75.3%	93.3%	77.7%	87.1%	94.9%	95.9%	89.1%	77.7%
VA Existing	5301	Energy Star or Better Monitor - LCD	78.6%	42.2%	48.4%	91.8%	75.3%	93.3%	77.7%	87.1%	94.9%	95.9%	89.1%	77.7%
VA Existing	5302	Monitor Power Management Enabling - LCD	78.6%	42.2%	48.4%	91.8%	75.3%	93.3%	77.7%	87.1%	94.9%	95.9%	89.1%	77.7%
VA Existing	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	78.6%	42.2%	48.4%	91.8%	75.3%	93.3%	77.7%	87.1%	94.9%	95.9%	89.1%	77.7%
VA Existing	5400	Base Copier	96.6%	44.8%	87.1%	29.0%	89.4%	98.6%	99.3%	93.6%	95.2%	97.4%	98.4%	85.8%
VA Existing	5401	Energy Star or Better Copier	96.6%	44.8%	87.1%	29.0%	89.4%	98.6%	99.3%	93.6%	95.2%	97.4%	98.4%	85.8%
VA Existing	5402	Copier Power Management Enabling	96.6%	44.8%	87.1%	29.0%	89.4%	98.6%	99.3%	93.6%	95.2%	97.4%	98.4%	85.8%
VA Existing	5500	Base Multifunction	96.6%	78.2%	81.5%	84.0%	93.9%	97.9%	83.6%	93.3%	90.1%	96.8%	90.8%	86.2%
VA Existing	5501	Multifunction Power Management Enabling	96.6%	78.2%	81.5%	84.0%	93.9%	97.9%	83.6%	93.3%	90.1%	96.8%	90.8%	86.2%
VA Existing	5502	ENERGY STAR Multi-Function Printer	96.6%	78.2%	81.5%	84.0%	93.9%	97.9%	83.6%	93.3%	90.1%	96.8%	90.8%	86.2%
VA Existing	5600	Base Printer	95.4%	30.3%	51.1%	17.4%	83.1%	98.6%	82.5%	42.8%	69.0%	91.7%	53.1%	71.0%
VA Existing	5601	Printer Power Management Enabling	95.4%	30.3%	51.1%	17.4%	83.1%	98.6%	82.5%	42.8%	69.0%	91.7%	53.1%	71.0%

Commercial Elec Measure Inputs			APPLICABILITY FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Center	Non-Jurisdictional	Religious Worship	Misc
VA Existing	5602	ENERGY STAR Printer	95.4%	30.3%	51.1%	17.4%	83.1%	98.6%	82.5%	42.8%	69.0%	91.7%	53.1%	71.0%
VA Existing	5700	Base Data Center/Server Room	0.2%	0.1%	0.0%	0.0%	0.1%	0.4%	0.3%	0.2%	100.0%	0.2%	0.1%	0.1%
VA Existing	5701	Data Center Improved Operations	0.2%	0.1%	0.0%	0.0%	0.1%	0.4%	0.3%	0.2%	100.0%	0.2%	0.1%	0.1%
VA Existing	5702	Data Center Best Practices	0.2%	0.1%	0.0%	0.0%	0.1%	0.4%	0.3%	0.2%	100.0%	0.2%	0.1%	0.1%
VA Existing	5703	Data Center State of the Art practices	0.2%	0.1%	0.0%	0.0%	0.1%	0.4%	0.3%	0.2%	100.0%	0.2%	0.1%	0.1%
VA Existing	5704	Data Center Airflow Management	0.2%	0.1%	0.0%	0.0%	0.1%	0.4%	0.3%	0.2%	100.0%	0.2%	0.1%	0.1%
VA Existing	6000	Base Water Heating	88.9%	39.3%	62.5%	77.9%	82.6%	72.5%	55.4%	31.2%	88.9%	38.7%	71.5%	50.8%
VA Existing	6001	Demand controlled circulating systems	88.9%	39.3%	62.5%	77.9%	82.6%	72.5%	55.4%	31.2%	88.9%	38.7%	71.5%	50.8%
VA Existing	6002	High Efficiency Water Heater (electric)	88.9%	39.3%	62.5%	77.9%	82.6%	72.5%	55.4%	31.2%	88.9%	38.7%	71.5%	50.8%
VA Existing	6003	Hot Water Pipe Insulation	88.9%	39.3%	62.5%	77.9%	82.6%	72.5%	55.4%	31.2%	88.9%	38.7%	71.5%	50.8%
VA Existing	6004	Tankless Water Heater	88.9%	39.3%	62.5%	77.9%	82.6%	72.5%	55.4%	31.2%	88.9%	38.7%	71.5%	50.8%
VA Existing	6005	Heat Pump Water Heater (air source)	88.9%	39.3%	62.5%	77.9%	82.6%	72.5%	55.4%	31.2%	88.9%	38.7%	71.5%	50.8%
VA Existing	6006	Heat Recovery Unit	88.9%	39.3%	62.5%	77.9%	82.6%	72.5%	55.4%	31.2%	88.9%	38.7%	71.5%	50.8%
VA Existing	6007	Heat Trap	88.9%	39.3%	62.5%	77.9%	82.6%	72.5%	55.4%	31.2%	88.9%	38.7%	71.5%	50.8%
VA Existing	6008	Solar Water Heater	88.9%	39.3%	62.5%	77.9%	82.6%	72.5%	55.4%	31.2%	88.9%	38.7%	71.5%	50.8%
VA Existing	7000	Base Refrigerated Vending Machines	99.3%	100.0%	90.1%	98.3%	98.6%	100.0%	98.6%	95.7%	100.0%	98.1%	100.0%	97.0%
VA Existing	7001	Vending Misers (Refrigerated units)	49.7%	50.0%	45.0%	49.1%	49.3%	50.0%	49.3%	47.8%	50.0%	49.1%	50.0%	48.5%
VA Existing	7002	Vending Misers (Refrigerated glass-front units)	49.7%	50.0%	45.0%	49.1%	49.3%	50.0%	49.3%	47.8%	50.0%	49.1%	50.0%	48.5%
VA Existing	7100	Base Non-Refrigerated Vending Machines	78.1%	88.4%	53.8%	11.4%	95.2%	70.9%	74.4%	31.5%	100.0%	67.9%	3.4%	46.6%
VA Existing	7101	Vending Misers (Non-Refrigerated)	78.1%	88.4%	53.8%	11.4%	95.2%	70.9%	74.4%	31.5%	100.0%	67.9%	3.4%	46.6%
VA Existing	7200	Base Oven	1.7%	15.1%	3.5%	55.7%	15.0%	7.6%	4.5%	20.4%	0.1%	22.2%	49.4%	4.5%
VA Existing	7201	Convection Oven	1.7%	15.1%	3.5%	55.7%	15.0%	7.6%	4.5%	20.4%	0.1%	22.2%	49.4%	4.5%
VA Existing	7300	Base Fryer	1.3%	19.1%	1.3%	49.1%	10.9%	11.2%	2.5%	19.2%	0.1%	13.0%	1.4%	4.5%
VA Existing	7301	Efficient Fryer	1.3%	19.1%	1.3%	49.1%	10.9%	11.2%	2.5%	19.2%	0.1%	13.0%	1.4%	4.5%
VA Existing	7400	Base Steamer	1.0%	15.3%	1.3%	41.9%	10.9%	1.1%	4.5%	7.0%	0.1%	16.3%	2.7%	2.4%
VA Existing	7401	Efficient Steamer	1.0%	15.3%	1.3%	41.9%	10.9%	1.1%	4.5%	7.0%	0.1%	16.3%	2.7%	2.4%
VA Existing	8000	Base Heating, Heat Pump (7.7 HSPF)	34.7%	7.6%	7.7%	3.1%	1.5%	17.2%	22.8%	25.4%	0.0%	6.2%	5.7%	22.4%
VA Existing	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	34.7%	7.6%	7.7%	3.1%	1.5%	17.2%	22.8%	25.4%	0.0%	6.2%	5.7%	22.4%
VA Existing	8100	Base Heating, Other Electric	35.1%	21.1%	28.1%	76.2%	12.0%	0.0%	32.1%	20.3%	41.2%	13.9%	46.4%	20.8%
VA Existing	9500	Base Miscellaneous	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
VA Existing	9501	Xmisc	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
NC Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1003	ROB 4L4'T5, 2014-2015	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1004	ROB 4L4' LED Tube, 2014-2015	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	0.9%	0.1%	0.0%	0.1%	0.0%	0.7%	3.8%	0.1%	0.0%	0.0%	0.0%	0.0%
NC Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1013	ROB 4L4'T5, 2016-2017	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1014	ROB 4L4' LED Tube, 2016-2017	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	0.9%	0.1%	0.0%	0.1%	0.0%	0.7%	3.8%	0.1%	0.0%	0.0%	0.0%	0.0%
NC Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1023	ROB 4L4'T5, 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1024	ROB 4L4' LED Tube, 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	0.9%	0.1%	0.0%	0.1%	0.0%	0.7%	3.8%	0.1%	0.0%	0.0%	0.0%	0.0%
NC Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1033	ROB 4L4'T5, 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1034	ROB 4L4' LED Tube, 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%

Commercial Elec Measure Inputs			APPLICABILITY FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Center	Non-Jurisdictional	Religious Worship	Misc
NC Existing	1035	LED Troffer (base 4L4'T8), 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	0.9%	0.1%	0.0%	0.1%	0.0%	0.7%	3.8%	0.1%	0.0%	0.0%	0.0%	0.0%
NC Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	47.9%	13.2%	9.2%
NC Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1103	ROB 2L4'T5, 2014-2015	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1104	ROB 2L4' LED Tube, 2014-2015	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	0.0%	1.0%	0.0%	0.0%	0.0%	0.1%	1.0%	0.7%	0.0%	0.0%	0.0%	0.0%
NC Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1113	ROB 2L4'T5, 2016-2017	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1114	ROB 2L4' LED Tube, 2016-2017	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	0.0%	1.0%	0.0%	0.0%	0.0%	0.1%	1.0%	0.7%	0.0%	0.0%	0.0%	0.0%
NC Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1123	ROB 2L4'T5, 2018-2019	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1124	ROB 2L4' LED Tube, 2018-2019	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	0.0%	1.0%	0.0%	0.0%	0.0%	0.1%	1.0%	0.7%	0.0%	0.0%	0.0%	0.0%
NC Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%
NC Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	13.7%	12.5%	8.7%

Commercial Elec Measure Inputs			ENERGY SAVINGS (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	Non-Jurisdictional	Religious Worship	Misc
VA Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
VA Existing	1003	ROB 4L4'T5, 2014-2015	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
VA Existing	1004	ROB 4L4' LED Tube, 2014-2015	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
VA Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
VA Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
VA Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
VA Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
VA Existing	1013	ROB 4L4'T5, 2016-2017	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
VA Existing	1014	ROB 4L4' LED Tube, 2016-2017	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
VA Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
VA Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
VA Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
VA Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
VA Existing	1023	ROB 4L4'T5, 2018-2019	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
VA Existing	1024	ROB 4L4' LED Tube, 2018-2019	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
VA Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
VA Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
VA Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
VA Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
VA Existing	1033	ROB 4L4'T5, 2020	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
VA Existing	1034	ROB 4L4' LED Tube, 2020	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
VA Existing	1035	LED Troffer (base 4L4'T8), 2020	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
VA Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
VA Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
VA Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
VA Existing	1103	ROB 2L4'T5, 2014-2015	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
VA Existing	1104	ROB 2L4' LED Tube, 2014-2015	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
VA Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
VA Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
VA Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
VA Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
VA Existing	1113	ROB 2L4'T5, 2016-2017	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
VA Existing	1114	ROB 2L4' LED Tube, 2016-2017	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
VA Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
VA Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
VA Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
VA Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
VA Existing	1123	ROB 2L4'T5, 2018-2019	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
VA Existing	1124	ROB 2L4' LED Tube, 2018-2019	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
VA Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
VA Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%

Commercial Elec Measure Inputs			ENERGY SAVINGS (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	Non-Jurisdictional	Religious Worship	Misc
VA Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
VA Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1131	ROB 2L4' High Performance T8 (86 W), 2020	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
VA Existing	1133	ROB 2L4'T5, 2020	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
VA Existing	1134	ROB 2L4' LED Tube, 2020	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
VA Existing	1135	LED Troffer (base 2L4'T8), 2020	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
VA Existing	1136	Lighting Control Tuneup (base 2L4'T8), 2020	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
VA Existing	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
VA Existing	1200	Base Other Fluorescent Fixture	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1201	ROB High Performance T8 (base other fluorescent)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	1202	ROB Low Watt High Performance T8 (base other fluorescent)	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
VA Existing	1203	Lighting Control Tuneup (base other fluorescent fixture)	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%
VA Existing	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
VA Existing	1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1301	CFLs (base incandescent flood) 2014-2015	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%
VA Existing	1302	LEDs (base incandescent flood) 2014-2015	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
VA Existing	1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1311	CFLs (base incandescent flood) 2016-2017	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%
VA Existing	1312	LEDs (base incandescent flood) 2016-2017	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
VA Existing	1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1321	CFLs (base incandescent flood) 2018-2019	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%
VA Existing	1322	LEDs (base incandescent flood) 2018-2019	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
VA Existing	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1331	CFLs (base incandescent flood) 2020	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%
VA Existing	1332	LEDs (base incandescent flood) 2020	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
VA Existing	1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1401	CFLs (base incandescent A-line 72W) 2014-2015	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%
VA Existing	1402	LEDs (base incandescent A-line 72W) 2014-2015	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
VA Existing	1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1411	CFLs (base incandescent A-line 72W) 2016-2017	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%
VA Existing	1412	LEDs (base incandescent A-line 72W) 2016-2017	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
VA Existing	1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1421	CFLs (base incandescent A-line 72W) 2018-2019	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%
VA Existing	1422	LEDs (base incandescent A-line 72W) 2018-2019	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
VA Existing	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1431	CFLs (base incandescent A-line 72W) 2020	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%	74%
VA Existing	1432	LEDs (base incandescent A-line 72W) 2020	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
VA Existing	1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1501	CFLs (base incandescent A-line 53W) 2014-2015	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%
VA Existing	1502	LEDs (base incandescent A-line 53W) 2014-2015	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1511	CFLs (base incandescent A-line 53W) 2016-2017	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%
VA Existing	1512	LEDs (base incandescent A-line 53W) 2016-2017	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1521	CFLs (base incandescent A-line 53W) 2018-2019	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%
VA Existing	1522	LEDs (base incandescent A-line 53W) 2018-2019	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1531	CFLs (base incandescent A-line 53W) 2020	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%
VA Existing	1532	LEDs (base incandescent A-line 53W) 2020	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	1600	Base CFL 18W to screw-in replacement 2014-2015	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1601	LED screw-in replacement (base CFL 18W) 2014-2015	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
VA Existing	1610	Base CFL 18W to screw-in replacement 2016-2017	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1611	LED screw-in replacement (base CFL 18W) 2016-2017	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
VA Existing	1620	Base CFL 18W to screw-in replacement 2018-2019	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1621	LED screw-in replacement (base CFL 18W) 2018-2019	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
VA Existing	1630	Base CFL 18W to screw-in replacement 2020	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1631	LED screw-in replacement (base CFL 18W) 2020	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%
VA Existing	1700	Base CFL 23W to screw-in replacement 2014-2015	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1701	LED screw-in replacement (base CFL 23W) 2014-2015	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%
VA Existing	1710	Base CFL 23W to screw-in replacement 2016-2017	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Commercial Elec Measure Inputs			ENERGY SAVINGS (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	Non-Jurisdictional	Religious Worship	Misc
VA Existing	1711	LED screw-in replacement (base CFL 23W) 2016-2017	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%
VA Existing	1720	Base CFL 23W to screw-in replacement 2018-2019	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1721	LED screw-in replacement (base CFL 23W) 2018-2019	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%
VA Existing	1730	Base CFL 23W to screw-in replacement 2020	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1731	LED screw-in replacement (base CFL 23W) 2020	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%	26%
VA Existing	1800	BaseMetal Halide, 465W	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1801	T5 (240W) (base metal halide)	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%	48%
VA Existing	1802	Induction High Bay Lighting	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%	37%
VA Existing	1803	PSMH + electronic ballast	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
VA Existing	1804	PSMH, magnetic ballast, 320 W	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
VA Existing	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
VA Existing	1806	Occupancy Sensor, High Bay T5	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
VA Existing	1850	Base CFL Exit Sign	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1851	LED Exit Sign	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%
VA Existing	1900	Base Outdoor High Pressure Sodium 250W Lamp	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	1901	Outdoor Lighting Controls (Photocell/Timeclock)	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
VA Existing	1902	LED Outdoor Area Lighting	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%	52%
VA Existing	1903	Bi-Level LED Outdoor Lighting	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
VA Existing	2002	Window Film (Standard) - Chiller	9%	10%	2%	9%	12%	4%	1%	7%	9%	5%	1%	1%
VA Existing	2003	EMS - Chiller	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	2004	Cool Roof - Chiller	2%	7%	13%	15%	18%	6%	1%	0%	2%	1%	0%	0%
VA Existing	2005	Chiller Tune Up/Diagnostics	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
VA Existing	2006	VSD for Chiller Pumps and Towers	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	2007	EMS Optimization - Chiller	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	2008	New Economizer - Chiller	27%	0%	21%	0%	0%	16%	18%	43%	27%	14%	0%	0%
VA Existing	2009	Dual Enthalpy Economizer Replaced Dry Bulb Economizer - Chiller	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	2010	Ceiling/roof Insulation - Chiller	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
VA Existing	2011	Duct/Pipe Insulation - Chiller	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
VA Existing	2012	Duct Testing/Sealing	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%
VA Existing	2013	High Efficiency Chiller Motors	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
VA Existing	2100	Base DX Packaged System, EER=10.3, 10 tons	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	2101	DX Packaged System, EER=10.9, 10 tons	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
VA Existing	2102	DX Packaged System, EER=13.4, 10 tons	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%
VA Existing	2103	Geothermal Heat Pump, EER=13, 10 tons - DX	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
VA Existing	2104	DX Coil Cleaning	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	2105	DX Tune Up/ Advanced Diagnostics	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	2106	Prog. Thermostat - DX	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	2107	Cool Roof - DX	2%	7%	13%	15%	18%	4%	1%	0%	2%	1%	0%	0%
VA Existing	2108	Optimize Controls - DX	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	2109	Economizer - DX	28%	12%	27%	2%	0%	5%	0%	4%	28%	14%	0%	0%
VA Existing	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	3%	3%	4%	1%	3%	8%	0%	1%	3%	2%	0%	0%
VA Existing	2111	Economizer Repair - DX	28%	12%	27%	2%	0%	5%	0%	4%	28%	14%	0%	0%
VA Existing	2112	Aerosol Duct Sealing - DX	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%
VA Existing	2113	Ceiling/roof Insulation - DX	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
VA Existing	2114	Duct/Pipe Insulation - DX	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
VA Existing	2115	Window Film (Standard) - DX	9%	10%	2%	9%	12%	4%	1%	7%	9%	5%	1%	1%
VA Existing	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
VA Existing	2300	Base PTAC, EER=8.3, 1 ton	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	2301	HE PTAC, EER=9.6, 1 ton	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
VA Existing	2302	Occupancy Sensor (hotels)	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
VA Existing	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	3001	Fan Motor, 5hp, 1800rpm, 89.5%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
VA Existing	3002	Variable Speed Drive Control, 5 HP	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	3003	Demand Controlled Ventilation	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
VA Existing	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	3101	Fan Motor, 15hp, 1800rpm, 92.4%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
VA Existing	3102	Variable Speed Drive Control, 15 HP	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	3103	Air Handler Optimization, 15 HP	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
VA Existing	3105	Energy Recovery Ventilation (ERV)	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%

Commercial Elec Measure Inputs			ENERGY SAVINGS (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	Non-Jurisdictional	Religious Worship	Misc
VA Existing	3106	Separate Makeup Air / Exhaust Hoods AC	25%	25.0%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
VA Existing	3107	Demand Controlled Ventilation	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
VA Existing	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	3201	Fan Motor, 40hp, 1800rpm, 94.1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
VA Existing	3202	Variable Speed Drive Control, 40 HP	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	3203	Air Handler Optimization, 40 HP	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	3204	Demand Controlled Ventilation	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
VA Existing	4000	Base Built-Up Refrigeration System	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	4001	High-efficiency fan motors	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
VA Existing	4002	Strip curtains for walk-ins (built-up)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
VA Existing	4003	Auto-closer on main door to walk-in freezer (built-up)												
VA Existing	4004	Night covers for display cases	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
VA Existing	4005	Evaporator fan controller for MT walk-ins	0.55%	0.55%	0.55%	0.32%	0.41%	0.55%	0.55%	0.55%	0.55%	0.55%	0.55%	0.55%
VA Existing	4006	Electronically commutated evaporator fan motor	11.8%	11.8%	11.8%	11.8%	11.8%	11.8%	11.8%	11.8%	11.8%	11.8%	11.8%	11.8%
VA Existing	4007	Efficient compressor motor	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
VA Existing	4008	Compressor VSD retrofit	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
VA Existing	4009	Floating head pressure controls	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
VA Existing	4010	Refrigeration Commissioning	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	4011	Demand Hot Gas Defrost	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
VA Existing	4012	Demand Defrost Electric	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
VA Existing	4013	Anti-sweat (humidistat) controls	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	4014	Freezer-Cooler Replacement Gaskets	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
VA Existing	4015	High R-Value Glass Doors	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
VA Existing	4016	LED Display Lighting	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%
VA Existing	4017	Multiplex Compressor System	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%	14%
VA Existing	4018	Oversized Air Cooled Condenser	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
VA Existing	4019	Insulated suction lines												
VA Existing	4100	Base Self-Contained Refrigeration	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	4101	Strip curtains for walk-ins (self-contained)	0%	1%	1%	2%	4%	0%	0%	1%	0%	0%	0%	0%
VA Existing	4102	Auto-closer on main door to walk-in freezer (self-contained)												
VA Existing	4103	Night covers for display cases (self-contained)	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
VA Existing	4104	Freezer-Cooler Replacement Gaskets (self-contained)	4%	3%	4%	3%	0%	3%	3%	3%	4%	3%	3%	3%
VA Existing	4105	Bi-level LED Case Lighting (self-contained units) 2014	0.2%	0.3%	3.4%	0.7%	0.0%	0.2%	0.4%	0.1%	0.2%	0.1%	0.2%	0.1%
VA Existing	4106	Energy-Star Refrigerator, solid door	3%	3%	2%	0%	0%	5%	5%	2%	3%	4%	6%	6%
VA Existing	4107	Energy-Star Freezer, solid door	1%	1%	1%	3%	0%	1%	0%	3%	1%	0%	0%	0%
VA Existing	4108	Energy-Star Refrigerator, glass door	7%	2%	10%	0%	0%	1%	4%	0%	7%	5%	2%	2%
VA Existing	4109	Energy-Star Freezer, glass door	2%	3%	3%	8%	0%	2%	0%	6%	2%	1%	0%	0%
VA Existing	4110	Energy Star Ice Machines	2%	2%	1%	0%	0%	3%	4%	1%	2%	3%	4%	4%
VA Existing	4111	Hydraulic-type door closer on reach-in cooler glass doors												
VA Existing	4112	Reach-in unit occupancy sensors	0.1%	0.1%	1.8%	0.03%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
VA Existing	5000	Base Desktop PC	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	5001	PC Network Power Management Enabling	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%
VA Existing	5002	Energy Star or Better PC	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
VA Existing	5003	Plug-load controls - Commercial Smart Strip (base desktop PC)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	5100	Base Laptop PC	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	5101	Laptop Network Power Management Enabling	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
VA Existing	5102	Energy Star or Better Laptop	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	5103	Plug-load controls - Commercial Smart Strip (base Laptop PC)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	5200	Base Monitor, CRT	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	5201	Energy Star or Better Monitor - CRT	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%
VA Existing	5202	Monitor Power Management Enabling - CRT	53%	53%	53%	53%	53%	53%	53%	53%	53%	53%	53%	53%
VA Existing	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
VA Existing	5300	Base Monitor, LCD	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	5301	Energy Star or Better Monitor - LCD	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
VA Existing	5302	Monitor Power Management Enabling - LCD	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%
VA Existing	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
VA Existing	5400	Base Copier	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	5401	Energy Star or Better Copier	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
VA Existing	5402	Copier Power Management Enabling	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%
VA Existing	5500	Base Multifunction	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	5501	Multifunction Power Management Enabling	49%	49%	49%	49%	49%	49%	49%	49%	49%	49%	49%	49%
VA Existing	5502	ENERGY STAR Multi-Function Printer	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
VA Existing	5600	Base Printer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Commercial Elec Measure Inputs			ENERGY SAVINGS (percent)											
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VA Existing	5601	Printer Power Management Enabling	49%	49%	49%	49%	49%	49%	49%	49%	49%	49%	49%	49%
VA Existing	5602	ENERGY STAR Printer	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
VA Existing	5700	Base Data Center/Server Room	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	5701	Data Center Improved Operations	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
VA Existing	5702	Data Center Best Practices	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
VA Existing	5703	Data Center State of the Art practices	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%	56%
VA Existing	5704	Data Center Airflow Management												
VA Existing	6000	Base Water Heating	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	6001	Demand controlled circulating systems	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	6002	High Efficiency Water Heater (electric)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
VA Existing	6003	Hot Water Pipe Insulation	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
VA Existing	6004	Tankless Water Heater	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	6005	Heat Pump Water Heater (air source)	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
VA Existing	6006	Heat Recovery Unit	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%
VA Existing	6007	Heat Trap	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%	9%
VA Existing	6008	Solar Water Heater	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	7000	Base Refrigerated Vending Machines	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	7001	Vending Misers (Refrigerated units)	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%
VA Existing	7002	Vending Misers (Refrigerated glass-front units)	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	7100	Base Non-Refrigerated Vending Machines	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	7101	Vending Misers (Non-Refrigerated)	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%	46%
VA Existing	7200	Base Oven	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	7201	Convection Oven	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%	23%
VA Existing	7300	Base Fryer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	7301	Efficient Fryer	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
VA Existing	7400	Base Steamer	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	7401	Efficient Steamer	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%	69%
VA Existing	8000	Base Heating, Heat Pump (7.7 HSPF)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
VA Existing	8100	Base Heating, Other Electric	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	9500	Base Miscellaneous	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	9501	Xmisc	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NC Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NC Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
NC Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
NC Existing	1003	ROB 4L4'T5, 2014-2015	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
NC Existing	1004	ROB 4L4' LED Tube, 2014-2015	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
NC Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
NC Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
NC Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
NC Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
NC Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NC Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
NC Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
NC Existing	1013	ROB 4L4'T5, 2016-2017	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
NC Existing	1014	ROB 4L4' LED Tube, 2016-2017	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
NC Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
NC Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
NC Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
NC Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
NC Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NC Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
NC Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
NC Existing	1023	ROB 4L4'T5, 2018-2019	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
NC Existing	1024	ROB 4L4' LED Tube, 2018-2019	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
NC Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
NC Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
NC Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
NC Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
NC Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NC Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
NC Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
NC Existing	1033	ROB 4L4'T5, 2020	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%

Commercial Elec Measure Inputs			ENERGY SAVINGS (percent)											
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NC Existing	1034	ROB 4L4' LED Tube, 2020	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
NC Existing	1035	LED Troffer (base 4L4'T8), 2020	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
NC Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
NC Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
NC Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
NC Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NC Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
NC Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
NC Existing	1103	ROB 2L4'T5, 2014-2015	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
NC Existing	1104	ROB 2L4' LED Tube, 2014-2015	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
NC Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
NC Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
NC Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
NC Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
NC Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NC Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
NC Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
NC Existing	1113	ROB 2L4'T5, 2016-2017	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
NC Existing	1114	ROB 2L4' LED Tube, 2016-2017	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
NC Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
NC Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
NC Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
NC Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
NC Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
NC Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
NC Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%
NC Existing	1123	ROB 2L4'T5, 2018-2019	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%
NC Existing	1124	ROB 2L4' LED Tube, 2018-2019	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%	34%
NC Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
NC Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
NC Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	30%	20%	20%	20%	20%	20%	20%	20%	30%	25%	20%	20%
NC Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
NC Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Commercial Elec Measure Inputs			Standards Adjustment Factor (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	Jurisdictidligious	Wors	Misc
VA Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1003	ROB 4L4'T5, 2014-2015	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1004	ROB 4L4' LED Tube, 2014-2015	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1013	ROB 4L4'T5, 2016-2017	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1014	ROB 4L4' LED Tube, 2016-2017	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1023	ROB 4L4'T5, 2018-2019	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1024	ROB 4L4' LED Tube, 2018-2019	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1033	ROB 4L4'T5, 2020	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1034	ROB 4L4' LED Tube, 2020	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1035	LED Troffer (base 4L4'T8), 2020	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	94%	92%	93%	85%	96%	93%	90%	95%	96%	96%	89%	89%
VA Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1103	ROB 2L4'T5, 2014-2015	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1104	ROB 2L4' LED Tube, 2014-2015	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1113	ROB 2L4'T5, 2016-2017	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1114	ROB 2L4' LED Tube, 2016-2017	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1123	ROB 2L4'T5, 2018-2019	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%

Commercial Elec Measure Inputs			Standards Adjustment Factor (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	Jurisdictional	Religious	Wors	Misc
VA Existing	1124	ROB 2L4' LED Tube, 2018-2019	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1131	ROB 2L4' High Performance T8 (86 W), 2020	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1133	ROB 2L4'T5, 2020	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1134	ROB 2L4' LED Tube, 2020	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1135	LED Troffer (base 2L4'T8), 2020	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1136	Lighting Control Tuneup (base 2L4'T8), 2020	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1200	Base Other Fluorescent Fixture	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1201	ROB High Performance T8 (base other fluorescent)	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1202	ROB Low Watt High Performance T8 (base other fluorescent)	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1203	Lighting Control Tuneup (base other fluorescent fixture)	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	98%	97%	97%	93%	100%	97%	96%	98%	99%	99%	96%	96%
VA Existing	1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1301	CFLs (base incandescent flood) 2014-2015	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1302	LEDs (base incandescent flood) 2014-2015	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1311	CFLs (base incandescent flood) 2016-2017	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1312	LEDs (base incandescent flood) 2016-2017	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1321	CFLs (base incandescent flood) 2018-2019	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1322	LEDs (base incandescent flood) 2018-2019	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1331	CFLs (base incandescent flood) 2020	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1332	LEDs (base incandescent flood) 2020	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1401	CFLs (base incandescent A-line 72W) 2014-2015	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1402	LEDs (base incandescent A-line 72W) 2014-2015	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1411	CFLs (base incandescent A-line 72W) 2016-2017	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1412	LEDs (base incandescent A-line 72W) 2016-2017	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1421	CFLs (base incandescent A-line 72W) 2018-2019	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1422	LEDs (base incandescent A-line 72W) 2018-2019	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1431	CFLs (base incandescent A-line 72W) 2020	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1432	LEDs (base incandescent A-line 72W) 2020	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1501	CFLs (base incandescent A-line 53W) 2014-2015	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1502	LEDs (base incandescent A-line 53W) 2014-2015	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1511	CFLs (base incandescent A-line 53W) 2016-2017	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1512	LEDs (base incandescent A-line 53W) 2016-2017	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1521	CFLs (base incandescent A-line 53W) 2018-2019	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1522	LEDs (base incandescent A-line 53W) 2018-2019	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1531	CFLs (base incandescent A-line 53W) 2020	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1532	LEDs (base incandescent A-line 53W) 2020	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1600	Base CFL 18W to screw-in replacement 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1601	LED screw-in replacement (base CFL 18W) 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Commercial Elec Measure Inputs			Standards Adjustment Factor (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	Jurisdictional	Religious	Wors	Misc
VA Existing	1610	Base CFL 18W to screw-in replacement 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1611	LED screw-in replacement (base CFL 18W) 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1620	Base CFL 18W to screw-in replacement 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1621	LED screw-in replacement (base CFL 18W) 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1630	Base CFL 18W to screw-in replacement 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1631	LED screw-in replacement (base CFL 18W) 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1700	Base CFL 23W to screw-in replacement 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1701	LED screw-in replacement (base CFL 23W) 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1710	Base CFL 23W to screw-in replacement 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1711	LED screw-in replacement (base CFL 23W) 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1720	Base CFL 23W to screw-in replacement 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1721	LED screw-in replacement (base CFL 23W) 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1730	Base CFL 23W to screw-in replacement 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1731	LED screw-in replacement (base CFL 23W) 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1800	BaseMetal Halide, 465W	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1801	T5 (240W) (base metal halide)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1802	Induction High Bay Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1803	PSMH + electronic ballast	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1804	PSMH, magnetic ballast, 320 W	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1806	Occupancy Sensor, High Bay T5	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1850	Base CFL Exit Sign	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1851	LED Exit Sign	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1900	Base Outdoor High Pressure Sodium 250W Lamp	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1901	Outdoor Lighting Controls (Photocell/Timeclock)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1902	LED Outdoor Area Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1903	Bi-Level LED Outdoor Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2002	Window Film (Standard) - Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2003	EMS - Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2004	Cool Roof - Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2005	Chiller Tune Up/Diagnostics	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2006	VSD for Chiller Pumps and Towers	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2007	EMS Optimization - Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2008	New Economizer - Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2009	Dual Enthalpy Economizer Replaced Dry Bulb Economizer - Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2010	Ceiling/roof Insulation - Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2011	Duct/Pipe Insulation - Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2012	Duct Testing/Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2013	High Efficiency Chiller Motors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2100	Base DX Packaged System, EER=10.3, 10 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2101	DX Packaged System, EER=10.9, 10 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2102	DX Packaged System, EER=13.4, 10 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2103	Geothermal Heat Pump, EER=13, 10 tons - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2104	DX Coil Cleaning	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2105	DX Tune Up/ Advanced Diagnostics	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2106	Prog. Thermostat - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2107	Cool Roof - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2108	Optimize Controls - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2109	Economizer - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2111	Economizer Repair - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2112	Aerosol Duct Sealing - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2113	Ceiling/roof Insulation - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2114	Duct/Pipe Insulation - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2115	Window Film (Standard) - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Commercial Elec Measure Inputs			Standards Adjustment Factor (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	Jurisdictional	Religious	Wors	Misc
VA Existing	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2300	Base PTAC, EER=8.3, 1 ton	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2301	HE PTAC, EER=9.6, 1 ton	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2302	Occupancy Sensor (hotels)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3001	Fan Motor, 5hp, 1800rpm, 89.5%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3002	Variable Speed Drive Control, 5 HP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3003	Demand Controlled Ventilation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3101	Fan Motor, 15hp, 1800rpm, 92.4%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3102	Variable Speed Drive Control, 15 HP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3103	Air Handler Optimization, 15 HP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3105	Energy Recovery Ventilation (ERV)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3106	Separate Makeup Air / Exhaust Hoods AC	100%	100.0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3107	Demand Controlled Ventilation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3201	Fan Motor, 40hp, 1800rpm, 94.1%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3202	Variable Speed Drive Control, 40 HP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3203	Air Handler Optimization, 40 HP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3204	Demand Controlled Ventilation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4000	Base Built-Up Refrigeration System	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4001	High-efficiency fan motors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4002	Strip curtains for walk-ins (built-up)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4003	Auto-closer on main door to walk-in freezer (built-up)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4004	Night covers for display cases	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4005	Evaporator fan controller for MT walk-ins	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4006	Electronically commutated evaporator fan motor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4007	Efficient compressor motor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4008	Compressor VSD retrofit	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4009	Floating head pressure controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4010	Refrigeration Commissioning	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4011	Demand Hot Gas Defrost	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4012	Demand Defrost Electric	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4013	Anti-sweat (humidistat) controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4014	Freezer-Cooler Replacement Gaskets	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4015	High R-Value Glass Doors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4016	LED Display Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4017	Multiplex Compressor System	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4018	Oversized Air Cooled Condenser	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4019	Insulated suction lines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4100	Base Self-Contained Refrigeration	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4101	Strip curtains for walk-ins (self-contained)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4102	Auto-closer on main door to walk-in freezer (self-contained)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4103	Night covers for display cases (self-contained)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4104	Freezer-Cooler Replacement Gaskets (self-contained)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4105	Bi-level LED Case Lighting (self-contained units) 2014	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4106	Energy-Star Refrigerator, solid door	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4107	Energy-Star Freezer, solid door	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4108	Energy-Star Refrigerator, glass door	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4109	Energy-Star Freezer, glass door	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4110	Energy Star Ice Machines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4111	Hydraulic-type door closer on reach-in cooler glass doors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4112	Reach-in unit occupancy sensors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5000	Base Desktop PC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5001	PC Network Power Management Enabling	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5002	Energy Star or Better PC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5003	Plug-load controls - Commercial Smart Strip (base desktop PC)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Commercial Elec Measure Inputs			Standards Adjustment Factor (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	Jurisdictidligious	Wors	Misc
VA Existing	5100	Base Laptop PC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5101	Laptop Network Power Management Enabling	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5102	Energy Star or Better Laptop	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5103	Plug-load controls - Commercial Smart Strip (base desktop PC)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5200	Base Monitor, CRT	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5201	Energy Star or Better Monitor - CRT	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5202	Monitor Power Management Enabling - CRT	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5300	Base Monitor, LCD	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5301	Energy Star or Better Monitor - LCD	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5302	Monitor Power Management Enabling - LCD	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5400	Base Copier	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5401	Energy Star or Better Copier	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5402	Copier Power Management Enabling	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5500	Base Multifunction	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5501	Multifunction Power Management Enabling	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5502	ENERGY STAR Multi-Function Printer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5600	Base Printer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5601	Printer Power Management Enabling	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5602	ENERGY STAR Printer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5700	Base Data Center/Server Room	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5701	Data Center Improved Operations	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5702	Data Center Best Practices	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5703	Data Center State of the Art practices	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5704	Data Center Airflow Management	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6000	Base Water Heating	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6001	Demand controlled circulating systems	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6002	High Efficiency Water Heater (electric)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6003	Hot Water Pipe Insulation	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6004	Tankless Water Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6005	Heat Pump Water Heater (air source)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6006	Heat Recovery Unit	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6007	Heat Trap	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6008	Solar Water Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7000	Base Refrigerated Vending Machines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7001	Vending Misers (Refrigerated units)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7002	Vending Misers (Refrigerated glass-front units)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7100	Base Non-Refrigerated Vending Machines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7101	Vending Misers (Non-Refrigerated)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7200	Base Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7201	Convection Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7300	Base Fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7301	Efficient Fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7400	Base Steamer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7401	Efficient Steamer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	8000	Base Heating, Heat Pump (7.7 HSPF)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	8100	Base Heating, Other Electric	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	9500	Base Miscellaneous	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	9501	Xmisc	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1003	ROB 4L4'T5, 2014-2015	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1004	ROB 4L4' LED Tube, 2014-2015	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%

Commercial Elec Measure Inputs			Standards Adjustment Factor (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	Jurisdictidligious	Wors	Misc
NC Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1013	ROB 4L4'T5, 2016-2017	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1014	ROB 4L4' LED Tube, 2016-2017	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1023	ROB 4L4'T5, 2018-2019	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1024	ROB 4L4' LED Tube, 2018-2019	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1033	ROB 4L4'T5, 2020	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1034	ROB 4L4' LED Tube, 2020	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1035	LED Troffer (base 4L4'T8), 2020	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	87%	98%	87%	88%	82%	97%	87%	85%	96%	96%	94%	94%
NC Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1103	ROB 2L4'T5, 2014-2015	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1104	ROB 2L4' LED Tube, 2014-2015	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1113	ROB 2L4'T5, 2016-2017	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1114	ROB 2L4' LED Tube, 2016-2017	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1123	ROB 2L4'T5, 2018-2019	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1124	ROB 2L4' LED Tube, 2018-2019	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%
NC Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	95%	99%	95%	95%	92%	99%	94%	93%	99%	99%	98%	98%

Commercial Elec Measure Inputs			FEASIBILITY FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	)ata Centerp	-Jurisdictior	ligious Wors	Misc
VA Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1003	ROB 4L4'T5, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1004	ROB 4L4' LED Tube, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
VA Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1013	ROB 4L4'T5, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1014	ROB 4L4' LED Tube, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
VA Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1023	ROB 4L4'T5, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1024	ROB 4L4' LED Tube, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
VA Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1033	ROB 4L4'T5, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1034	ROB 4L4' LED Tube, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1035	LED Troffer (base 4L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
VA Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1103	ROB 2L4'T5, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1104	ROB 2L4' LED Tube, 2014-2015	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
VA Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1113	ROB 2L4'T5, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1114	ROB 2L4' LED Tube, 2016-2017	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
VA Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Commercial Elec Measure Inputs			FEASIBILITY FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	)ata Centerp	-Jurisdictior	ligious Wors	Misc
VA Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1123	ROB 2L4'T5, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1124	ROB 2L4' LED Tube, 2018-2019	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
VA Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1131	ROB 2L4' High Performance T8 (86 W), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1133	ROB 2L4'T5, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1134	ROB 2L4' LED Tube, 2020	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1135	LED Troffer (base 2L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1136	Lighting Control Tuneup (base 2L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
VA Existing	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1200	Base Other Fluorescent Fixture	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1201	ROB High Performance T8 (base other fluorescent)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1202	ROB Low Watt High Performance T8 (base other fluorescent)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1203	Lighting Control Tuneup (base other fluorescent fixture)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
VA Existing	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1301	CFLs (base incandescent flood) 2014-2015	90%	50%	50%	90%	90%	90%	90%	70%	90%	90%	90%	90%
VA Existing	1302	LEDs (base incandescent flood) 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1311	CFLs (base incandescent flood) 2016-2017	90%	50%	50%	90%	90%	90%	90%	70%	90%	90%	90%	90%
VA Existing	1312	LEDs (base incandescent flood) 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1321	CFLs (base incandescent flood) 2018-2019	90%	50%	50%	90%	90%	90%	90%	70%	90%	90%	90%	90%
VA Existing	1322	LEDs (base incandescent flood) 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1331	CFLs (base incandescent flood) 2020	90%	50%	50%	90%	90%	90%	90%	70%	90%	90%	90%	90%
VA Existing	1332	LEDs (base incandescent flood) 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1401	CFLs (base incandescent A-line 72W) 2014-2015	90%	50%	50%	90%	90%	90%	90%	70%	90%	90%	90%	90%
VA Existing	1402	LEDs (base incandescent A-line 72W) 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1411	CFLs (base incandescent A-line 72W) 2016-2017	90%	50%	50%	90%	90%	90%	90%	70%	90%	90%	90%	90%
VA Existing	1412	LEDs (base incandescent A-line 72W) 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1421	CFLs (base incandescent A-line 72W) 2018-2019	90%	50%	50%	90%	90%	90%	90%	70%	90%	90%	90%	90%
VA Existing	1422	LEDs (base incandescent A-line 72W) 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1431	CFLs (base incandescent A-line 72W) 2020	90%	50%	50%	90%	90%	90%	90%	70%	90%	90%	90%	90%
VA Existing	1432	LEDs (base incandescent A-line 72W) 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1501	CFLs (base incandescent A-line 53W) 2014-2015	90%	50%	50%	90%	90%	90%	90%	70%	90%	90%	90%	90%
VA Existing	1502	LEDs (base incandescent A-line 53W) 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1511	CFLs (base incandescent A-line 53W) 2016-2017	90%	50%	50%	90%	90%	90%	90%	70%	90%	90%	90%	90%
VA Existing	1512	LEDs (base incandescent A-line 53W) 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1521	CFLs (base incandescent A-line 53W) 2018-2019	90%	50%	50%	90%	90%	90%	90%	70%	90%	90%	90%	90%
VA Existing	1522	LEDs (base incandescent A-line 53W) 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Commercial Elec Measure Inputs			FEASIBILITY FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	)ata Centerp	-Jurisdictior	ligious Wors	Misc
VA Existing	1531	CFLs (base incandescent A-line 53W) 2020	90%	50%	50%	90%	90%	90%	90%	70%	90%	90%	90%	90%
VA Existing	1532	LEDs (base incandescent A-line 53W) 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1600	Base CFL 18W to screw-in replacement 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1601	LED screw-in replacement (base CFL 18W) 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1610	Base CFL 18W to screw-in replacement 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1611	LED screw-in replacement (base CFL 18W) 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1620	Base CFL 18W to screw-in replacement 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1621	LED screw-in replacement (base CFL 18W) 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1630	Base CFL 18W to screw-in replacement 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1631	LED screw-in replacement (base CFL 18W) 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1700	Base CFL 23W to screw-in replacement 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1701	LED screw-in replacement (base CFL 23W) 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1710	Base CFL 23W to screw-in replacement 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1711	LED screw-in replacement (base CFL 23W) 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1720	Base CFL 23W to screw-in replacement 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1721	LED screw-in replacement (base CFL 23W) 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1730	Base CFL 23W to screw-in replacement 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1731	LED screw-in replacement (base CFL 23W) 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1800	BaseMetal Halide, 465W	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1801	T5 (240W) (base metal halide)	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1802	Induction High Bay Lighting	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1803	PSMH + electronic ballast	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1804	PSMH, magnetic ballast, 320 W	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	1806	Occupancy Sensor, High Bay T5	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%	19%
VA Existing	1850	Base CFL Exit Sign	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1851	LED Exit Sign	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1900	Base Outdoor High Pressure Sodium 250W Lamp	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1901	Outdoor Lighting Controls (Photocell/Timeclock)	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
VA Existing	1902	LED Outdoor Area Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1903	Bi-Level LED Outdoor Lighting	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
VA Existing	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2002	Window Film (Standard) - Chiller	75%	75%	50%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	2003	EMS - Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2004	Cool Roof - Chiller	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
VA Existing	2005	Chiller Tune Up/Diagnostics	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2006	VSD for Chiller Pumps and Towers	16%	0%	0%	100%	0%	17%	15%	4%	16%	39%	62%	62%
VA Existing	2007	EMS Optimization - Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2008	New Economizer - Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2009	Dual Enthalpy Economizer Replaced Dry Bulb Economizer - Chiller	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2010	Ceiling/roof Insulation - Chiller	22%	100%	43%	100%	3%	100%	100%	100%	22%	36%	49%	49%
VA Existing	2011	Duct/Pipe Insulation - Chiller	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	2012	Duct Testing/Sealing	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2013	High Efficiency Chiller Motors	29%	0%	0%	100%	0%	6%	19%	4%	29%	16%	4%	4%
VA Existing	2100	Base DX Packaged System, EER=10.3, 10 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2101	DX Packaged System, EER=10.9, 10 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2102	DX Packaged System, EER=13.4, 10 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2103	Geothermal Heat Pump, EER=13, 10 tons - DX	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
VA Existing	2104	DX Coil Cleaning	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	2105	DX Tune Up/ Advanced Diagnostics	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2106	Prog. Thermostat - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2107	Cool Roof - DX	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
VA Existing	2108	Optimize Controls - DX	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2109	Economizer - DX	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
VA Existing	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

Commercial Elec Measure Inputs			FEASIBILITY FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	)ata Centerp	-Jurisdictior	ligious	Wors	Misc
VA Existing	2111	Economizer Repair - DX	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
VA Existing	2112	Aerosol Duct Sealing - DX	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
VA Existing	2113	Ceiling/roof Insulation - DX	22%	43%	100%	100%	100%	52%	100%	100%	22%	61%	100%	100%
VA Existing	2114	Duct/Pipe Insulation - DX	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	2115	Window Film (Standard) - DX	75%	75%	50%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2300	Base PTAC, EER=8.3, 1 ton	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2301	HE PTAC, EER=9.6, 1 ton	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2302	Occupancy Sensor (hotels)	0%	0%	0%	0%	0%	0%	0%	75%	0%	0%	0%	0%
VA Existing	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3001	Fan Motor, 5hp, 1800rpm, 89.5%	94%	100%	92%	100%	100%	100%	100%	100%	94%	97%	100%	100%
VA Existing	3002	Variable Speed Drive Control, 5 HP	83%	100%	100%	100%	100%	100%	100%	0%	83%	91%	100%	100%
VA Existing	3003	Demand Controlled Ventilation	79%	92%	70%	100%	100%	100%	100%	100%	79%	85%	91%	91%
VA Existing	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3101	Fan Motor, 15hp, 1800rpm, 92.4%	94%	100%	92%	100%	100%	100%	100%	100%	94%	97%	100%	100%
VA Existing	3102	Variable Speed Drive Control, 15 HP	83%	100%	100%	100%	100%	100%	100%	0%	83%	91%	100%	100%
VA Existing	3103	Air Handler Optimization, 15 HP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3105	Energy Recovery Ventilation (ERV)	55%	100%	100%	100%	100%	85%	100%	100%	55%	71%	88%	88%
VA Existing	3106	Separate Makeup Air / Exhaust Hoods AC	0%	100.0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	3107	Demand Controlled Ventilation	79%	92%	70%	100%	100%	100%	100%	100%	79%	85%	91%	91%
VA Existing	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3201	Fan Motor, 40hp, 1800rpm, 94.1%	94%	100%	92%	100%	100%	100%	100%	100%	94%	97%	100%	100%
VA Existing	3202	Variable Speed Drive Control, 40 HP	83%	100%	100%	100%	100%	100%	100%	0%	83%	91%	100%	100%
VA Existing	3203	Air Handler Optimization, 40 HP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3204	Demand Controlled Ventilation	79%	92%	70%	100%	100%	100%	100%	100%	79%	85%	91%	91%
VA Existing	4000	Base Built-Up Refrigeration System	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4001	High-efficiency fan motors	64%	56%	59%	49%	50%	50%	100%	0%	64%	49%	34%	34%
VA Existing	4002	Strip curtains for walk-ins (built-up)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4003	Auto-closer on main door to walk-in freezer (built-up)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4004	Night covers for display cases	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4005	Evaporator fan controller for MT walk-ins	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4006	Electronically commutated evaporator fan motor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4007	Efficient compressor motor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4008	Compressor VSD retrofit	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4009	Floating head pressure controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4010	Refrigeration Commissioning	20%	20%	60%	20%	20%	20%	20%	20%	20%	20%	20%	20%
VA Existing	4011	Demand Hot Gas Defrost	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4012	Demand Defrost Electric	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4013	Anti-sweat (humidistat) controls	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4014	Freezer-Cooler Replacement Gaskets	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4015	High R-Value Glass Doors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4016	LED Display Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4017	Multiplex Compressor System	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4018	Oversized Air Cooled Condenser	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4019	Insulated suction lines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4100	Base Self-Contained Refrigeration	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4101	Strip curtains for walk-ins (self-contained)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4102	Auto-closer on main door to walk-in freezer (self-contained)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4103	Night covers for display cases (self-contained)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4104	Freezer-Cooler Replacement Gaskets (self-contained)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4105	Bi-level LED Case Lighting (self-contained units) 2014	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4106	Energy-Star Refrigerator, solid door	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4107	Energy-Star Freezer, solid door	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4108	Energy-Star Refrigerator, glass door	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

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VA Existing	4109	Energy-Star Freezer, glass door	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4110	Energy Star Ice Machines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4111	Hydraulic-type door closer on reach-in cooler glass doors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4112	Reach-in unit occupancy sensors	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5000	Base Desktop PC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5001	PC Network Power Management Enabling	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	5002	Energy Star or Better PC	75%	100%	75%	100%	100%	100%	100%	100%	75%	88%	100%	100%
VA Existing	5003	Plug-load controls - Commercial Smart Strip (base desktop PC)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	5100	Base Laptop PC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5101	Laptop Network Power Management Enabling	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5102	Energy Star or Better Laptop	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5103	Plug-load controls - Commercial Smart Strip (base desktop PC)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	5200	Base Monitor, CRT	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5201	Energy Star or Better Monitor - CRT	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5202	Monitor Power Management Enabling - CRT	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5300	Base Monitor, LCD	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5301	Energy Star or Better Monitor - LCD	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5302	Monitor Power Management Enabling - LCD	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5400	Base Copier	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5401	Energy Star or Better Copier	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5402	Copier Power Management Enabling	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	5500	Base Multifunction	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5501	Multifunction Power Management Enabling	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	5502	ENERGY STAR Multi-Function Printer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5600	Base Printer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5601	Printer Power Management Enabling	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	5602	ENERGY STAR Printer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5700	Base Data Center/Server Room	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5701	Data Center Improved Operations	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
VA Existing	5702	Data Center Best Practices	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
VA Existing	5703	Data Center State of the Art practices	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
VA Existing	5704	Data Center Airflow Management	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6000	Base Water Heating	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6001	Demand controlled circulating systems	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	6002	High Efficiency Water Heater (electric)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6003	Hot Water Pipe Insulation	58%	100%	82%	100%	99%	55%	100%	100%	58%	79%	100%	100%
VA Existing	6004	Tankless Water Heater	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	6005	Heat Pump Water Heater (air source)	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
VA Existing	6006	Heat Recovery Unit	10%	80%	5%	80%	10%	15%	80%	20%	10%	8%	5%	5%
VA Existing	6007	Heat Trap	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	6008	Solar Water Heater	76%	20%	4%	20%	49%	10%	20%	20%	76%	38%	0%	0%
VA Existing	7000	Base Refrigerated Vending Machines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7001	Vending Misers (Refrigerated units)	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	7002	Vending Misers (Refrigerated glass-front units)	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
VA Existing	7100	Base Non-Refrigerated Vending Machines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7101	Vending Misers (Non-Refrigerated)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7200	Base Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7201	Convection Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7300	Base Fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7301	Efficient Fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7400	Base Steamer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7401	Efficient Steamer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	8000	Base Heating, Heat Pump (7.7 HSPF)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

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VA Existing	8100	Base Heating, Other Electric	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	9500	Base Miscellaneous	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	9501	Xmisc	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1003	ROB 4L4'T5, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1004	ROB 4L4' LED Tube, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
NC Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
NC Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1013	ROB 4L4'T5, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1014	ROB 4L4' LED Tube, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
NC Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
NC Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1023	ROB 4L4'T5, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1024	ROB 4L4' LED Tube, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
NC Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
NC Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1033	ROB 4L4'T5, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1034	ROB 4L4' LED Tube, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1035	LED Troffer (base 4L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
NC Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
NC Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1103	ROB 2L4'T5, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1104	ROB 2L4' LED Tube, 2014-2015	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
NC Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
NC Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
NC Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1113	ROB 2L4'T5, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1114	ROB 2L4' LED Tube, 2016-2017	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
NC Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%

Commercial Elec Measure Inputs			FEASIBILITY FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	)ata Centerp	n-Jurisdictior	ligious Wors	Misc
NC Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
NC Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1123	ROB 2L4'T5, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1124	ROB 2L4' LED Tube, 2018-2019	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
NC Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	28%	7%	7%	7%	14%	35%	35%	14%	28%	21%	14%	14%
NC Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
NC Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Commercial Elec Measure Inputs			INCOMPLETE FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centern	Jurisdictid	gious Wor	Misc
VA Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	98%	100%	100%	98%	78%	99%	100%	100%	98%	99%	100%	100%
VA Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1003	ROB 4L4'T5, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1004	ROB 4L4' LED Tube, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	97%	93%	100%	98%	100%	86%	99%	100%	97%	98%	99%	99%
VA Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	84%	97%	95%	98%	67%	81%	97%	91%	94%	78%	90%	90%
VA Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	98%	100%	100%	98%	78%	99%	100%	100%	98%	99%	100%	100%
VA Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1013	ROB 4L4'T5, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1014	ROB 4L4' LED Tube, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	97%	93%	100%	98%	100%	86%	99%	100%	97%	98%	99%	99%
VA Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	84%	97%	95%	98%	67%	81%	97%	91%	94%	78%	90%	90%
VA Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	98%	100%	100%	98%	78%	99%	100%	100%	98%	99%	100%	100%
VA Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1023	ROB 4L4'T5, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1024	ROB 4L4' LED Tube, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	97%	93%	100%	98%	100%	86%	99%	100%	97%	98%	99%	99%
VA Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	84%	97%	95%	98%	67%	81%	97%	91%	94%	78%	90%	90%
VA Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	98%	100%	100%	98%	78%	99%	100%	100%	98%	99%	100%	100%
VA Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1033	ROB 4L4'T5, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1034	ROB 4L4' LED Tube, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1035	LED Troffer (base 4L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	97%	93%	100%	98%	100%	86%	99%	100%	97%	98%	99%	99%
VA Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	84%	97%	95%	98%	67%	81%	97%	91%	94%	78%	90%	90%
VA Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	100%	100%	100%	95%	99%	98%	100%	100%	100%	95%	90%	90%
VA Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1103	ROB 2L4'T5, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1104	ROB 2L4' LED Tube, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	84%	97%	95%	98%	67%	81%	97%	91%	94%	78%	90%	90%
VA Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	100%	100%	100%	95%	99%	98%	100%	100%	100%	95%	90%	90%
VA Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1113	ROB 2L4'T5, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1114	ROB 2L4' LED Tube, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	84%	97%	95%	98%	67%	81%	97%	91%	94%	78%	90%	90%
VA Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Commercial Elec Measure Inputs			INCOMPLETE FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centern	Jurisdictio	ligious Wor	Misc
VA Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	100%	100%	100%	95%	99%	98%	100%	100%	100%	95%	90%	90%
VA Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1123	ROB 2L4'T5, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1124	ROB 2L4' LED Tube, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	84%	97%	95%	98%	67%	81%	97%	91%	94%	78%	90%	90%
VA Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1131	ROB 2L4' High Performance T8 (86 W), 2020	100%	100%	100%	95%	99%	98%	100%	100%	100%	95%	90%	90%
VA Existing	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1133	ROB 2L4'T5, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1134	ROB 2L4' LED Tube, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1135	LED Troffer (base 2L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1136	Lighting Control Tuneup (base 2L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	84%	97%	95%	98%	67%	81%	97%	91%	94%	78%	90%	90%
VA Existing	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1200	Base Other Fluorescent Fixture	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1201	ROB High Performance T8 (base other fluorescent)	100%	100%	100%	100%	100%	81%	100%	100%	100%	85%	71%	71%
VA Existing	1202	ROB Low Watt High Performance T8 (base other fluorescent)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1203	Lighting Control Tuneup (base other fluorescent fixture)	100%	100%	100%	100%	100%	74%	50%	100%	100%	100%	100%	100%
VA Existing	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	84%	97%	95%	98%	67%	81%	97%	91%	94%	78%	90%	90%
VA Existing	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1301	CFLs (base incandescent flood) 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1302	LEDs (base incandescent flood) 2014-2015	64.5%	76.0%	96.5%	34.1%	50.1%	82.5%	94.0%	85.6%	83.8%	61.6%	94.2%	72.6%
VA Existing	1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1311	CFLs (base incandescent flood) 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1312	LEDs (base incandescent flood) 2016-2017	64.5%	76.0%	96.5%	34.1%	50.1%	82.5%	94.0%	85.6%	83.8%	61.6%	94.2%	72.6%
VA Existing	1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1321	CFLs (base incandescent flood) 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1322	LEDs (base incandescent flood) 2018-2019	64.5%	76.0%	96.5%	34.1%	50.1%	82.5%	94.0%	85.6%	83.8%	61.6%	94.2%	72.6%
VA Existing	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1331	CFLs (base incandescent flood) 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1332	LEDs (base incandescent flood) 2020	64.5%	76.0%	96.5%	34.1%	50.1%	82.5%	94.0%	85.6%	83.8%	61.6%	94.2%	72.6%
VA Existing	1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1401	CFLs (base incandescent A-line 72W) 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1402	LEDs (base incandescent A-line 72W) 2014-2015	64.5%	76.0%	96.5%	34.1%	50.1%	82.5%	94.0%	85.6%	83.8%	61.6%	94.2%	72.6%
VA Existing	1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1411	CFLs (base incandescent A-line 72W) 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1412	LEDs (base incandescent A-line 72W) 2016-2017	64.5%	76.0%	96.5%	34.1%	50.1%	82.5%	94.0%	85.6%	83.8%	61.6%	94.2%	72.6%
VA Existing	1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1421	CFLs (base incandescent A-line 72W) 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1422	LEDs (base incandescent A-line 72W) 2018-2019	64.5%	76.0%	96.5%	34.1%	50.1%	82.5%	94.0%	85.6%	83.8%	61.6%	94.2%	72.6%
VA Existing	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1431	CFLs (base incandescent A-line 72W) 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1432	LEDs (base incandescent A-line 72W) 2020	64.5%	76.0%	96.5%	34.1%	50.1%	82.5%	94.0%	85.6%	83.8%	61.6%	94.2%	72.6%
VA Existing	1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1501	CFLs (base incandescent A-line 53W) 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1502	LEDs (base incandescent A-line 53W) 2014-2015	64.5%	76.0%	96.5%	34.1%	50.1%	82.5%	94.0%	85.6%	83.8%	61.6%	94.2%	72.6%
VA Existing	1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1511	CFLs (base incandescent A-line 53W) 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1512	LEDs (base incandescent A-line 53W) 2016-2017	64.5%	76.0%	96.5%	34.1%	50.1%	82.5%	94.0%	85.6%	83.8%	61.6%	94.2%	72.6%
VA Existing	1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1521	CFLs (base incandescent A-line 53W) 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Commercial Elec Measure Inputs			INCOMPLETE FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centern-Jurisdictidgious Wor			Misc
VA Existing	1522	LEDs (base incandescent A-line 53W) 2018-2019	64.5%	76.0%	96.5%	34.1%	50.1%	82.5%	94.0%	85.6%	83.8%	61.6%	94.2%	72.6%
VA Existing	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1531	CFLs (base incandescent A-line 53W) 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1532	LEDs (base incandescent A-line 53W) 2020	64.5%	76.0%	96.5%	34.1%	50.1%	82.5%	94.0%	85.6%	83.8%	61.6%	94.2%	72.6%
VA Existing	1600	Base CFL 18W to screw-in replacement 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1601	LED screw-in replacement (base CFL 18W) 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1610	Base CFL 18W to screw-in replacement 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1611	LED screw-in replacement (base CFL 18W) 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1620	Base CFL 18W to screw-in replacement 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1621	LED screw-in replacement (base CFL 18W) 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1630	Base CFL 18W to screw-in replacement 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1631	LED screw-in replacement (base CFL 18W) 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1700	Base CFL 23W to screw-in replacement 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1701	LED screw-in replacement (base CFL 23W) 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1710	Base CFL 23W to screw-in replacement 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1711	LED screw-in replacement (base CFL 23W) 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1720	Base CFL 23W to screw-in replacement 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1721	LED screw-in replacement (base CFL 23W) 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1730	Base CFL 23W to screw-in replacement 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1731	LED screw-in replacement (base CFL 23W) 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1800	BaseMetal Halide, 465W	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1801	T5 (240W) (base metal halide)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1802	Induction High Bay Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1803	PSMH + electronic ballast	100%	100%	100%	97%	100%	50%	100%	99%	100%	100%	99%	99%
VA Existing	1804	PSMH, magnetic ballast, 320 W	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1806	Occupancy Sensor, High Bay T5	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%
VA Existing	1850	Base CFL Exit Sign	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1851	LED Exit Sign	35%	64%	58%	1%	100%	56%	6%	35%	35%	37%	39%	39%
VA Existing	1900	Base Outdoor High Pressure Sodium 250W Lamp	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1901	Outdoor Lighting Controls (Photocell/Timeclock)	54%	68%	37%	49%	16%	42%	35%	36%	19%	27%	6%	32%
VA Existing	1902	LED Outdoor Area Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1903	Bi-Level LED Outdoor Lighting	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%
VA Existing	2002	Window Film (Standard) - Chiller	0%	0%	0%	99%	0%	17%	17%	67%	0%	43%	85%	85%
VA Existing	2003	EMS - Chiller	68%	81%	85%	96%	63%	58%	88%	75%	22%	36%	47%	90%
VA Existing	2004	Cool Roof - Chiller	34%	0%	0%	100%	0%	61%	88%	100%	34%	67%	100%	100%
VA Existing	2005	Chiller Tune Up/Diagnostics	3%	2%	8%	2%	0%	3%	2%	26%	1%	7%	1%	6%
VA Existing	2006	VSD for Chiller Pumps and Towers	39%	0%	0%	100%	0%	10%	13%	100%	39%	50%	62%	62%
VA Existing	2007	EMS Optimization - Chiller	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	2008	New Economizer - Chiller	19%	0%	0%	3%	0%	74%	54%	68%	19%	57%	95%	95%
VA Existing	2009	Dual Enthalpy Economizer Replaced Dry Bulb Economizer - Chiller												
VA Existing	2010	Ceiling/roof Insulation - Chiller	15%	57%	15%	0%	33%	0%	0%	0%	15%	17%	19%	19%
VA Existing	2011	Duct/Pipe Insulation - Chiller	20%	0%	0%	100%	0%	39%	75%	33%	20%	55%	89%	89%
VA Existing	2012	Duct Testing/Sealing	100%	92%	100%	100%	97%	85%	100%	100%	100%	98%	96%	96%
VA Existing	2013	High Efficiency Chiller Motors	19%	0%	0%	100%	0%	49%	55%	4%	19%	41%	62%	62%
VA Existing	2100	Base DX Packaged System, EER=10.3, 10 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2101	DX Packaged System, EER=10.9, 10 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2102	DX Packaged System, EER=13.4, 10 tons	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2103	Geothermal Heat Pump, EER=13, 10 tons - DX	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%
VA Existing	2104	DX Coil Cleaning	3%	2%	8%	2%	0%	3%	2%	26%	1%	7%	1%	6%
VA Existing	2105	DX Tune Up/ Advanced Diagnostics	3%	2%	8%	2%	0%	3%	2%	26%	1%	7%	1%	6%
VA Existing	2106	Prog. Thermostat - DX	41%	42%	56%	28%	68%	19%	37%	54%	90%	67%	45%	38%
VA Existing	2107	Cool Roof - DX	94%	91%	66%	100%	78%	95%	100%	100%	94%	97%	100%	100%

Commercial Elec Measure Inputs			INCOMPLETE FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centern-Jurisdictiogious Wor			Misc
VA Existing	2108	Optimize Controls - DX	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
VA Existing	2109	Economizer - DX	72%	31%	58%	1%	35%	23%	87%	76%	72%	61%	50%	50%
VA Existing	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	53%	53%	53%	53%	53%	53%	53%	53%	53%	53%	53%	53%
VA Existing	2111	Economizer Repair - DX	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%
VA Existing	2112	Aerosol Duct Sealing - DX	100%	92%	100%	100%	97%	85%	100%	100%	100%	98%	96%	96%
VA Existing	2113	Ceiling/roof Insulation - DX	0%	1%	0%	1%	35%	1%	0%	0%	0%	0%	0%	0%
VA Existing	2114	Duct/Pipe Insulation - DX	43%	81%	48%	100%	13%	79%	73%	72%	43%	42%	42%	42%
VA Existing	2115	Window Film (Standard) - DX	28%	93%	29%	99%	43%	30%	61%	97%	28%	36%	44%	44%
VA Existing	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%
VA Existing	2300	Base PTAC, EER=8.3, 1 ton	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2301	HE PTAC, EER=9.6, 1 ton	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	2302	Occupancy Sensor (hotels)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3001	Fan Motor, 5hp, 1800rpm, 89.5%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%	78%
VA Existing	3002	Variable Speed Drive Control, 5 HP	74%	98%	96%	100%	100%	86%	90%	80%	30%	66%	98%	93%
VA Existing	3003	Demand Controlled Ventilation	42%	100%	100%	100%	7%	93%	65%	100%	42%	27%	13%	13%
VA Existing	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3101	Fan Motor, 15hp, 1800rpm, 92.4%	42%	100%	21%	100%	100%	64%	15%	100%	42%	71%	100%	100%
VA Existing	3102	Variable Speed Drive Control, 15 HP	74%	98%	96%	100%	100%	86%	90%	80%	30%	66%	98%	93%
VA Existing	3103	Air Handler Optimization, 15 HP	95%	100%	100%	100%	100%	100%	0%	100%	95%	81%	66%	66%
VA Existing	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	42%	100%	100%	100%	100%	98%	100%	100%	42%	71%	100%	100%
VA Existing	3105	Energy Recovery Ventilation (ERV)	59%	100%	98%	100%	100%	82%	100%	100%	59%	39%	20%	20%
VA Existing	3106	Separate Makeup Air / Exhaust Hoods AC	100%	100.0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3107	Demand Controlled Ventilation	42%	100%	100%	100%	7%	93%	65%	100%	42%	27%	13%	13%
VA Existing	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	3201	Fan Motor, 40hp, 1800rpm, 94.1%	42%	100%	21%	100%	0%	19%	0%	0%	42%	39%	36%	36%
VA Existing	3202	Variable Speed Drive Control, 40 HP	74%	98%	96%	100%	100%	86%	90%	80%	30%	66%	98%	93%
VA Existing	3203	Air Handler Optimization, 40 HP	95%	100%	100%	100%	100%	100%	0%	100%	95%	81%	66%	66%
VA Existing	3204	Demand Controlled Ventilation	42%	100%	100%	100%	7%	93%	65%	100%	42%	27%	13%	13%
VA Existing	4000	Base Built-Up Refrigeration System	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4001	High-efficiency fan motors	64%	100%	48%	57%	48%	100%	100%	100%	64%	82%	100%	100%
VA Existing	4002	Strip curtains for walk-ins (built-up)	88%	60%	80%	21%	10%	87%	73%	48%	0%	48%	100%	40%
VA Existing	4003	Auto-closer on main door to walk-in freezer (built-up)												
VA Existing	4004	Night covers for display cases	69%	96%	97%	91%	100%	100%	97%	99%	100%	68%	100%	96%
VA Existing	4005	Evaporator fan controller for MT walk-ins	60%	26%	51%	22%	5%	21%	37%	30%	0%	44%	66%	57%
VA Existing	4006	Electronically commutated evaporator fan motor	64%	100%	48%	57%	48%	100%	100%	100%	64%	82%	100%	100%
VA Existing	4007	Efficient compressor motor	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	4008	Compressor VSD retrofit	58%	100%	100%	100%	0%	76%	100%	100%	58%	79%	100%	100%
VA Existing	4009	Floating head pressure controls	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	4010	Refrigeration Commissioning	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
VA Existing	4011	Demand Hot Gas Defrost	58%	100%	100%	100%	0%	76%	100%	100%	58%	79%	100%	100%
VA Existing	4012	Demand Defrost Electric	0%	0%	19%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	4013	Anti-sweat (humidistat) controls	0%	0%	0%	27%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	4014	Freezer-Cooler Replacement Gaskets	50%	50%	50%	50%	50%	50%	50%	50%	50%	0.5	0.5	0.5
VA Existing	4015	High R-Value Glass Doors	0%	0%	100%	95%	0%	0%	0%	0%	0%	50%	100%	100%
VA Existing	4016	LED Display Lighting	100%	76%	59%	97%	95%	94%	98%	99%	100%	87%	100%	79%
VA Existing	4017	Multiplex Compressor System	0%	0%	0%	11%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	4018	Oversized Air Cooled Condenser	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
VA Existing	4019	Insulated suction lines												
VA Existing	4100	Base Self-Contained Refrigeration	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	4101	Strip curtains for walk-ins (self-contained)	88%	60%	80%	21%	10%	87%	73%	48%	0%	48%	100%	40%
VA Existing	4102	Auto-closer on main door to walk-in freezer (self-contained)												
VA Existing	4103	Night covers for display cases (self-contained)	69%	96%	97%	91%	100%	100%	97%	99%	100%	68%	100%	96%
VA Existing	4104	Freezer-Cooler Replacement Gaskets (self-contained)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%

Commercial Elec Measure Inputs			INCOMPLETE FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centern-Jurisdictiogious Wor			Misc
VA Existing	4105	Bi-level LED Case Lighting (self-contained units) 2014	100%	76%	59%	97%	95%	94%	98%	99%	100%	87%	100%	79%
VA Existing	4106	Energy-Star Refrigerator, solid door	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%
VA Existing	4107	Energy-Star Freezer, solid door	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%	66%
VA Existing	4108	Energy-Star Refrigerator, glass door	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%
VA Existing	4109	Energy-Star Freezer, glass door	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%
VA Existing	4110	Energy Star Ice Machines	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%	64%
VA Existing	4111	Hydraulic-type door closer on reach-in cooler glass doors												
VA Existing	4112	Reach-in unit occupancy sensors	100%	100%	62%	96%	100%	100%	99%	99%	100%	87%	100%	78%
VA Existing	5000	Base Desktop PC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5001	PC Network Power Management Enabling	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	5002	Energy Star or Better PC	86%	99%	51%	98%	99%	83%	94%	54%	86%	89%	92%	92%
VA Existing	5003	Plug-load controls - Commercial Smart Strip (base desktop PC)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
VA Existing	5100	Base Laptop PC	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5101	Laptop Network Power Management Enabling	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
VA Existing	5102	Energy Star or Better Laptop	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%	54%
VA Existing	5103	Plug-load controls - Commercial Smart Strip (base desktop PC)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
VA Existing	5200	Base Monitor, CRT	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5201	Energy Star or Better Monitor - CRT	58%	100%	100%	100%	100%	100%	95%	100%	58%	79%	100%	100%
VA Existing	5202	Monitor Power Management Enabling - CRT	19%	44%	25%	100%	70%	53%	66%	41%	19%	33%	46%	46%
VA Existing	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
VA Existing	5300	Base Monitor, LCD	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5301	Energy Star or Better Monitor - LCD	58%	97%	62%	98%	99%	84%	94%	43%	58%	72%	85%	85%
VA Existing	5302	Monitor Power Management Enabling - LCD	46%	55%	23%	95%	7%	14%	30%	74%	46%	33%	20%	20%
VA Existing	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
VA Existing	5400	Base Copier	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5401	Energy Star or Better Copier	43%	67%	65%	99%	53%	24%	78%	42%	43%	51%	60%	60%
VA Existing	5402	Copier Power Management Enabling	25%	60%	29%	96%	21%	25%	38%	24%	25%	28%	30%	30%
VA Existing	5500	Base Multifunction	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5501	Multifunction Power Management Enabling	33%	100%	25%	63%	17%	35%	25%	33%	33%	32%	30%	30%
VA Existing	5502	ENERGY STAR Multi-Function Printer	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
VA Existing	5600	Base Printer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5601	Printer Power Management Enabling	33%	100%	25%	63%	17%	35%	25%	33%	33%	32%	30%	30%
VA Existing	5602	ENERGY STAR Printer	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
VA Existing	5700	Base Data Center/Server Room	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5701	Data Center Improved Operations	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
VA Existing	5702	Data Center Best Practices	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
VA Existing	5703	Data Center State of the Art practices	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	5704	Data Center Airflow Management												
VA Existing	6000	Base Water Heating	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6001	Demand controlled circulating systems	79%	100%	40%	97%	51%	100%	100%	100%	79%	89%	100%	100%
VA Existing	6002	High Efficiency Water Heater (electric)	100%	100%	99%	100%	100%	97%	100%	100%	100%	100%	100%	100%
VA Existing	6003	Hot Water Pipe Insulation	92%	76%	100%	99%	20%	91%	44%	85%	0%	81%	96%	86%
VA Existing	6004	Tankless Water Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6005	Heat Pump Water Heater (air source)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6006	Heat Recovery Unit	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	6007	Heat Trap	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
VA Existing	6008	Solar Water Heater	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7000	Base Refrigerated Vending Machines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7001	Vending Misers (Refrigerated units)	88%	100%	80%	85%	57%	92%	96%	92%	100%	85%	100%	100%
VA Existing	7002	Vending Misers (Refrigerated glass-front units)	88%	100%	80%	85%	57%	92%	96%	92%	100%	85%	100%	100%
VA Existing	7100	Base Non-Refrigerated Vending Machines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7101	Vending Misers (Non-Refrigerated)	88%	100%	80%	85%	57%	92%	96%	92%	100%	85%	100%	100%
VA Existing	7200	Base Oven	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7201	Convection Oven	0%	100%	100%	0%	0%	100%	0%	0%	0%	0%	0%	0%
VA Existing	7300	Base Fryer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Commercial Elec Measure Inputs			INCOMPLETE FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centern-Jurisdictidgious Wor			Misc
VA Existing	7301	Efficient Fryer	0%	100%	100%	0%	0%	0%	100%	0%	0%	50%	100%	100%
VA Existing	7400	Base Steamer	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	7401	Efficient Steamer	0%	100%	79%	100%	0%	76%	0%	0%	0%	0%	0%	0%
VA Existing	8000	Base Heating, Heat Pump (7.7 HSPF)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%
VA Existing	8100	Base Heating, Other Electric	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	9500	Base Miscellaneous	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	9501	Xmisc	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	98%	100%	100%	98%	78%	99%	100%	100%	98%	99%	100%	100%
NC Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1003	ROB 4L4'T5, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1004	ROB 4L4' LED Tube, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	97%	93%	100%	98%	100%	86%	99%	100%	97%	98%	99%	99%
NC Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	99%	98%	100%	100%	100%	94%	93%	93%	100%	100%	100%	100%
NC Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	98%	100%	100%	98%	78%	99%	100%	100%	98%	99%	100%	100%
NC Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1013	ROB 4L4'T5, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1014	ROB 4L4' LED Tube, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	97%	93%	100%	98%	100%	86%	99%	100%	97%	98%	99%	99%
NC Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	99%	98%	100%	100%	100%	94%	93%	93%	100%	100%	100%	100%
NC Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	98%	100%	100%	98%	78%	99%	100%	100%	98%	99%	100%	100%
NC Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1023	ROB 4L4'T5, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1024	ROB 4L4' LED Tube, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	97%	93%	100%	98%	100%	86%	99%	100%	97%	98%	99%	99%
NC Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	99%	98%	100%	100%	100%	94%	93%	93%	100%	100%	100%	100%
NC Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	98%	100%	100%	98%	78%	99%	100%	100%	98%	99%	100%	100%
NC Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1033	ROB 4L4'T5, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1034	ROB 4L4' LED Tube, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1035	LED Troffer (base 4L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	97%	93%	100%	98%	100%	86%	99%	100%	97%	98%	99%	99%
NC Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	99%	98%	100%	100%	100%	94%	93%	93%	100%	100%	100%	100%
NC Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	100%	100%	100%	95%	99%	98%	100%	100%	100%	95%	90%	90%
NC Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1103	ROB 2L4'T5, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1104	ROB 2L4' LED Tube, 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	99%	98%	100%	100%	100%	94%	93%	93%	100%	100%	100%	100%
NC Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	100%	100%	100%	95%	99%	98%	100%	100%	100%	95%	90%	90%

Commercial Elec Measure Inputs			INCOMPLETE FACTOR (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centern-Jurisdictidgious Wors			Misc
NC Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1113	ROB 2L4'T5, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1114	ROB 2L4' LED Tube, 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	99%	98%	100%	100%	100%	94%	93%	93%	100%	100%	100%	100%
NC Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	100%	100%	100%	95%	99%	98%	100%	100%	100%	95%	90%	90%
NC Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1123	ROB 2L4'T5, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1124	ROB 2L4' LED Tube, 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	99%	98%	100%	100%	100%	94%	93%	93%	100%	100%	100%	100%
NC Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NC Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Commercial Elec Measure Inputs			TECHNOLOGY SATURATION (units/square foot)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	ata Center	n-Jurisdict	eligious Wors	Misc
VA Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1003	ROB 4L4'T5, 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1004	ROB 4L4' LED Tube, 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1013	ROB 4L4'T5, 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1014	ROB 4L4' LED Tube, 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1023	ROB 4L4'T5, 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1024	ROB 4L4' LED Tube, 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1033	ROB 4L4'T5, 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1034	ROB 4L4' LED Tube, 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1035	LED Troffer (base 4L4'T8), 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
VA Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1103	ROB 2L4'T5, 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1104	ROB 2L4' LED Tube, 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1113	ROB 2L4'T5, 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1114	ROB 2L4' LED Tube, 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096

Commercial Elec Measure Inputs			TECHNOLOGY SATURATION (units/square foot)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	ata Center	n-Jurisdict	ligious Wors	Misc
VA Existing	1123	ROB 2L4'T5, 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1124	ROB 2L4' LED Tube, 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1131	ROB 2L4' High Performance T8 (86 W), 2020	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1133	ROB 2L4'T5, 2020	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1134	ROB 2L4' LED Tube, 2020	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1135	LED Troffer (base 2L4'T8), 2020	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1136	Lighting Control Tuneup (base 2L4'T8), 2020	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
VA Existing	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1200	Base Other Fluorescent Fixture	0.0190	0.0000	0.0100	0.0000	0.0192	0.0042	0.0095	0.0052	0.0190	0.0081	0.0050	0.0050
VA Existing	1201	ROB High Performance T8 (base other fluorescent)	0.0190	0.0000	0.0100	0.0000	0.0192	0.0042	0.0095	0.0052	0.0190	0.0081	0.0050	0.0050
VA Existing	1202	ROB Low Watt High Performance T8 (base other fluorescent)	0.0190	0.0000	0.0100	0.0000	0.0192	0.0042	0.0095	0.0052	0.0190	0.0081	0.0050	0.0050
VA Existing	1203	Lighting Control Tuneup (base other fluorescent fixture)	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	0.0190	0.0000	0.0100	0.0000	0.0192	0.0042	0.0095	0.0052	0.0190	0.0081	0.0050	0.0050
VA Existing	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1301	CFLs (base incandescent flood) 2014-2015	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1302	LEDs (base incandescent flood) 2014-2015	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1311	CFLs (base incandescent flood) 2016-2017	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1312	LEDs (base incandescent flood) 2016-2017	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1321	CFLs (base incandescent flood) 2018-2019	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1322	LEDs (base incandescent flood) 2018-2019	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1331	CFLs (base incandescent flood) 2020	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1332	LEDs (base incandescent flood) 2020	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1401	CFLs (base incandescent A-line 72W) 2014-2015	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1402	LEDs (base incandescent A-line 72W) 2014-2015	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1411	CFLs (base incandescent A-line 72W) 2016-2017	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1412	LEDs (base incandescent A-line 72W) 2016-2017	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1421	CFLs (base incandescent A-line 72W) 2018-2019	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1422	LEDs (base incandescent A-line 72W) 2018-2019	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1431	CFLs (base incandescent A-line 72W) 2020	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1432	LEDs (base incandescent A-line 72W) 2020	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1501	CFLs (base incandescent A-line 53W) 2014-2015	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1502	LEDs (base incandescent A-line 53W) 2014-2015	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1511	CFLs (base incandescent A-line 53W) 2016-2017	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1512	LEDs (base incandescent A-line 53W) 2016-2017	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1521	CFLs (base incandescent A-line 53W) 2018-2019	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1522	LEDs (base incandescent A-line 53W) 2018-2019	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1531	CFLs (base incandescent A-line 53W) 2020	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155
VA Existing	1532	LEDs (base incandescent A-line 53W) 2020	0.0684	0.0162	0.0197	0.0157	0.0000	0.0008	0.0063	0.0175	0.0684	0.0241	0.0155	0.0155

Commercial Elec Measure Inputs			TECHNOLOGY SATURATION (units/square foot)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	ata Center	n-Jurisdict	eligious Wors	Misc
VA Existing	1600	Base CFL 18W to screw-in replacement 2014-2015	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1601	LED screw-in replacement (base CFL 18W) 2014-2015	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1610	Base CFL 18W to screw-in replacement 2016-2017	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1611	LED screw-in replacement (base CFL 18W) 2016-2017	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1620	Base CFL 18W to screw-in replacement 2018-2019	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1621	LED screw-in replacement (base CFL 18W) 2018-2019	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1630	Base CFL 18W to screw-in replacement 2020	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1631	LED screw-in replacement (base CFL 18W) 2020	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1700	Base CFL 23W to screw-in replacement 2014-2015	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1701	LED screw-in replacement (base CFL 23W) 2014-2015	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1710	Base CFL 23W to screw-in replacement 2016-2017	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1711	LED screw-in replacement (base CFL 23W) 2016-2017	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1720	Base CFL 23W to screw-in replacement 2018-2019	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1721	LED screw-in replacement (base CFL 23W) 2018-2019	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1730	Base CFL 23W to screw-in replacement 2020	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1731	LED screw-in replacement (base CFL 23W) 2020	0.0157	0.0166	0.0127	0.0774	0.0132	0.0286	0.0081	0.0123	0.0157	0.0170	0.0111	0.0111
VA Existing	1800	BaseMetal Halide, 465W	0.0000	0.0001	0.0000	0.0086	0.0015	0.0045	0.0000	0.0024	0.0000	0.0019	0.0013	0.0013
VA Existing	1801	T5 (240W) (base metal halide)	0.0000	0.0001	0.0000	0.0086	0.0015	0.0045	0.0000	0.0024	0.0000	0.0019	0.0013	0.0013
VA Existing	1802	Induction High Bay Lighting	0.0000	0.0001	0.0000	0.0086	0.0015	0.0045	0.0000	0.0024	0.0000	0.0019	0.0013	0.0013
VA Existing	1803	PSMH + electronic ballast	0.0000	0.0001	0.0000	0.0086	0.0015	0.0045	0.0000	0.0024	0.0000	0.0019	0.0013	0.0013
VA Existing	1804	PSMH, magnetic ballast, 320 W	0.0000	0.0001	0.0000	0.0086	0.0015	0.0045	0.0000	0.0024	0.0000	0.0019	0.0013	0.0013
VA Existing	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	1806	Occupancy Sensor, High Bay T5	0.0000	0.0001	0.0000	0.0086	0.0015	0.0045	0.0000	0.0024	0.0000	0.0019	0.0013	0.0013
VA Existing	1850	Base CFL Exit Sign	0.0003	0.0005	0.0002	0.0001	0.0000	0.0001	0.0005	0.0003	0.0003	0.0002	0.0001	0.0001
VA Existing	1851	LED Exit Sign	0.0003	0.0005	0.0002	0.0001	0.0000	0.0001	0.0005	0.0003	0.0003	0.0002	0.0001	0.0001
VA Existing	1900	Base Outdoor High Pressure Sodium 250W Lamp	0.0008	0.0028	0.0009	0.0003	0.0004	0.0006	0.0003	0.0003	0.0008	0.0005	0.0003	0.0003
VA Existing	1901	Outdoor Lighting Controls (Photocell/Timeclock)	0.0008	0.0028	0.0009	0.0003	0.0004	0.0006	0.0003	0.0003	0.0008	0.0005	0.0003	0.0003
VA Existing	1902	LED Outdoor Area Lighting	0.0008	0.0028	0.0009	0.0003	0.0004	0.0006	0.0003	0.0003	0.0008	0.0005	0.0003	0.0003
VA Existing	1903	Bi-Level LED Outdoor Lighting	0.0008	0.0028	0.0009	0.0003	0.0004	0.0006	0.0003	0.0003	0.0008	0.0005	0.0003	0.0003
VA Existing	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2002	Window Film (Standard) - Chiller	0.0877	0.0284	0.0409	0.0460	1.0172	0.0335	0.0171	0.0171	0.0877	0.0877	0.0284	0.0284
VA Existing	2003	EMS - Chiller	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2004	Cool Roof - Chiller	0.3315	1.0000	0.8973	1.0000	1.0000	0.4838	0.2500	0.2500	0.3315	0.3315	0.5000	0.5000
VA Existing	2005	Chiller Tune Up/Diagnostics	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2006	VSD for Chiller Pumps and Towers	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2007	EMS Optimization - Chiller	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	2008	New Economizer - Chiller	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2009	Dual Enthalpy Economizer Replaced Dry Bulb Economizer - Chiller	0.00001	0.00001	0.00001	0.00000	0.00004	0.00001	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000
VA Existing	2010	Ceiling/roof Insulation - Chiller	0.3315	1.0000	0.8973	1.0000	1.0000	0.4838	0.2500	0.2500	0.3315	0.3315	0.5000	0.5000
VA Existing	2011	Duct/Pipe Insulation - Chiller	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500
VA Existing	2012	Duct Testing/Sealing	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2013	High Efficiency Chiller Motors	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2100	Base DX Packaged System, EER=10.3, 10 tons	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2101	DX Packaged System, EER=10.9, 10 tons	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2102	DX Packaged System, EER=13.4, 10 tons	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2103	Geothermal Heat Pump, EER=13, 10 tons - DX	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2104	DX Coil Cleaning	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2105	DX Tune Up/ Advanced Diagnostics	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2106	Prog. Thermostat - DX	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2107	Cool Roof - DX	0.3315	1.0000	0.8973	1.0000	1.0000	0.4838	0.2500	0.2500	0.3315	0.3315	0.5000	0.5000
VA Existing	2108	Optimize Controls - DX	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	2109	Economizer - DX	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	0.0003	0.0003	0.0003	0.0002	0.0019	0.0003	0.0003	0.0004	0.0003	0.0003	0.0002	0.0002
VA Existing	2111	Economizer Repair - DX	0.0003	0.0003	0.0003	0.0002	0.0019	0.0003	0.0003	0.0004	0.0003	0.0003	0.0002	0.0002
VA Existing	2112	Aerosol Duct Sealing - DX	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	2113	Ceiling/roof Insulation - DX	0.3315	1.0000	0.8973	1.0000	1.0000	0.4838	0.2500	0.2500	0.3315	0.3315	0.5000	0.5000

Commercial Elec Measure Inputs			TECHNOLOGY SATURATION (units/square foot)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	ata Center	n-Jurisdict	eligious Wors	Misc
VA Existing	2114	Duct/Pipe Insulation - DX	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500
VA Existing	2115	Window Film (Standard) - DX	0.0877	0.0284	0.0409	0.0460	1.0172	0.0335	0.0171	0.0171	0.0877	0.0877	0.0284	0.0284
VA Existing	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
VA Existing	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
VA Existing	2300	Base PTAC, EER=8.3, 1 ton	0.0000	0.0000	0.0000	0.0000	0.0000	0.0020	0.0000	0.0024	0.0000	0.0000	0.0018	0.0018
VA Existing	2301	HE PTAC, EER=9.6, 1 ton	0.0000	0.0000	0.0000	0.0000	0.0000	0.0020	0.0000	0.0024	0.0000	0.0000	0.0018	0.0018
VA Existing	2302	Occupancy Sensor (hotels)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0020	0.0000	0.0024	0.0000	0.0000	0.0018	0.0018
VA Existing	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	0.0003	0.0018	0.0003	0.0005	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0005	0.0005
VA Existing	3001	Fan Motor, 5hp, 1800rpm, 89.5%	0.0003	0.0018	0.0003	0.0005	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0005	0.0005
VA Existing	3002	Variable Speed Drive Control, 5 HP	0.0003	0.0018	0.0003	0.0005	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0005	0.0005
VA Existing	3003	Demand Controlled Ventilation	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	0.0002	0.0010	0.0013	0.0000	0.0000	0.0006	0.0002	0.0000	0.0002	0.0002	0.0009	0.0009
VA Existing	3101	Fan Motor, 15hp, 1800rpm, 92.4%	0.0002	0.0010	0.0013	0.0000	0.0000	0.0006	0.0002	0.0000	0.0002	0.0002	0.0009	0.0009
VA Existing	3102	Variable Speed Drive Control, 15 HP	0.0002	0.0010	0.0013	0.0000	0.0000	0.0006	0.0002	0.0000	0.0002	0.0002	0.0009	0.0009
VA Existing	3103	Air Handler Optimization, 15 HP	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	3105	Energy Recovery Ventilation (ERV)	0.0030	0.0030	0.0030	0.0025	0.0189	0.0025	0.0025	0.0035	0.0030	0.0030	0.0020	0.0020
VA Existing	3106	Separate Makeup Air / Exhaust Hoods AC	0.0002	0.1%	0.0013	0.0000	0.0000	0.0006	0.0002	0.0000	0.0002	0.0002	0.0009	0.0009
VA Existing	3107	Demand Controlled Ventilation	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	0.0012	0.0000	0.0019	0.0000	0.0004	0.0001	0.0000	0.0000	0.0012	0.0012	0.0024	0.0024
VA Existing	3201	Fan Motor, 40hp, 1800rpm, 94.1%	0.0012	0.0000	0.0019	0.0000	0.0004	0.0001	0.0000	0.0000	0.0012	0.0012	0.0024	0.0024
VA Existing	3202	Variable Speed Drive Control, 40 HP	0.0012	0.0000	0.0019	0.0000	0.0004	0.0001	0.0000	0.0000	0.0012	0.0012	0.0024	0.0024
VA Existing	3203	Air Handler Optimization, 40 HP	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	3204	Demand Controlled Ventilation	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	4000	Base Built-Up Refrigeration System	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
VA Existing	4001	High-efficiency fan motors	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
VA Existing	4002	Strip curtains for walk-ins (built-up)	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
VA Existing	4003	Auto-closer on main door to walk-in freezer (built-up)	0.00013	0.00013	0.00008	0.00005	0.00001	0.00002	0.00027	0.00003	0.00015	0.00019	0.00009	0.00009
VA Existing	4004	Night covers for display cases	0.00073	0.00274	0.00058	0.01454	0.00000	0.00018	0.00026	0.00020	0.00073	0.00073	0.00024	0.00024
VA Existing	4005	Evaporator fan controller for MT walk-ins	0.00013	0.00013	0.00008	0.00005	0.00001	0.00002	0.00027	0.00003	0.00015	0.00019	0.00009	0.00009
VA Existing	4006	Electronically commutated evaporator fan motor	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500	0.00500
VA Existing	4007	Efficient compressor motor	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
VA Existing	4008	Compressor VSD retrofit	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
VA Existing	4009	Floating head pressure controls	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
VA Existing	4010	Refrigeration Commissioning	0.00002	0.00078	0.00016	0.00155	0.00016	0.00012	0.00003	0.00002	0.00002	0.00002	0.00016	0.00016
VA Existing	4011	Demand Hot Gas Defrost	0.00002	0.00065	0.00013	0.00130	0.00013	0.00010	0.00002	0.00002	0.00002	0.00002	0.00013	0.00013
VA Existing	4012	Demand Defrost Electric	0.00002	0.00065	0.00013	0.00130	0.00013	0.00010	0.00002	0.00002	0.00002	0.00002	0.00013	0.00013
VA Existing	4013	Anti-sweat (humidistat) controls	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
VA Existing	4014	Freezer-Cooler Replacement Gaskets	0.00073	0.00274	0.00058	0.01454	0.00000	0.00018	0.00026	0.00020	0.00073	0.00073	0.00024	0.00024
VA Existing	4015	High R-Value Glass Doors	0.00073	0.00274	0.00058	0.01454	0.00000	0.00018	0.00026	0.00020	0.00073	0.00073	0.00024	0.00024
VA Existing	4016	LED Display Lighting	0.00073	0.00274	0.00058	0.01454	0.00000	0.00018	0.00026	0.00020	0.00073	0.00073	0.00024	0.00024
VA Existing	4017	Multiplex Compressor System	0.00002	0.00078	0.00016	0.00155	0.00016	0.00012	0.00003	0.00002	0.00002	0.00002	0.00016	0.00016
VA Existing	4018	Oversized Air Cooled Condenser	0.00002	0.00078	0.00016	0.00155	0.00016	0.00012	0.00003	0.00002	0.00002	0.00002	0.00016	0.00016
VA Existing	4019	Insulated suction lines												
VA Existing	4100	Base Self-Contained Refrigeration	0.0000	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA Existing	4101	Strip curtains for walk-ins (self-contained)	0.00239	0.00242	0.00152	0.00167	0.00024	0.00029	0.00488	0.00056	0.00262	0.00339	0.00166	0.00166
VA Existing	4102	Auto-closer on main door to walk-in freezer (self-contained)	0.00013	0.00013	0.00008	0.00009	0.00001	0.00002	0.00027	0.00003	0.00015	0.00019	0.00009	0.00009
VA Existing	4103	Night covers for display cases (self-contained)	0.00001	0.00025	0.00009	0.00000	0.00000	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001
VA Existing	4104	Freezer-Cooler Replacement Gaskets (self-contained)	0.00002	0.00052	0.00068	0.00017	0.00000	0.00002	0.00003	0.00002	0.00002	0.00002	0.00002	0.00002
VA Existing	4105	Bi-level LED Case Lighting (self-contained units) 2014	0.00002	0.00044	0.00065	0.00015	0.00000	0.00002	0.00003	0.00001	0.00002	0.00002	0.00002	0.00002
VA Existing	4106	Energy-Star Refrigerator, solid door	0.00001	0.00025	0.00009	0.00000	0.00000	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001
VA Existing	4107	Energy-Star Freezer, solid door	0.00000	0.00007	0.00004	0.00010	0.00000	0.00000	0.00000	0.00001	0.00000	0.00000	0.00000	0.00000
VA Existing	4108	Energy-Star Refrigerator, glass door	0.00001	0.00011	0.00052	0.00001	0.00000	0.00001	0.00001	0.00000	0.00001	0.00001	0.00001	0.00001
VA Existing	4109	Energy-Star Freezer, glass door	0.00000	0.00007	0.00004	0.00010	0.00000	0.00000	0.00000	0.00001	0.00000	0.00000	0.00000	0.00000
VA Existing	4110	Energy Star Ice Machines	0.00001	0.00025	0.00009	0.00000	0.00000	0.00001	0.00002	0.00001	0.00001	0.00001	0.00001	0.00001
VA Existing	4111	Hydraulic-type door closer on reach-in cooler glass doors	0.00001	0.00011	0.00052	0.00001	0.00000	0.00001	0.00001	0.00000	0.00001	0.00001	0.00001	0.00001
VA Existing	4112	Reach-in unit occupancy sensors	0.00001	0.00011	0.00052	0.00001	0.00000	0.00001	0.00001	0.00000	0.00001	0.00001	0.00001	0.00001

Commercial Elec Measure Inputs			TECHNOLOGY SATURATION (units/square foot)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	ata Center	n-Jurisdict	eligious Wors	Misc
VA Existing	5000	Base Desktop PC	0.00025	0.00024	0.00009	0.00015	0.00009	0.00012	0.00024	0.00009	0.00014	0.00020	0.00017	0.00011
VA Existing	5001	PC Network Power Management Enabling	0.00025	0.00024	0.00009	0.00015	0.00009	0.00012	0.00024	0.00009	0.00014	0.00020	0.00017	0.00011
VA Existing	5002	Energy Star or Better PC	0.00025	0.00024	0.00009	0.00015	0.00009	0.00012	0.00024	0.00009	0.00014	0.00020	0.00017	0.00011
VA Existing	5003	Plug-load controls - Commercial Smart Strip (base desktop PC)	0.00025	0.00024	0.00009	0.00015	0.00009	0.00012	0.00024	0.00009	0.00014	0.00020	0.00017	0.00011
VA Existing	5100	Base Laptop PC	0.00018	0.00010	0.00003	0.00004	0.00005	0.00010	0.00012	0.00003	0.00008	0.00014	0.00011	0.00005
VA Existing	5101	Laptop Network Power Management Enabling	0.00018	0.00010	0.00003	0.00004	0.00005	0.00010	0.00012	0.00003	0.00008	0.00014	0.00011	0.00005
VA Existing	5102	Energy Star or Better Laptop	0.00018	0.00010	0.00003	0.00004	0.00005	0.00010	0.00012	0.00003	0.00008	0.00014	0.00011	0.00005
VA Existing	5103	Plug-load controls - Commercial Smart Strip (base desktop PC)	0.00018	0.00010	0.00003	0.00004	0.00005	0.00010	0.00012	0.00003	0.00008	0.00014	0.00011	0.00005
VA Existing	5200	Base Monitor, CRT	0.00012	0.00024	0.00005	0.00012	0.00004	0.00007	0.00014	0.00007	0.00013	0.00010	0.00009	0.00006
VA Existing	5201	Energy Star or Better Monitor - CRT	0.00012	0.00024	0.00005	0.00012	0.00004	0.00007	0.00014	0.00007	0.00013	0.00010	0.00009	0.00006
VA Existing	5202	Monitor Power Management Enabling - CRT	0.00012	0.00024	0.00005	0.00012	0.00004	0.00007	0.00014	0.00007	0.00013	0.00010	0.00009	0.00006
VA Existing	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	0.00012	0.00024	0.00005	0.00012	0.00004	0.00007	0.00014	0.00007	0.00013	0.00010	0.00009	0.00006
VA Existing	5300	Base Monitor, LCD	0.00021	0.00028	0.00007	0.00015	0.00007	0.00010	0.00019	0.00007	0.00014	0.00017	0.00014	0.00009
VA Existing	5301	Energy Star or Better Monitor - LCD	0.00021	0.00028	0.00007	0.00015	0.00007	0.00010	0.00019	0.00007	0.00014	0.00017	0.00014	0.00009
VA Existing	5302	Monitor Power Management Enabling - LCD	0.00021	0.00028	0.00007	0.00015	0.00007	0.00010	0.00019	0.00007	0.00014	0.00017	0.00014	0.00009
VA Existing	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	0.00021	0.00028	0.00007	0.00015	0.00007	0.00010	0.00019	0.00007	0.00014	0.00017	0.00014	0.00009
VA Existing	5400	Base Copier	0.00010	0.00015	0.00004	0.00012	0.00003	0.00004	0.00007	0.00003	0.00004	0.00006	0.00007	0.00004
VA Existing	5401	Energy Star or Better Copier	0.00010	0.00015	0.00004	0.00012	0.00003	0.00004	0.00007	0.00003	0.00004	0.00006	0.00007	0.00004
VA Existing	5402	Copier Power Management Enabling	0.00010	0.00015	0.00004	0.00012	0.00003	0.00004	0.00007	0.00003	0.00004	0.00006	0.00007	0.00004
VA Existing	5500	Base Multifunction	0.00011	0.00022	0.00005	0.00011	0.00004	0.00003	0.00009	0.00003	0.00003	0.00006	0.00007	0.00004
VA Existing	5501	Multifunction Power Management Enabling	0.00011	0.00022	0.00005	0.00011	0.00004	0.00003	0.00009	0.00003	0.00003	0.00006	0.00007	0.00004
VA Existing	5502	ENERGY STAR Multi-Function Printer	0.00011	0.00022	0.00005	0.00011	0.00004	0.00003	0.00009	0.00003	0.00003	0.00006	0.00007	0.00004
VA Existing	5600	Base Printer	0.00012	0.00012	0.00004	0.00008	0.00004	0.00005	0.00009	0.00003	0.00002	0.00010	0.00007	0.00005
VA Existing	5601	Printer Power Management Enabling	0.00012	0.00012	0.00004	0.00008	0.00004	0.00005	0.00009	0.00003	0.00002	0.00010	0.00007	0.00005
VA Existing	5602	ENERGY STAR Printer	0.00012	0.00012	0.00004	0.00008	0.00004	0.00005	0.00009	0.00003	0.00002	0.00010	0.00007	0.00005
VA Existing	5700	Base Data Center/Server Room	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
VA Existing	5701	Data Center Improved Operations	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
VA Existing	5702	Data Center Best Practices	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
VA Existing	5703	Data Center State of the Art practices	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
VA Existing	5704	Data Center Airflow Management												
VA Existing	6000	Base Water Heating	0.0015	0.0027	0.0013	0.0021	0.0080	0.0025	0.0026	0.0038	0.0015	0.0015	0.0016	0.0016
VA Existing	6001	Demand controlled circulating systems	0.0001	0.0002	0.0001	0.0001	0.0002	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001
VA Existing	6002	High Efficiency Water Heater (electric)	0.0015	0.0027	0.0013	0.0021	0.0080	0.0025	0.0026	0.0038	0.0015	0.0015	0.0016	0.0016
VA Existing	6003	Hot Water Pipe Insulation	0.0011	0.0021	0.0010	0.0016	0.0061	0.0019	0.0020	0.0029	0.0011	0.0011	0.0012	0.0012
VA Existing	6004	Tankless Water Heater	0.0015	0.0027	0.0013	0.0021	0.0080	0.0025	0.0026	0.0038	0.0015	0.0015	0.0016	0.0016
VA Existing	6005	Heat Pump Water Heater (air source)	0.0015	0.0027	0.0013	0.0021	0.0080	0.0025	0.0026	0.0038	0.0015	0.0015	0.0016	0.0016
VA Existing	6006	Heat Recovery Unit	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	6007	Heat Trap	0.0015	0.0027	0.0013	0.0021	0.0080	0.0025	0.0026	0.0038	0.0015	0.0015	0.0016	0.0016
VA Existing	6008	Solar Water Heater	0.0015	0.0027	0.0013	0.0021	0.0080	0.0025	0.0026	0.0038	0.0015	0.0015	0.0016	0.0016
VA Existing	7000	Base Refrigerated Vending Machines	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA Existing	7001	Vending Misers (Refrigerated units)	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA Existing	7002	Vending Misers (Refrigerated glass-front units)	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA Existing	7100	Base Non-Refrigerated Vending Machines	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA Existing	7101	Vending Misers (Non-Refrigerated)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
VA Existing	7200	Base Oven	0.0001	0.0002	0.0001	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000
VA Existing	7201	Convection Oven	0.0001	0.0002	0.0001	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000
VA Existing	7300	Base Fryer	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000
VA Existing	7301	Efficient Fryer	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000
VA Existing	7400	Base Steamer	0.0002	0.0002	0.0001	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000
VA Existing	7401	Efficient Steamer	0.0002	0.0002	0.0001	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000
VA Existing	8000	Base Heating, Heat Pump (7.7 HSPF)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
VA Existing	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
VA Existing	8100	Base Heating, Other Electric	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	9500	Base Miscellaneous	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
VA Existing	9501	Xmisc	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066

Commercial Elec Measure Inputs			TECHNOLOGY SATURATION (units/square foot)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	ata Center	Jurisdictie	ligious Wors	Misc
NC Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1003	ROB 4L4'T5, 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1004	ROB 4L4' LED Tube, 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1013	ROB 4L4'T5, 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1014	ROB 4L4' LED Tube, 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1023	ROB 4L4'T5, 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1024	ROB 4L4' LED Tube, 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1033	ROB 4L4'T5, 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1034	ROB 4L4' LED Tube, 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1035	LED Troffer (base 4L4'T8), 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	0.0114	0.0179	0.0094	0.0123	0.0036	0.0093	0.0071	0.0046	0.0114	0.0085	0.0066	0.0066
NC Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1103	ROB 2L4'T5, 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1104	ROB 2L4' LED Tube, 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1113	ROB 2L4'T5, 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1114	ROB 2L4' LED Tube, 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1123	ROB 2L4'T5, 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1124	ROB 2L4' LED Tube, 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096

Commercial Elec Measure Inputs			TECHNOLOGY SATURATION (units/square foot)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	ata Center	n-Jurisdict	eligious Wors	Misc
NC Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096
NC Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NC Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	0.0118	0.0152	0.0097	0.0183	0.0061	0.0112	0.0060	0.0059	0.0118	0.0105	0.0096	0.0096

Commercial Elec Measure Inputs			APPLICABILITY*INCOMPLETE*FEASIBILITY (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	lon-Jurisdiction	eligious Worshi	Misc
VA Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	60%	2%	29%	42%	45%	57%	47%	3%	45%	47%	25%	20%
VA Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1003	ROB 4L4'T5, 2014-2015	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1004	ROB 4L4' LED Tube, 2014-2015	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	10%	0%	1%	1%	19%	9%	1%	0%	3%	10%	3%	2%
VA Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	15%	0%	2%	3%	5%	16%	16%	0%	12%	8%	3%	3%
VA Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	18%	1%	9%	13%	17%	17%	14%	1%	14%	14%	8%	6%
VA Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	60%	2%	29%	42%	45%	57%	47%	3%	45%	47%	25%	20%
VA Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1013	ROB 4L4'T5, 2016-2017	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1014	ROB 4L4' LED Tube, 2016-2017	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	10%	0%	1%	1%	19%	9%	1%	0%	3%	10%	3%	2%
VA Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	15%	0%	2%	3%	5%	16%	16%	0%	12%	8%	3%	3%
VA Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	18%	1%	9%	13%	17%	17%	14%	1%	14%	14%	8%	6%
VA Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	60%	2%	29%	42%	45%	57%	47%	3%	45%	47%	25%	20%
VA Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1023	ROB 4L4'T5, 2018-2019	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1024	ROB 4L4' LED Tube, 2018-2019	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	10%	0%	1%	1%	19%	9%	1%	0%	3%	10%	3%	2%
VA Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	15%	0%	2%	3%	5%	16%	16%	0%	12%	8%	3%	3%
VA Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	18%	1%	9%	13%	17%	17%	14%	1%	14%	14%	8%	6%
VA Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	60%	2%	29%	42%	45%	57%	47%	3%	45%	47%	25%	20%
VA Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1033	ROB 4L4'T5, 2020	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1034	ROB 4L4' LED Tube, 2020	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1035	LED Troffer (base 4L4'T8), 2020	62%	2%	29%	42%	57%	57%	47%	3%	46%	48%	25%	20%
VA Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	10%	0%	1%	1%	19%	9%	1%	0%	3%	10%	3%	2%
VA Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	15%	0%	2%	3%	5%	16%	16%	0%	12%	8%	3%	3%
VA Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	18%	1%	9%	13%	17%	17%	14%	1%	14%	14%	8%	6%
VA Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	2%	25%	10%	0%	0%	5%	12%	17%	1%	13%	21%	17%
VA Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1103	ROB 2L4'T5, 2014-2015	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1104	ROB 2L4' LED Tube, 2014-2015	1%	8%	3%	0%	0%	2%	4%	5%	0%	4%	7%	6%
VA Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	0%	1%	0%	0%	0%	1%	0%	2%	0%	3%	2%	2%
VA Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	0%	2%	1%	0%	0%	2%	4%	2%	0%	2%	3%	2%
VA Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	1%	8%	3%	0%	0%	2%	4%	5%	0%	4%	7%	6%
VA Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	2%	25%	10%	0%	0%	5%	12%	17%	1%	13%	21%	17%
VA Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1113	ROB 2L4'T5, 2016-2017	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1114	ROB 2L4' LED Tube, 2016-2017	1%	8%	3%	0%	0%	2%	4%	5%	0%	4%	7%	6%
VA Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	0%	1%	0%	0%	0%	1%	0%	2%	0%	3%	2%	2%
VA Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	0%	2%	1%	0%	0%	2%	4%	2%	0%	2%	3%	2%
VA Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	1%	8%	3%	0%	0%	2%	4%	5%	0%	4%	7%	6%
VA Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	2%	25%	10%	0%	0%	5%	12%	17%	1%	13%	21%	17%
VA Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1123	ROB 2L4'T5, 2018-2019	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1124	ROB 2L4' LED Tube, 2018-2019	1%	8%	3%	0%	0%	2%	4%	5%	0%	4%	7%	6%
VA Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	0%	1%	0%	0%	0%	1%	0%	2%	0%	3%	2%	2%
VA Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	0%	2%	1%	0%	0%	2%	4%	2%	0%	2%	3%	2%

Commercial Elec Measure Inputs			APPLICABILITY*INCOMPLETE*FEASIBILITY (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	lon-Jurisdiction	eligious Worshi	Misc
VA Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	1%	8%	3%	0%	0%	2%	4%	5%	0%	4%	7%	6%
VA Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1131	ROB 2L4' High Performance T8 (86 W), 2020	2%	25%	10%	0%	0%	5%	12%	17%	1%	13%	21%	17%
VA Existing	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1133	ROB 2L4'T5, 2020	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1134	ROB 2L4' LED Tube, 2020	1%	8%	3%	0%	0%	2%	4%	5%	0%	4%	7%	6%
VA Existing	1135	LED Troffer (base 2L4'T8), 2020	2%	25%	10%	0%	0%	5%	12%	17%	1%	14%	24%	19%
VA Existing	1136	Lighting Control Tuneup (base 2L4'T8), 2020	0%	1%	0%	0%	0%	1%	0%	2%	0%	3%	2%	2%
VA Existing	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	0%	2%	1%	0%	0%	2%	4%	2%	0%	2%	3%	2%
VA Existing	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	1%	8%	3%	0%	0%	2%	4%	5%	0%	4%	7%	6%
VA Existing	1200	Base Other Fluorescent Fixture	5%	0%	0%	0%	0%	2%	4%	1%	4%	3%	1%	1%
VA Existing	1201	ROB High Performance T8 (base other fluorescent)	5%	0%	0%	0%	0%	2%	4%	1%	4%	3%	1%	1%
VA Existing	1202	ROB Low Watt High Performance T8 (base other fluorescent)	5%	0%	0%	0%	0%	2%	4%	1%	4%	3%	1%	1%
VA Existing	1203	Lighting Control Tuneup (base other fluorescent fixture)	1%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%
VA Existing	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	1%	0%	0%	0%	0%	1%	1%	0%	1%	1%	0%	0%
VA Existing	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	1%	0%	0%	0%	0%	1%	1%	0%	1%	1%	0%	0%
VA Existing	1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	7%	22%	10%	25%	3%	5%	9%	16%	5%	6%	11%	10%
VA Existing	1301	CFLs (base incandescent flood) 2014-2015	7%	11%	5%	22%	3%	4%	8%	11%	4%	5%	10%	9%
VA Existing	1302	LEDs (base incandescent flood) 2014-2015	5%	16%	9%	8%	1%	4%	8%	14%	4%	4%	10%	8%
VA Existing	1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	7%	22%	10%	25%	3%	5%	9%	16%	5%	6%	11%	10%
VA Existing	1311	CFLs (base incandescent flood) 2016-2017	7%	11%	5%	22%	3%	4%	8%	11%	4%	5%	10%	9%
VA Existing	1312	LEDs (base incandescent flood) 2016-2017	5%	16%	9%	8%	1%	4%	8%	14%	4%	4%	10%	8%
VA Existing	1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	7%	22%	10%	25%	3%	5%	9%	16%	5%	6%	11%	10%
VA Existing	1321	CFLs (base incandescent flood) 2018-2019	7%	11%	5%	22%	3%	4%	8%	11%	4%	5%	10%	9%
VA Existing	1322	LEDs (base incandescent flood) 2018-2019	5%	16%	9%	8%	1%	4%	8%	14%	4%	4%	10%	8%
VA Existing	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	7%	22%	10%	25%	3%	5%	9%	16%	5%	6%	11%	10%
VA Existing	1331	CFLs (base incandescent flood) 2020	7%	11%	5%	22%	3%	4%	8%	11%	4%	5%	10%	9%
VA Existing	1332	LEDs (base incandescent flood) 2020	5%	16%	9%	8%	1%	4%	8%	14%	4%	4%	10%	8%
VA Existing	1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	4%	11%	5%	12%	1%	2%	4%	8%	2%	3%	5%	5%
VA Existing	1401	CFLs (base incandescent A-line 72W) 2014-2015	3%	5%	2%	11%	1%	2%	4%	6%	2%	3%	5%	5%
VA Existing	1402	LEDs (base incandescent A-line 72W) 2014-2015	2%	8%	5%	4%	1%	2%	4%	7%	2%	2%	5%	4%
VA Existing	1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	4%	11%	5%	12%	1%	2%	4%	8%	2%	3%	5%	5%
VA Existing	1411	CFLs (base incandescent A-line 72W) 2016-2017	3%	5%	2%	11%	1%	2%	4%	6%	2%	3%	5%	5%
VA Existing	1412	LEDs (base incandescent A-line 72W) 2016-2017	2%	8%	5%	4%	1%	2%	4%	7%	2%	2%	5%	4%
VA Existing	1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	4%	11%	5%	12%	1%	2%	4%	8%	2%	3%	5%	5%
VA Existing	1421	CFLs (base incandescent A-line 72W) 2018-2019	3%	5%	2%	11%	1%	2%	4%	6%	2%	3%	5%	5%
VA Existing	1422	LEDs (base incandescent A-line 72W) 2018-2019	2%	8%	5%	4%	1%	2%	4%	7%	2%	2%	5%	4%
VA Existing	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	4%	11%	5%	12%	1%	2%	4%	8%	2%	3%	5%	5%
VA Existing	1431	CFLs (base incandescent A-line 72W) 2020	3%	5%	2%	11%	1%	2%	4%	6%	2%	3%	5%	5%
VA Existing	1432	LEDs (base incandescent A-line 72W) 2020	2%	8%	5%	4%	1%	2%	4%	7%	2%	2%	5%	4%
VA Existing	1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	4%	11%	5%	12%	1%	2%	4%	8%	2%	3%	5%	5%
VA Existing	1501	CFLs (base incandescent A-line 53W) 2014-2015	3%	5%	2%	11%	1%	2%	4%	6%	2%	3%	5%	5%
VA Existing	1502	LEDs (base incandescent A-line 53W) 2014-2015	2%	8%	5%	4%	1%	2%	4%	7%	2%	2%	5%	4%
VA Existing	1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	4%	11%	5%	12%	1%	2%	4%	8%	2%	3%	5%	5%
VA Existing	1511	CFLs (base incandescent A-line 53W) 2016-2017	3%	5%	2%	11%	1%	2%	4%	6%	2%	3%	5%	5%
VA Existing	1512	LEDs (base incandescent A-line 53W) 2016-2017	2%	8%	5%	4%	1%	2%	4%	7%	2%	2%	5%	4%
VA Existing	1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	4%	11%	5%	12%	1%	2%	4%	8%	2%	3%	5%	5%
VA Existing	1521	CFLs (base incandescent A-line 53W) 2018-2019	3%	5%	2%	11%	1%	2%	4%	6%	2%	3%	5%	5%
VA Existing	1522	LEDs (base incandescent A-line 53W) 2018-2019	2%	8%	5%	4%	1%	2%	4%	7%	2%	2%	5%	4%
VA Existing	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	4%	11%	5%	12%	1%	2%	4%	8%	2%	3%	5%	5%
VA Existing	1531	CFLs (base incandescent A-line 53W) 2020	3%	5%	2%	11%	1%	2%	4%	6%	2%	3%	5%	5%
VA Existing	1532	LEDs (base incandescent A-line 53W) 2020	2%	8%	5%	4%	1%	2%	4%	7%	2%	2%	5%	4%
VA Existing	1600	Base CFL 18W to screw-in replacement 2014-2015	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1601	LED screw-in replacement (base CFL 18W) 2014-2015	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1610	Base CFL 18W to screw-in replacement 2016-2017	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1611	LED screw-in replacement (base CFL 18W) 2016-2017	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1620	Base CFL 18W to screw-in replacement 2018-2019	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1621	LED screw-in replacement (base CFL 18W) 2018-2019	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1630	Base CFL 18W to screw-in replacement 2020	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1631	LED screw-in replacement (base CFL 18W) 2020	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1700	Base CFL 23W to screw-in replacement 2014-2015	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1701	LED screw-in replacement (base CFL 23W) 2014-2015	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%

Commercial Elec Measure Inputs			APPLICABILITY*INCOMPLETE*FEASIBILITY (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	lon-Jurisdiction	eligious Worshi	Misc
VA Existing	1710	Base CFL 23W to screw-in replacement 2016-2017	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1711	LED screw-in replacement (base CFL 23W) 2016-2017	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1720	Base CFL 23W to screw-in replacement 2018-2019	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1721	LED screw-in replacement (base CFL 23W) 2018-2019	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1730	Base CFL 23W to screw-in replacement 2020	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1731	LED screw-in replacement (base CFL 23W) 2020	8%	14%	17%	1%	6%	10%	9%	19%	17%	11%	9%	11%
VA Existing	1800	BaseMetal Halide, 465W	2%	3%	4%	1%	25%	5%	2%	6%	2%	9%	2%	6%
VA Existing	1801	T5 (240W) (base metal halide)	2%	2%	3%	1%	18%	4%	1%	4%	1%	6%	1%	4%
VA Existing	1802	Induction High Bay Lighting	2%	2%	3%	1%	18%	4%	1%	4%	1%	6%	1%	4%
VA Existing	1803	PSMH + electronic ballast	2%	2%	3%	1%	18%	2%	1%	4%	1%	6%	1%	4%
VA Existing	1804	PSMH, magnetic ballast, 320 W	2%	2%	3%	1%	18%	4%	1%	4%	1%	6%	1%	4%
VA Existing	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	1%	1%	1%	0%	8%	2%	1%	2%	0%	3%	1%	2%
VA Existing	1806	Occupancy Sensor, High Bay T5	0%	0%	1%	0%	4%	1%	0%	1%	0%	1%	0%	1%
VA Existing	1850	Base CFL Exit Sign	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
VA Existing	1851	LED Exit Sign	35%	64%	58%	1%	100%	56%	6%	35%	35%	37%	39%	39%
VA Existing	1900	Base Outdoor High Pressure Sodium 250W Lamp	43%	62%	41%	25%	72%	85%	64%	92%	93%	79%	89%	68%
VA Existing	1901	Outdoor Lighting Controls (Photocell/Timeclock)	21%	38%	14%	11%	10%	32%	20%	30%	16%	19%	5%	19%
VA Existing	1902	LED Outdoor Area Lighting	43%	62%	41%	25%	72%	85%	64%	92%	93%	79%	89%	68%
VA Existing	1903	Bi-Level LED Outdoor Lighting	35%	50%	33%	20%	58%	68%	51%	73%	74%	63%	71%	54%
VA Existing	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	13%	15%	1%	3%	0%	40%	19%	27%	66%	44%	15%	8%
VA Existing	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	9%	10%	1%	2%	0%	27%	13%	18%	45%	30%	10%	6%
VA Existing	2002	Window Film (Standard) - Chiller	0%	0%	0%	2%	0%	5%	2%	13%	0%	14%	9%	5%
VA Existing	2003	EMS - Chiller	9%	12%	1%	3%	0%	23%	17%	20%	14%	16%	7%	7%
VA Existing	2004	Cool Roof - Chiller	2%	0%	0%	1%	0%	12%	8%	13%	11%	15%	7%	4%
VA Existing	2005	Chiller Tune Up/Diagnostics	0%	0%	0%	0%	0%	1%	0%	7%	0%	3%	0%	1%
VA Existing	2006	VSD for Chiller Pumps and Towers	1%	0%	0%	3%	0%	1%	0%	1%	4%	9%	6%	3%
VA Existing	2007	EMS Optimization - Chiller	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	2008	New Economizer - Chiller	2%	0%	0%	0%	0%	29%	10%	18%	12%	25%	14%	8%
VA Existing	2009	Dual Enthalpy Economizer Replaced Dry Bulb Economizer - Chiller	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	2010	Ceiling/roof Insulation - Chiller	0%	8%	0%	0%	0%	0%	0%	0%	2%	3%	1%	1%
VA Existing	2011	Duct/Pipe Insulation - Chiller	2%	0%	0%	2%	0%	12%	11%	7%	10%	18%	10%	6%
VA Existing	2012	Duct Testing/Sealing	13%	13%	1%	3%	0%	34%	19%	27%	66%	43%	14%	8%
VA Existing	2013	High Efficiency Chiller Motors	1%	0%	0%	3%	0%	1%	2%	0%	4%	3%	0%	0%
VA Existing	2100	Base DX Packaged System, EER=10.3, 10 tons	58%	77%	50%	84%	37%	95%	65%	68%	38%	54%	47%	32%
VA Existing	2101	DX Packaged System, EER=10.9, 10 tons	58%	77%	50%	84%	37%	95%	65%	68%	38%	54%	47%	32%
VA Existing	2102	DX Packaged System, EER=13.4, 10 tons	58%	77%	50%	84%	37%	95%	65%	68%	38%	54%	47%	32%
VA Existing	2103	Geothermal Heat Pump, EER=13, 10 tons - DX	3%	4%	2%	4%	2%	5%	3%	3%	2%	3%	2%	2%
VA Existing	2104	DX Coil Cleaning	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	2105	DX Tune Up/ Advanced Diagnostics	2%	2%	4%	2%	0%	3%	1%	18%	0%	4%	0%	2%
VA Existing	2106	Prog. Thermostat - DX	24%	33%	28%	23%	25%	18%	24%	36%	34%	36%	21%	12%
VA Existing	2107	Cool Roof - DX	27%	35%	16%	42%	14%	45%	32%	34%	18%	26%	24%	16%
VA Existing	2108	Optimize Controls - DX	19%	25%	16%	28%	12%	31%	21%	22%	12%	18%	16%	10%
VA Existing	2109	Economizer - DX	21%	12%	14%	0%	6%	11%	28%	26%	14%	16%	12%	8%
VA Existing	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	0.4%	1.4%	0.5%	2.2%	0.6%	1.9%	0.2%	0.4%	0.2%	0%	1%	1%
VA Existing	2111	Economizer Repair - DX	8.4%	28.3%	10.9%	43.7%	12.7%	38.6%	4.6%	8.7%	3.2%	5%	11%	11%
VA Existing	2112	Aerosol Duct Sealing - DX	19%	23%	16%	27%	11%	26%	21%	22%	12%	17%	15%	10%
VA Existing	2113	Ceiling/roof Insulation - DX	0.0%	0.2%	0.0%	0.8%	12.9%	0.4%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	2114	Duct/Pipe Insulation - DX	18.5%	46.9%	18.0%	62.7%	3.6%	56.7%	35.4%	36.8%	12.0%	17%	15%	10%
VA Existing	2115	Window Film (Standard) - DX	12.1%	53.8%	7.2%	62.1%	11.9%	21.7%	29.6%	49.5%	7.8%	15%	16%	10%
VA Existing	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	40%	24%	18%	7%	20%	75%	41%	53%	5%	23%	39%	30%
VA Existing	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	36.4%	22.2%	16.9%	6.9%	18.4%	69.1%	37.9%	48.5%	4.4%	22%	36%	28%
VA Existing	2300	Base PTAC, EER=8.3, 1 ton	6.3%	2.9%	3.2%	3.5%	0.9%	68.4%	9.2%	11.1%	0.0%	36%	38%	19%
VA Existing	2301	HE PTAC, EER=9.6, 1 ton	6%	3%	3%	3%	1%	68%	9%	11%	0%	36%	38%	19%
VA Existing	2302	Occupancy Sensor (hotels)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%	0.0%	0%	0%	0%
VA Existing	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	42.5%	50.4%	43.3%	96.7%	30.2%	33.4%	18.8%	65.4%	18.8%	48%	54%	54%
VA Existing	3001	Fan Motor, 5hp, 1800rpm, 89.5%	31%	39%	31%	75%	24%	26%	15%	51%	14%	36%	42%	42%
VA Existing	3002	Variable Speed Drive Control, 5 HP	25.8%	49.5%	41.5%	96.6%	30.2%	28.7%	16.9%	0.0%	4.7%	29%	53%	50%
VA Existing	3003	Demand Controlled Ventilation	14.1%	46.5%	30.3%	96.7%	2.1%	30.9%	12.3%	65.4%	6.2%	11%	6%	6%
VA Existing	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	7%	0%	2%	0%	0%	89%	65%	0%	65%	25%	43%	43%
VA Existing	3101	Fan Motor, 15hp, 1800rpm, 92.4%	2.9%	0.0%	0.3%	0.0%	0.0%	57.3%	10.0%	0.0%	26.0%	17%	43%	43%
VA Existing	3102	Variable Speed Drive Control, 15 HP	4.5%	0.0%	1.4%	0.0%	0.0%	76.7%	58.8%	0.0%	16.2%	15%	42%	40%
VA Existing	3103	Air Handler Optimization, 15 HP	7%	0%	2%	0%	0%	89%	0%	0%	62%	20%	28%	28%

Commercial Elec Measure Inputs			APPLICABILITY*INCOMPLETE*FEASIBILITY (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	lon-Jurisdiction	eligious Worshi	Misc
VA Existing	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	3.1%	0.0%	1.5%	0.0%	0.0%	87.5%	65.4%	0.0%	27.5%	18%	43%	43%
VA Existing	3105	Energy Recovery Ventilation (ERV)	2.4%	0.0%	1.5%	0.0%	0.0%	62.1%	65.4%	0.0%	21.2%	7%	7%	7%
VA Existing	3106	Separate Makeup Air / Exhaust Hoods AC	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	3107	Demand Controlled Ventilation	2.4%	0.0%	1.1%	0.0%	0.0%	82.8%	42.6%	0.0%	21.6%	6%	5%	5%
VA Existing	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	4.6%	0.0%	1.5%	95.6%	10.0%	37.3%	69.5%	11.3%	69.5%	19%	34%	34%
VA Existing	3201	Fan Motor, 40hp, 1800rpm, 94.1%	1.8%	0.0%	0.3%	95.6%	0.0%	7.2%	0.0%	0.0%	27.6%	7%	12%	12%
VA Existing	3202	Variable Speed Drive Control, 40 HP	2.8%	0.0%	1.4%	95.5%	10.0%	32.0%	62.5%	0.0%	17.2%	12%	33%	32%
VA Existing	3203	Air Handler Optimization, 40 HP	4.4%	0.0%	1.5%	95.6%	10.0%	37.3%	0.0%	11.3%	66.1%	16%	22%	22%
VA Existing	3204	Demand Controlled Ventilation	1.5%	0.0%	1.1%	95.6%	0.7%	34.5%	45.3%	11.3%	23.0%	4%	4%	4%
VA Existing	4000	Base Built-Up Refrigeration System	8.7%	67.0%	17.4%	91.4%	37.3%	36.6%	25.6%	37.7%	2.3%	40%	43%	18%
VA Existing	4001	High-efficiency fan motors	3.6%	37.5%	4.9%	25.5%	8.9%	18.3%	25.6%	0.0%	0.9%	16%	15%	6%
VA Existing	4002	Strip curtains for walk-ins (built-up)	8%	40%	14%	19%	4%	32%	19%	18%	0%	19%	43%	7%
VA Existing	4003	Auto-closer on main door to walk-in freezer (built-up)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	4004	Night covers for display cases	6.0%	64.1%	16.9%	82.7%	37.3%	36.6%	24.8%	37.5%	2.3%	28%	43%	17%
VA Existing	4005	Evaporator fan controller for MT walk-ins	5.2%	17.7%	8.9%	20.1%	1.8%	7.6%	9.5%	11.2%	0.0%	18%	29%	10%
VA Existing	4006	Electronically commutated evaporator fan motor	5.6%	67.0%	8.3%	52.1%	17.9%	36.6%	25.6%	37.7%	1.5%	33%	43%	18%
VA Existing	4007	Efficient compressor motor	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	4008	Compressor VSD retrofit	5.0%	67.0%	17.4%	91.4%	0.0%	27.7%	25.6%	37.7%	1.3%	32%	43%	18%
VA Existing	4009	Floating head pressure controls	0.0%	0.0%	0.0%	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	4010	Refrigeration Commissioning	0.9%	6.7%	5.2%	9.1%	3.7%	3.7%	2.6%	3.8%	0.2%	4%	4%	2%
VA Existing	4011	Demand Hot Gas Defrost	5.0%	67.0%	17.4%	91.4%	0.0%	27.7%	25.6%	37.7%	1.3%	32%	43%	18%
VA Existing	4012	Demand Defrost Electric	0.0%	0.0%	3.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	4013	Anti-sweat (humidistat) controls	0.0%	0.0%	0.0%	24.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	4014	Freezer-Cooler Replacement Gaskets	4.3%	33.5%	8.7%	45.7%	18.6%	18.3%	12.8%	18.9%	1.1%	20%	22%	9%
VA Existing	4015	High R-Value Glass Doors	0.0%	0.0%	17.4%	86.6%	0.0%	0.0%	0.0%	0.0%	0.0%	20%	43%	18%
VA Existing	4016	LED Display Lighting	8.7%	50.9%	10.2%	88.8%	35.3%	34.3%	24.9%	37.2%	2.3%	35%	43%	14%
VA Existing	4017	Multiplex Compressor System	0%	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%
VA Existing	4018	Oversized Air Cooled Condenser	4.3%	33.5%	8.7%	45.7%	18.6%	18.3%	12.8%	18.9%	1.1%	20%	22%	9%
VA Existing	4019	Insulated suction lines	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	4100	Base Self-Contained Refrigeration	68%	91%	71%	94%	90%	83%	77%	78%	95%	85%	96%	62%
VA Existing	4101	Strip curtains for walk-ins (self-contained)	10.8%	54.4%	14.1%	19.6%	3.5%	19.2%	19.3%	28.3%	0.0%	27%	2%	11%
VA Existing	4102	Auto-closer on main door to walk-in freezer (self-contained)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	4103	Night covers for display cases (self-contained)	5%	46%	15%	25%	2%	32%	14%	37%	0%	23%	10%	17%
VA Existing	4104	Freezer-Cooler Replacement Gaskets (self-contained)	33.9%	45.6%	35.6%	46.9%	44.8%	41.6%	38.3%	39.0%	47.6%	42%	48%	31%
VA Existing	4105	Bi-level LED Case Lighting (self-contained units) 2014	8.7%	50.9%	10.2%	88.8%	1.4%	34.3%	24.9%	29.2%	2.3%	35%	43%	14%
VA Existing	4106	Energy-Star Refrigerator, solid door	5.6%	42.9%	11.1%	58.5%	0.9%	23.4%	16.4%	19.0%	1.5%	26%	28%	12%
VA Existing	4107	Energy-Star Freezer, solid door	5.7%	44.2%	11.5%	60.3%	1.0%	24.1%	16.9%	19.6%	1.5%	27%	29%	12%
VA Existing	4108	Energy-Star Refrigerator, glass door	5.6%	42.9%	11.1%	58.5%	0.9%	23.4%	16.4%	19.0%	1.5%	26%	28%	12%
VA Existing	4109	Energy-Star Freezer, glass door	6%	43%	11%	58%	1%	23%	16%	19%	1%	26%	28%	12%
VA Existing	4110	Energy Star Ice Machines	11.0%	56.3%	10.6%	46.8%	25.3%	53.3%	22.0%	49.9%	4.0%	43%	52%	23%
VA Existing	4111	Hydraulic-type door closer on reach-in cooler glass doors	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	4112	Reach-in unit occupancy sensors	8.7%	67.0%	10.7%	88.0%	1.5%	36.6%	25.2%	29.3%	2.3%	35%	43%	14%
VA Existing	5000	Base Desktop PC	97.6%	63.7%	80.3%	84.9%	97.9%	99.6%	95.0%	96.9%	97.7%	98%	95%	90%
VA Existing	5001	PC Network Power Management Enabling	55%	36%	45%	48%	55%	56%	53%	55%	55%	55%	54%	50%
VA Existing	5002	Energy Star or Better PC	62.6%	63.0%	30.9%	83.1%	97.0%	82.7%	89.6%	52.2%	62.7%	76%	88%	82%
VA Existing	5003	Plug-load controls - Commercial Smart Strip (base desktop PC)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	5100	Base Laptop PC	86.9%	44.0%	60.5%	65.7%	85.5%	97.5%	68.2%	86.6%	90.1%	83%	72%	71%
VA Existing	5101	Laptop Network Power Management Enabling	25.2%	12.7%	17.5%	19.1%	24.8%	28.3%	19.8%	25.1%	26.1%	24%	21%	20%
VA Existing	5102	Energy Star or Better Laptop	47.3%	23.9%	32.9%	35.7%	46.5%	53.0%	37.1%	47.1%	49.0%	45%	39%	38%
VA Existing	5103	Plug-load controls - Commercial Smart Strip (base laptop PC)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	5200	Base Monitor, CRT	59.8%	46.8%	41.7%	28.1%	68.3%	93.6%	64.4%	83.7%	78.9%	60%	45%	51%
VA Existing	5201	Energy Star or Better Monitor - CRT	34.6%	46.8%	41.7%	28.1%	68.3%	93.6%	61.4%	83.7%	45.7%	47%	45%	51%
VA Existing	5202	Monitor Power Management Enabling - CRT	8.5%	15.6%	7.8%	21.1%	35.7%	37.5%	31.9%	25.7%	11.2%	15%	16%	18%
VA Existing	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	29.9%	23.4%	20.8%	14.1%	34.2%	46.8%	32.2%	41.8%	39.4%	30%	23%	25%
VA Existing	5300	Base Monitor, LCD	78.6%	42.2%	48.4%	91.8%	75.3%	93.3%	77.7%	87.1%	94.9%	96%	89%	78%
VA Existing	5301	Energy Star or Better Monitor - LCD	45.8%	41.1%	30.2%	89.9%	74.3%	78.0%	73.3%	37.5%	55.3%	69%	76%	66%
VA Existing	5302	Monitor Power Management Enabling - LCD	27.1%	17.5%	8.5%	65.4%	3.8%	9.9%	17.2%	48.3%	32.6%	24%	14%	12%
VA Existing	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	39.3%	21.1%	24.2%	45.9%	37.6%	46.6%	38.9%	43.5%	47.4%	48%	45%	39%
VA Existing	5400	Base Copier	96.6%	44.8%	87.1%	29.0%	89.4%	98.6%	99.3%	93.6%	95.2%	97%	98%	86%
VA Existing	5401	Energy Star or Better Copier	41.3%	30.0%	56.3%	28.7%	47.0%	23.2%	77.9%	39.0%	40.7%	50%	59%	51%
VA Existing	5402	Copier Power Management Enabling	18%	20%	19%	21%	14%	18%	29%	17%	18%	20%	22%	19%
VA Existing	5500	Base Multifunction	96.6%	78.2%	81.5%	84.0%	93.9%	97.9%	83.6%	93.3%	90.1%	97%	91%	86%

Commercial Elec Measure Inputs			APPLICABILITY*INCOMPLETE*FEASIBILITY (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	Non-Jurisdiction	Religious Worshi	Misc
VA Existing	5501	Multifunction Power Management Enabling	24.0%	58.7%	15.2%	39.7%	11.7%	25.7%	15.5%	23.3%	22.4%	23%	20%	19%
VA Existing	5502	ENERGY STAR Multi-Function Printer	48.5%	39.3%	40.9%	42.1%	47.1%	49.1%	42.0%	46.8%	45.2%	49%	46%	43%
VA Existing	5600	Base Printer	95.4%	30.3%	51.1%	17.4%	83.1%	98.6%	82.5%	42.8%	69.0%	92%	53%	71%
VA Existing	5601	Printer Power Management Enabling	23.7%	22.7%	9.5%	8.2%	10.4%	25.9%	15.3%	10.7%	17.1%	22%	12%	16%
VA Existing	5602	ENERGY STAR Printer	76.3%	24.2%	40.9%	13.9%	66.5%	78.9%	66.0%	34.3%	55.2%	73%	42%	57%
VA Existing	5700	Base Data Center/Server Room	0.2%	0.1%	0.0%	0.0%	0.1%	0.4%	0.3%	0.2%	100.0%	0%	0%	0%
VA Existing	5701	Data Center Improved Operations	0.1%	0.0%	0.0%	0.0%	0.1%	0.2%	0.1%	0.1%	48.0%	0%	0%	0%
VA Existing	5702	Data Center Best Practices	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	27.0%	0%	0%	0%
VA Existing	5703	Data Center State of the Art practices	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	0%
VA Existing	5704	Data Center Airflow Management	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	6000	Base Water Heating	88.9%	39.3%	62.5%	77.9%	82.6%	72.5%	55.4%	31.2%	88.9%	39%	71%	51%
VA Existing	6001	Demand controlled circulating systems	52.6%	29.5%	18.7%	56.7%	31.4%	54.4%	41.6%	23.4%	52.6%	26%	54%	38%
VA Existing	6002	High Efficiency Water Heater (electric)	89%	39%	62%	78%	83%	70%	55%	31%	89%	39%	71%	51%
VA Existing	6003	Hot Water Pipe Insulation	47.2%	29.7%	51.4%	77.4%	16.1%	36.1%	24.4%	26.6%	0.0%	25%	68%	44%
VA Existing	6004	Tankless Water Heater	66.6%	29.5%	46.9%	58.4%	62.0%	54.4%	41.6%	23.4%	66.7%	29%	54%	38%
VA Existing	6005	Heat Pump Water Heater (air source)	71%	31%	50%	62%	66%	58%	44%	25%	71%	31%	57%	41%
VA Existing	6006	Heat Recovery Unit	8.9%	31.4%	3.1%	62.3%	8.3%	10.9%	44.3%	6.2%	8.9%	3%	4%	3%
VA Existing	6007	Heat Trap	50.0%	22.1%	35.2%	43.8%	46.5%	40.8%	31.2%	17.6%	50.0%	22%	40%	29%
VA Existing	6008	Solar Water Heater	68%	8%	3%	16%	40%	7%	11%	6%	68%	15%	0%	0%
VA Existing	7000	Base Refrigerated Vending Machines	99.3%	100.0%	90.1%	98.3%	98.6%	100.0%	98.6%	95.7%	100.0%	98%	100%	97%
VA Existing	7001	Vending Misers (Refrigerated units)	30.7%	34.8%	25.3%	29.4%	19.6%	32.3%	33.0%	30.8%	35.0%	29%	35%	34%
VA Existing	7002	Vending Misers (Refrigerated glass-front units)	31%	35%	25%	29%	20%	32%	33%	31%	35%	29%	35%	34%
VA Existing	7100	Base Non-Refrigerated Vending Machines	78.1%	88.4%	53.8%	11.4%	95.2%	70.9%	74.4%	31.5%	100.0%	68%	3%	47%
VA Existing	7101	Vending Misers (Non-Refrigerated)	69%	88%	43%	10%	54%	65%	71%	29%	100%	58%	3%	47%
VA Existing	7200	Base Oven	1.7%	15.1%	3.5%	55.7%	15.0%	7.6%	4.5%	20.4%	0.1%	22%	49%	5%
VA Existing	7201	Convection Oven	0.0%	15.1%	3.5%	0.0%	0.0%	7.6%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	7300	Base Fryer	1.3%	19.1%	1.3%	49.1%	10.9%	11.2%	2.5%	19.2%	0.1%	13%	1%	4%
VA Existing	7301	Efficient Fryer	0%	19%	1%	0%	0%	0%	3%	0%	0%	7%	1%	4%
VA Existing	7400	Base Steamer	1.0%	15.3%	1.3%	41.9%	10.9%	1.1%	4.5%	7.0%	0.1%	16%	3%	2%
VA Existing	7401	Efficient Steamer	0.0%	15.3%	1.0%	41.9%	0.0%	0.8%	0.0%	0.0%	0.0%	0%	0%	0%
VA Existing	8000	Base Heating, Heat Pump (7.7 HSPF)	34.7%	7.6%	7.7%	3.1%	1.5%	17.2%	22.8%	25.4%	0.0%	6%	6%	22%
VA Existing	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	32.0%	7.0%	7.1%	2.9%	1.4%	15.8%	21.0%	23.3%	0.0%	6%	5%	21%
VA Existing	8100	Base Heating, Other Electric	35.1%	21.1%	28.1%	76.2%	12.0%	0.0%	32.1%	20.3%	41.2%	14%	46%	21%
VA Existing	9500	Base Miscellaneous	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100%	100%	100%
VA Existing	9501	Xmisc	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100%	100%	100%
NC Existing	1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	79%	4%	51%	61%	68%	10%	54%	2%	45%	47%	13%	9%
NC Existing	1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1003	ROB 4L4'T5, 2014-2015	80%	4%	51%	62%	86%	11%	54%	2%	46%	48%	13%	9%
NC Existing	1004	ROB 4L4' LED Tube, 2014-2015	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1005	LED Troffer (base 4L4'T8), 2014-2015	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	0.9%	0.1%	0.0%	0.1%	0.0%	0.6%	3.8%	0.1%	0.0%	0%	0%	0%
NC Existing	1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	22.3%	0.3%	3.5%	4.3%	12.1%	3.5%	17.4%	0.2%	12.8%	10%	2%	1%
NC Existing	1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	24%	1%	15%	18%	26%	3%	16%	1%	14%	14%	4%	3%
NC Existing	1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	80%	4%	51%	62%	86%	11%	54%	2%	46%	48%	13%	9%
NC Existing	1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	79%	4%	51%	61%	68%	10%	54%	2%	45%	47%	13%	9%
NC Existing	1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1013	ROB 4L4'T5, 2016-2017	80%	4%	51%	62%	86%	11%	54%	2%	46%	48%	13%	9%
NC Existing	1014	ROB 4L4' LED Tube, 2016-2017	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1015	LED Troffer (base 4L4'T8), 2016-2017	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	0.9%	0.1%	0.0%	0.1%	0.0%	0.6%	3.8%	0.1%	0.0%	0%	0%	0%
NC Existing	1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	22.3%	0.3%	3.5%	4.3%	12.1%	3.5%	17.4%	0.2%	12.8%	10%	2%	1%
NC Existing	1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	24.1%	1.2%	15.2%	18.5%	25.9%	3.2%	16.1%	0.6%	13.7%	14%	4%	3%
NC Existing	1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	78.6%	4.1%	50.7%	60.6%	67.6%	10.4%	53.6%	1.9%	44.7%	47%	13%	9%
NC Existing	1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1023	ROB 4L4'T5, 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1024	ROB 4L4' LED Tube, 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1025	LED Troffer (base 4L4'T8), 2018-2019	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	0.9%	0.1%	0.0%	0.1%	0.0%	0.6%	3.8%	0.1%	0.0%	0%	0%	0%
NC Existing	1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	22%	0%	4%	4%	12%	3%	17%	0%	13%	10%	2%	1%
NC Existing	1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	24.1%	1.2%	15.2%	18.5%	25.9%	3.2%	16.1%	0.6%	13.7%	14%	4%	3%

Commercial Elec Measure Inputs			APPLICABILITY*INCOMPLETE*FEASIBILITY (percent)											
Segment	Measure #	Measure Description	Office	Restaurant	Retail	Grocery	Warehouse	Education	Health	Lodging	Data Centers	lon-Jurisdiction	eligious Worshi	Misc
NC Existing	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1031	ROB 4L4' High Performance T8 (86 W), 2020	78.6%	4.1%	50.7%	60.6%	67.6%	10.4%	53.6%	1.9%	44.7%	47%	13%	9%
NC Existing	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1033	ROB 4L4'T5, 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1034	ROB 4L4' LED Tube, 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1035	LED Troffer (base 4L4'T8), 2020	80.4%	4.1%	50.7%	61.7%	86.4%	10.6%	53.6%	1.9%	45.8%	48%	13%	9%
NC Existing	1036	Lighting Control Tuneup (base 4L4'T8), 2020	0.9%	0.1%	0.0%	0.1%	0.0%	0.6%	3.8%	0.1%	0.0%	0%	0%	0%
NC Existing	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	22.3%	0.3%	3.5%	4.3%	12.1%	3.5%	17.4%	0.2%	12.8%	10%	2%	1%
NC Existing	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	24.1%	1.2%	15.2%	18.5%	25.9%	3.2%	16.1%	0.6%	13.7%	14%	4%	3%
NC Existing	1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	14%	12%	9%
NC Existing	1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	2.3%	51.0%	17.3%	0.2%	0.6%	1.0%	13.6%	10.7%	1.3%	13%	11%	8%
NC Existing	1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	2%	51%	17%	0%	1%	1%	14%	11%	1%	14%	12%	9%
NC Existing	1103	ROB 2L4'T5, 2014-2015	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	14%	12%	9%
NC Existing	1104	ROB 2L4' LED Tube, 2014-2015	0.7%	15.3%	5.2%	0.1%	0.2%	0.3%	4.1%	3.2%	0.4%	4%	4%	3%
NC Existing	1105	LED Troffer (base 2L4'T8), 2014-2015	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	14%	12%	9%
NC Existing	1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	0.0%	1.0%	0.0%	0.0%	0.0%	0.1%	1.0%	0.7%	0.0%	0%	0%	0%
NC Existing	1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	0.6%	3.5%	1.2%	0.0%	0.1%	0.3%	4.4%	1.4%	0.4%	3%	2%	1%
NC Existing	1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	0.7%	15.3%	5.2%	0.1%	0.2%	0.3%	4.1%	3.2%	0.4%	4%	4%	3%
NC Existing	1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	14%	12%	9%
NC Existing	1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	2.3%	51.0%	17.3%	0.2%	0.6%	1.0%	13.6%	10.7%	1.3%	13%	11%	8%
NC Existing	1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	14%	12%	9%
NC Existing	1113	ROB 2L4'T5, 2016-2017	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	14%	12%	9%
NC Existing	1114	ROB 2L4' LED Tube, 2016-2017	0.7%	15.3%	5.2%	0.1%	0.2%	0.3%	4.1%	3.2%	0.4%	4%	4%	3%
NC Existing	1115	LED Troffer (base 2L4'T8), 2016-2017	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	14%	12%	9%
NC Existing	1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	0%	1%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
NC Existing	1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	0.6%	3.5%	1.2%	0.0%	0.1%	0.3%	4.4%	1.4%	0.4%	3%	2%	1%
NC Existing	1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	0.7%	15.3%	5.2%	0.1%	0.2%	0.3%	4.1%	3.2%	0.4%	4%	4%	3%
NC Existing	1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	14%	12%	9%
NC Existing	1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	2.3%	51.0%	17.3%	0.2%	0.6%	1.0%	13.6%	10.7%	1.3%	13%	11%	8%
NC Existing	1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	14%	12%	9%
NC Existing	1123	ROB 2L4'T5, 2018-2019	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	14%	12%	9%
NC Existing	1124	ROB 2L4' LED Tube, 2018-2019	0.7%	15.3%	5.2%	0.1%	0.2%	0.3%	4.1%	3.2%	0.4%	4%	4%	3%
NC Existing	1125	LED Troffer (base 2L4'T8), 2018-2019	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	14%	12%	9%
NC Existing	1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	0.0%	1.0%	0.0%	0.0%	0.0%	0.1%	1.0%	0.7%	0.0%	0%	0%	0%
NC Existing	1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	0.6%	3.5%	1.2%	0.0%	0.1%	0.3%	4.4%	1.4%	0.4%	3%	2%	1%
NC Existing	1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	0.7%	15.3%	5.2%	0.1%	0.2%	0.3%	4.1%	3.2%	0.4%	4%	4%	3%
NC Existing	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	2.3%	51.0%	17.3%	0.3%	0.6%	1.0%	13.6%	10.7%	1.3%	14%	12%	9%

F NON-ADDITIVE MEASURE LEVEL RESULTS

The results presented in this chapter represent the initial measure screening for the study. Results are based only on measure costs and savings and do not include any program marketing and administrative costs. As a result, the TRCs shown here will be higher (the measure will appear more cost effective) than TRCs for the same measure once program costs are added in during the achievable savings analysis. In addition, these results do not take into account any interaction between the measures; all measures are evaluated independently. In practice some of these measures compete against each other for the same market share (for example 10.8 EER room air conditioners and 13.4 EER room air conditioners) and are therefore not additive. Also, measures that affect the same base energy use, such as ceiling insulation and a high efficiency central air conditioner, are assumed to be installed independently of each other in this analysis.

Residential Electric Existing Construction

DSM ASSYST SUMMARY

Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Household	Base UEC	UEC	Peak Watts/ Household	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	Single Family	0%	0%	0.0	3,071.7	3,071.7	1,824.9	18	0	0	N/A	N/A	N/A	N/A	N/A	N/A
1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Single Family	7%	7%	252.5	3,107.2	2,885.3	1,714.1	18	129	77	0.11	187	0.91	1.04	10.68	0.86
1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Single Family	13%	13%	514.5	3,138.7	2,720.2	1,616.0	18	243	144	0.12	202	0.84	0.96	11.54	0.86
1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Single Family	24%	24%	1,085.6	3,191.9	2,440.9	1,450.1	18	436	259	0.14	238	0.71	0.82	13.57	0.86
1004	Proper Refrigerant Charging and Air Flow (CAC)	Single Family	10%	10%	159.0	3,157.5	2,851.2	1,693.9	10	152	91	0.05	85	1.12	1.57	4.87	0.73
1005	Proper Sizing and Quality Install (CAC)	Single Family	13%	13%	540.5	3,187.8	2,773.4	1,647.6	18	206	123	0.13	215	0.79	0.91	12.24	0.86
1006	AC Maintenance and/or tune-up (CAC)	Single Family	1%	1%	101.0	3,088.9	3,058.0	1,816.7	4	9	6	0.32	538	0.07	0.12	30.70	0.63
1007	AC Filter Changes (CAC)	Single Family	1%	1%	24.6	3,089.5	3,058.6	1,817.1	1	9	5	0.08	131	0.07	0.13	7.47	0.59
1008	Ceiling R-0 to R-38 Insulation (CAC)	Single Family	18%	18%	1,013.8	3,071.7	2,505.2	1,488.3	20	60	36	0.17	294	0.63	0.70	16.80	0.88
1009	Ceiling R-0 to R-49 Insulation (CAC)	Single Family	19%	19%	1,255.1	3,071.7	2,494.9	1,482.2	20	41	24	0.21	358	0.51	0.58	20.43	0.88
1010	Ceiling R-11 to R-38 Insulaton (CAC)	Single Family	6%	6%	772.7	3,071.7	2,877.9	1,709.7	20	44	26	0.39	656	0.28	0.31	37.42	0.88
1011	Ceiling R-11 to R-49 Insulation (CAC)	Single Family	7%	7%	1,013.8	3,071.7	2,866.0	1,702.7	20	31	19	0.48	811	0.23	0.25	46.27	0.88
1012	Ceiling R-19 to R-38 Insulation (CAC)	Single Family	3%	3%	597.2	3,071.7	2,981.6	1,771.3	20	12	7	0.65	1,090	0.17	0.19	62.18	0.88
1013	Ceiling R-19 to R-49 Insulation (CAC)	Single Family	3%	3%	838.5	3,071.7	2,969.3	1,764.0	20	9	5	0.80	1,346	0.14	0.15	76.82	0.88
1014	Crawlspace insulation (CAC)	Single Family	2%	2%	110.6	3,088.6	3,023.8	1,796.4	20	14	8	0.17	281	0.66	0.73	16.05	0.88
1015	Basement insulation R-13 (CAC)	Single Family	2%	2%	1,120.0	3,088.6	3,023.8	1,796.4	20	9	5	1.69	2,847	0.06	0.07	162.48	0.88
1016	Floor R-0 to R-19 Insulation-Batts (CAC)	Single Family	2%	2%	1,283.3	3,088.6	3,023.8	1,796.4	20	0	0	1.94	3,262	0.06	0.06	186.18	0.88
1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	Single Family	2%	2%	781.3	3,128.9	3,063.3	1,819.9	20	4	3	1.16	1,960	0.09	0.11	111.88	0.88
1018	Cool Roof (CAC)	Single Family	2%	2%	390.6	3,084.2	3,019.6	1,793.9	15	36	21	0.59	994	0.15	0.18	56.75	0.82
1019	Duct Insulation (CAC)	Single Family	2%	2%	58.8	3,134.1	3,068.4	1,822.9	20	2	1	0.09	147	1.25	1.40	8.40	0.88
1020	Duct Testing and Sealing (CAC)	Single Family	2%	2%	346.9	3,124.1	3,058.6	1,817.1	18	9	5	0.52	872	0.19	0.22	49.75	0.86
1021	Return Duct Modification (CAC)	Single Family	19%	19%	430.5	3,748.3	3,036.1	1,803.7	20	12	7	0.06	99	1.85	2.07	5.67	0.88
1022	Programmable Thermostat (CAC)	Single Family	2%	2%	19.2	3,116.0	3,053.7	1,814.1	12	12	7	0.03	51	2.31	3.01	2.89	0.78
1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Single Family	6%	6%	265.6	3,120.8	2,931.9	1,741.8	10	97	57	0.14	231	0.42	0.58	13.20	0.73
1024	Self Install Weatherization (CAC)	Single Family	2%	2%	5.7	3,099.5	3,037.5	1,804.5	10	24	14	0.01	15	6.31	8.81	0.87	0.73
1025	Door Weatherization (CAC)	Single Family	3%	3%	23.9	3,112.3	3,021.7	1,795.2	5	35	21	0.03	43	1.08	1.78	2.48	0.63
1026	Ceiling Fans (CAC)	Single Family	6%	6%	464.3	3,229.8	3,037.4	1,804.4	15	24	14	0.24	397	0.37	0.44	22.65	0.82
1027	Whole House Fans (CAC)	Single Family	3%	3%	665.0	3,080.9	2,991.3	1,777.1	15	56	33	0.72	1,220	0.12	0.14	69.63	0.82
1028	Window Film (CAC)	Single Family	3%	3%	598.4	3,071.7	2,968.0	1,763.2	10	72	43	0.56	949	0.10	0.14	54.16	0.73
1029	WINDOWS - Default With Sunscreen (CAC)	Single Family	11%	11%	493.5	3,104.4	2,770.7	1,646.0	10	208	124	0.14	243	0.39	0.55	13.88	0.73
1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Single Family	2%	2%	375.7	3,112.1	3,056.8	1,816.0	20	10	6	0.66	1,117	0.16	0.18	63.73	0.88
1100	Base Split-System Air Conditioner - Early Replacement (11 SEER)	Single Family	0%	0%	0.0	2,861.8	2,861.8	1,700.2	8	0	0	N/A	N/A	N/A	N/A	N/A	N/A
1101	R (12.15 EER) Split-System Air Conditioner w/ Quality Install - Early Repl	Single Family	3%	3%	704.9	2,875.8	2,788.4	1,656.6	8	9	5	0.79	1,328	0.06	0.09	75.76	0.67
1102	Proper Refrigerant Charging and Air Flow (CAC early replacement)	Single Family	10%	10%	159.0	2,906.9	2,625.0	1,559.4	10	29	17	0.06	93	1.04	1.45	5.29	0.73
1103	Proper Sizing and Quality Install (CAC early replacement)	Single Family	13%	13%	540.5	2,922.6	2,542.7	1,510.6	18	39	23	0.14	234	0.72	0.83	13.35	0.86
1104	AC Maintenance and/or tune-up (CAC early replacement)	Single Family	1%	1%	101.0	2,877.8	2,849.1	1,692.6	4	2	1	0.34	577	0.07	0.11	32.96	0.63
1105	AC Filter Changes (CAC early replacement)	Single Family	1%	1%	24.6	2,878.4	2,849.6	1,692.9	1	1	1	0.08	141	0.07	0.12	8.02	0.59
1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Single Family	18%	18%	1,013.8	2,861.8	2,334.0	1,386.6	20	10	6	0.19	316	0.58	0.65	18.03	0.88
1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Single Family	19%	19%	1,255.1	2,861.8	2,324.4	1,380.9	20	7	4	0.23	384	0.48	0.54	21.92	0.88
1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Single Family	6%	6%	772.7	2,861.8	2,681.2	1,592.9	20	7	4	0.42	704	0.26	0.29	40.17	0.88
1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Single Family	7%	7%	1,013.8	2,861.8	2,670.2	1,586.3	20	5	3	0.52	870	0.21	0.24	49.66	0.88
1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Single Family	3%	3%	597.2	2,861.8	2,777.8	1,650.2	20	2	1	0.69	1,169	0.16	0.18	66.74	0.88
1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Single Family	3%	3%	838.5	2,861.8	2,766.4	1,643.4	20	1	1	0.86	1,445	0.13	0.14	82.46	0.88
1112	Crawlspace insulation (CAC early replacement)	Single Family	2%	2%	110.6	2,877.5	2,817.2	1,673.6	20	2	1	0.18	302	0.61	0.68	17.22	0.88
1113	Basement insulation R-13 (CAC early replacement)	Single Family	18%	18%	1,120.0	3,004.1	2,456.8	1,459.5	20	14	8	0.20	337	0.55	0.61	19.21	0.88
1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Single Family	2%	2%	1,283.3	2,877.5	2,817.2	1,673.6	20	0	0	2.08	3,502	0.05	0.06	199.83	0.88
1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Single Family	2%	2%	781.3	2,915.0	2,854.0	1,695.5	20	1	0	1.25	2,104	0.09	0.10	120.09	0.88
1116	Cool Roof (CAC early replacement)	Single Family	13%	13%	390.6	2,933.3	2,563.0	1,522.6	15	36	22	0.10	174	0.84	1.01	9.90	0.82
1117	Duct Insulation (CAC early replacement)	Single Family	14%	14%	58.8	3,305.6	2,838.5	1,686.3	20	3	2	0.01	21	8.90	9.96	1.18	0.88
1118	Duct Testing and Sealing (CAC early replacement)	Single Family	4%	5%	346.9	2,968.7	2,835.1	1,684.3	18	3	2	0.25	427	0.40	0.46	24.37	0.86
1119	Return Duct Modification (CAC early replacement)	Single Family	19%	19%	430.5	3,492.1	2,828.6	1,680.4	20	2	1	0.06	107	1.73	1.93	6.09	0.88
1120	Programmable Thermostat (CAC early replacement)	Single Family	2%	2%	19.2	2,903.0	2,845.0	1,690.2	12	2	1	0.03	54	2.15	2.80	3.10	0.78
1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early replacemen	Single Family	6%	6%	265.6	2,907.6	2,731.6	1,622.8	10	16	9	0.15	248	0.39	0.54	14.17	0.73
1122	Self Install Weatherization (CAC early replacement)	Single Family	2%	2%	5.7	2,871.0	2,813.6	1,671.5	10	6	3	0.01	16	5.84	8.16	0.94	0.73
1123	Door Weatherization (CAC early replacement)	Single Family	3%	3%	23.9	2,905.7	2,807.6	1,668.0	5	7	4	0.02	40	1.17	1.93	2.29	0.63
1124	Ceiling Fans (CAC early replacement)	Single Family	5%	5%	464.3	2,984.4	2,835.2	1,684.3	15	3	2	0.30	512	0.28	0.34	29.21	0.82
1125	Whole House Fans (CAC early replacement)	Single Family	20%	20%	665.0	2,921.9	2,337.5	1,388.7	15	64	38	0.11	187	0.78	0.94	10.68	0.82
1126	Window Film (CAC early replacement)	Single Family	7%	8%	598.4	2,861.8	2,647.2	1,572.6	10	26	16	0.27	459	0.21	0.29	26.17	0.73
1127	WINDOWS - Default With Sunscreen (CAC early replacement)	Single Family	5%	5%	493.5	2,876.6	2,725.2	1,619.0	10	17	10	0.32	536	0.18	0.25	30.60	0.73
1128	VINDOWS - Double-Glazed Clear to Energy Star (CAC early replacemen	Single Family	5%	5%	375.7	2,976.2	2,819.5	1,675.0	20	5	3	0.23	395	0.47	0.52	22.51	0.88
1200	Base Heat Pump Cooling (13 SEER)	Single Family	0%	0%	0.0	2,930.4	2,930.4	1,740.9	15	0	0	N/A	N/A	N/A	N/A	N/A	N/A
1201	Heat pump upgrade to (14.5-15.9 SEER, 8.2+ HSPF) (HP cooling)	Single Family	15%	15%	382.5	3,082.1	2,607.9	1,549.3	15	198	118	0.08	133	1.09	1.32	7.57	0.82
1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Single Family	23%	23%	504.9	3,164.0	2,433.9	1,445.9	15	305	181	0.07	114	1.28	1.54	6.49	0.82
1203	Ground Source Heat Pump with Desuperheater (HP cooling)	Single Family	21%	21%	4,357.4	2,946.7	2,327.9	1,383.0	15	371	220	0.69	1,158	0.13	0.15	66.10	0.82
1204	Proper Refrigerant Charging and Air Flow (HP cooling)	Single Family	10%	10%	159.0	3,012.2	2,720.0	1,615.9	10	129	77	0.05	90	1.07	1.50	5.11	0.73
1205	Proper Sizing and Quality Install (HP cooling)	Single Family	13%	13%	602.0	3,041.1	2,645.7	1,571.8	18	175	104	0.15	250	0.68	0.78	14.29	0.86

Residential Electric Existing Construction

DSM ASSYST SUMMARY

Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Household	Base UEC	UEC	Peak Watts/ Household	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
1206	Heat pump tune up	Single Family	1%	1%	191.8	2,946.8	2,917.3	1,733.1	5	8	5	0.64	1,071	0.04	0.07	61.10	0.63
1207	Heat Pump Filter Replacement	Single Family	1%	1%	27.4	2,947.4	2,917.9	1,733.5	1	8	5	0.09	153	0.06	0.11	8.73	0.59
1208	Ceiling R-0 to R-38 Insulation (HP cooling)	Single Family	19%	19%	1,013.8	2,930.4	2,384.6	1,416.6	20	51	31	0.18	306	0.60	0.67	17.44	0.88
1209	Ceiling R-0 to R-49 Insulation (HP cooling)	Single Family	19%	19%	1,255.1	2,930.4	2,362.7	1,403.6	20	36	21	0.22	364	0.51	0.57	20.75	0.88
1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	Single Family	6%	6%	772.7	2,930.4	2,740.8	1,628.3	20	39	23	0.40	671	0.27	0.31	38.27	0.88
1211	Ceiling R-11 to R-49 Insulation (HP cooling)	Single Family	7%	7%	1,013.8	2,930.4	2,715.7	1,613.3	20	29	17	0.46	777	0.24	0.27	44.33	0.88
1212	Ceiling R-19 to R-38 Insulation (HP cooling)	Single Family	3%	3%	597.2	2,930.4	2,846.8	1,691.2	20	10	6	0.70	1,175	0.16	0.18	67.04	0.88
1213	Ceiling R-19 to R-49 Insulation (HP cooling)	Single Family	4%	4%	838.5	2,930.4	2,820.6	1,675.7	20	9	5	0.75	1,257	0.15	0.16	71.71	0.88
1214	Crawlspace insulation (HP cooling)	Single Family	2%	2%	110.6	2,946.4	2,884.7	1,713.7	20	12	7	0.18	295	0.62	0.70	16.82	0.88
1215	Basement insulation R-13 (HP cooling)	Single Family	18%	18%	1,120.0	3,076.1	2,515.7	1,494.5	20	71	42	0.20	329	0.56	0.63	18.76	0.88
1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Single Family	8%	8%	1,283.3	2,989.9	2,760.8	1,640.2	20	2	1	0.55	921	0.20	0.22	52.58	0.88
1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Single Family	3%	3%	2,504.3	3,021.9	2,916.9	1,732.9	20	6	4	2.33	3,920	0.05	0.05	223.73	0.88
1218	Cool Roof (HP cooling)	Single Family	13%	13%	390.6	3,003.6	2,624.4	1,559.1	15	188	112	0.10	169	0.86	1.04	9.67	0.82
1219	Duct Insulation (HP cooling)	Single Family	14%	14%	58.8	3,384.8	2,906.5	1,726.7	20	15	9	0.01	20	9.11	10.20	1.15	0.88
1220	Duct Testing and Sealing (HP cooling)	Single Family	4%	5%	346.9	3,039.8	2,903.0	1,724.6	18	17	10	0.25	417	0.41	0.47	23.80	0.86
1221	Programmable Thermostat (HP cooling)	Single Family	5%	5%	64.1	3,038.3	2,886.4	1,714.7	12	27	16	0.04	69	1.69	2.20	3.96	0.78
1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Single Family	6%	6%	265.6	2,977.2	2,797.0	1,661.7	10	82	49	0.14	242	0.40	0.55	13.84	0.73
1223	Self Install Weatherization (HP cooling)	Single Family	2%	2%	15.0	2,956.9	2,897.7	1,721.5	10	20	12	0.02	42	2.30	3.21	2.38	0.73
1224	Door Weatherization (HP cooling)	Single Family	3%	3%	23.9	2,969.1	2,882.7	1,712.5	5	29	17	0.03	46	1.03	1.70	2.60	0.63
1225	Ceiling Fans (HP cooling)	Single Family	5%	5%	464.3	3,055.9	2,903.1	1,724.7	15	17	10	0.30	500	0.29	0.35	28.53	0.82
1226	Whole House Fans (HP cooling)	Single Family	20%	20%	665.0	2,991.9	2,393.5	1,421.9	15	330	196	0.11	183	0.79	0.96	10.43	0.82
1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Single Family	5%	5%	582.9	3,047.5	2,887.1	1,715.2	20	27	16	0.36	598	0.31	0.34	34.11	0.88
1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	Single Family	0%	0%	0.0	2,525.3	2,525.3	1,500.2	15	0	0	N/A	N/A	N/A	N/A	N/A	N/A
1301	ump upgrade to (14.5-15.9 SEER, 8.2+ HSPF) (HP cooling Early Replac	Single Family	15%	15%	382.5	2,656.1	2,247.4	1,335.2	15	30	18	0.09	154	0.94	1.14	8.79	0.82
1302	t pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Early Replacem	Single Family	23%	23%	504.9	2,726.7	2,097.4	1,246.1	15	46	28	0.08	132	1.10	1.33	7.53	0.82
1303	und Source Heat Pump with Desuperheater (HP cooling Early Replacem	Single Family	21%	21%	4,357.4	2,539.4	2,006.1	1,191.8	15	56	33	0.80	1,344	0.11	0.13	76.70	0.82
1304	roper Refrigerant Charging and Air Flow (HP cooling Early Replacement	Single Family	10%	10%	159.0	2,595.8	2,344.0	1,392.5	10	20	12	0.06	104	0.92	1.29	5.93	0.73
1305	Proper Sizing and Quality Install (HP cooling Early Replacement)	Single Family	13%	13%	602.0	2,620.7	2,280.0	1,354.5	18	27	16	0.17	291	0.58	0.67	16.59	0.86
1306	Heat pump tune up	Single Family	1%	1%	191.8	2,539.5	2,514.1	1,493.6	5	1	1	0.74	1,242	0.04	0.06	70.90	0.63
1307	Heat Pump Filter Replacement	Single Family	1%	1%	27.4	2,540.0	2,514.6	1,493.9	1	1	1	0.11	177	0.06	0.10	10.13	0.59
1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Single Family	19%	19%	1,013.8	2,525.3	2,055.0	1,220.8	20	8	5	0.21	355	0.52	0.58	20.23	0.88
1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Single Family	19%	19%	1,255.1	2,525.3	2,036.1	1,209.6	20	5	3	0.25	422	0.44	0.49	24.08	0.88
1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Single Family	6%	6%	772.7	2,525.3	2,362.0	1,403.2	20	6	3	0.46	778	0.24	0.26	44.41	0.88
1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement)	Single Family	7%	7%	1,013.8	2,525.3	2,340.3	1,390.3	20	4	3	0.54	901	0.20	0.23	51.44	0.88
1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement)	Single Family	3%	3%	597.2	2,525.3	2,453.2	1,457.4	20	1	1	0.81	1,363	0.14	0.15	77.80	0.88
1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement)	Single Family	4%	4%	838.5	2,525.3	2,430.7	1,444.1	20	1	1	0.87	1,458	0.13	0.14	83.22	0.88
1314	Crawlspace insulation (HP cooling Early Replacement)	Single Family	2%	2%	110.6	2,539.1	2,485.9	1,476.9	20	2	1	0.20	342	0.54	0.60	19.52	0.88
1315	Basement insulation R-13 (HP cooling Early Replacement)	Single Family	18%	18%	1,120.0	2,650.9	2,167.9	1,287.9	20	11	6	0.23	381	0.48	0.54	21.77	0.88
1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacement)	Single Family	8%	8%	1,283.3	2,576.6	2,379.2	1,413.4	20	0	0	0.64	1,069	0.17	0.19	61.02	0.88
1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacement)	Single Family	3%	3%	2,504.3	2,604.2	2,513.7	1,493.3	20	1	1	2.70	4,549	0.04	0.05	259.61	0.88
1318	Cool Roof (HP cooling Early Replacement)	Single Family	13%	13%	390.6	2,588.4	2,261.6	1,343.6	15	29	17	0.12	197	0.74	0.89	11.22	0.82
1319	Duct Insulation (HP cooling Early Replacement)	Single Family	14%	14%	58.8	2,916.9	2,504.7	1,488.0	20	2	1	0.01	23	7.85	8.79	1.34	0.88
1320	Duct Testing and Sealing (HP cooling Early Replacement)	Single Family	4%	5%	346.9	2,619.6	2,501.7	1,486.2	18	3	2	0.29	484	0.35	0.40	27.62	0.86
1321	Programmable Thermostat (HP cooling Early Replacement)	Single Family	5%	5%	87.8	2,618.3	2,487.4	1,477.7	12	4	2	0.07	110	1.06	1.38	6.29	0.78
1322	prehensive Shell Air Sealing - Inf. Reduction (HP cooling Early Replacen	Single Family	6%	6%	265.6	2,565.7	2,410.4	1,432.0	10	12	7	0.17	281	0.34	0.48	16.06	0.73
1323	Self Install Weatherization (HP cooling Early Replacement)	Single Family	2%	2%	15.0	2,548.1	2,497.2	1,483.5	10	3	2	0.03	48	1.98	2.77	2.76	0.73
1324	Door Weatherization (HP cooling Early Replacement)	Single Family	3%	3%	23.9	2,564.1	2,477.5	1,471.8	5	5	3	0.03	45	1.03	1.70	2.60	0.63
1325	Ceiling Fans (HP cooling early replacement)	Single Family	5%	5%	464.3	2,633.5	2,501.8	1,486.3	15	3	2	0.34	580	0.25	0.30	33.10	0.82
1326	Whole House Fans (HP cooling early replacement)	Single Family	20%	20%	665.0	2,578.3	2,062.7	1,225.4	15	50	30	0.13	212	0.68	0.83	12.11	0.82
1327	OWS - Double-Glazed Clear to Energy Star (HP cooling Early Replacer	Single Family	5%	5%	582.9	2,626.2	2,488.0	1,478.1	20	4	2	0.41	694	0.27	0.30	39.59	0.88
1400	Base Room Air Conditioner - EER 10.6	Single Family	0%	0%	0.0	1,435.8	1,435.8	853.0	9	0	0	N/A	N/A	N/A	N/A	N/A	N/A
1401	Energy Star Room Air Conditioner - EER 10.8	Single Family	2%	2%	61.7	1,438.4	1,411.8	838.7	9	2	1	0.23	381	0.22	0.33	21.77	0.70
1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Single Family	6%	6%	127.1	1,444.7	1,355.3	805.2	9	6	4	0.14	234	0.36	0.53	13.34	0.70
1403	Room AC Filter Replacement	Single Family	1%	1%	24.7	1,444.1	1,429.7	849.3	1	0	0	0.17	281	0.03	0.06	16.05	0.59
1404	Ceiling R-0 to R-38 Insulation (RAC)	Single Family	17%	17%	1,013.8	1,435.8	1,185.9	704.6	20	3	2	0.40	667	0.28	0.31	38.09	0.88
1405	Ceiling R-0 to R-49 Insulation (RAC)	Single Family	18%	18%	1,255.1	1,435.8	1,177.0	699.3	20	2	1	0.47	798	0.23	0.26	45.53	0.88
1406	Ceiling R-11 to R-38 Insulaton (RAC)	Single Family	6%	6%	772.7	1,435.8	1,353.5	804.1	20	2	1	0.92	1,544	0.12	0.13	88.13	0.88
1407	Ceiling R-11 to R-49 Insulation (RAC)	Single Family	6%	6%	1,013.8	1,435.8	1,343.3	798.0	20	2	1	1.07	1,803	0.10	0.11	102.89	0.88
1408	Ceiling R-19 to R-38 Insulation (RAC)	Single Family	3%	3%	597.2	1,435.8	1,397.2	830.1	20	1	0	1.51	2,549	0.07	0.08	145.46	0.88
1409	Ceiling R-19 to R-49 Insulation (RAC)	Single Family	3%	3%	838.5	1,435.8	1,386.7	823.8	20	0	0	1.67	2,811	0.07	0.07	160.45	0.88
1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	Single Family	4%	4%	781.3	1,491.0	1,427.5	848.1	20	0	0	1.20	2,026	0.09	0.10	115.60	0.88
1411	Cool Roof (RAC)	Single Family	13%	13%	390.6	1,471.6	1,285.8	763.9	15	12	7	0.21	346	0.42	0.51	19.74	0.82
1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Single Family	7%	7%	265.6	1,463.2	1,357.7	806.6	10	6	4	0.25	414	0.23	0.32	23.63	0.73
1413	Self Install Weatherization (RAC)	Single Family	2%	2%	5.7	1,448.8	1,419.8	843.5	10	1	1	0.02	33	2.95	4.12	1.86	0.73
1414	Door Weatherization (RAC)	Single Family	3%	3%	23.9	1,454.7	1,412.4	839.1	5	2	1	0.06	93	0.50	0.83	5.31	0.63
1415	Ceiling Fans (RAC)	Single Family	5%	5%	464.3	1,497.3	1,422.4	845.0	15	1	1	0.61	1,020	0.14	0.17	58.22	0.82

Residential Electric Existing Construction

DSM ASSYST SUMMARY

Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Household	Base UEC	UEC	Peak Watts/ Household	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
1416	Whole House Fans (RAC)	Single Family	20%	20%	665.0	1,465.9	1,172.7	696.7	15	21	12	0.22	373	0.39	0.47	21.29	0.82
1417	Window Film (RAC)	Single Family	21%	21%	598.4	1,435.8	1,134.3	673.8	10	24	14	0.19	326	0.29	0.41	18.63	0.73
1418	WINDOWS - Default With Sunscreen (RAC)	Single Family	5%	5%	493.5	1,443.2	1,367.3	812.3	10	5	3	0.63	1,069	0.09	0.13	60.99	0.73
1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Single Family	5%	5%	375.7	1,493.1	1,414.6	840.4	20	2	1	0.47	786	0.23	0.26	44.88	0.88
1500	Base Room Air Conditioner, Early Replacement - EER 9.7	Single Family	0%	0%	334.5	1,707.8	1,707.8	1,014.6	15	0	0	N/A	N/A	N/A	N/A	N/A	N/A
1501	ER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early replacemer	Single Family	13%	13%	908.7	1,707.8	1,480.7	879.6	9	3	2	0.39	658	0.13	0.19	37.55	0.70
1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	Single Family	0%	0%	114.2	51.7	51.7	30.7	12	0	0	N/A	N/A	N/A	N/A	N/A	N/A
1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/day)	Single Family	15%	15%	11.4	51.9	43.9	26.1	12	4	2	0.14	235	0.50	0.65	13.42	0.78
1700	Base Furnace Fan - Furnace & CAC	Single Family	0%	0%	0.0	1,169.8	1,169.8	600.1	18	0	0	N/A	N/A	N/A	N/A	N/A	N/A
1701	ECM Furnace Fan (variable speed motor) - Cooling	Single Family	50%	50%	175.0	1,299.8	649.9	333.4	18	780	400	0.03	51	3.60	4.40	2.53	0.81
2000	Base Heat Pump Space Heating (7.7 HSPF)	Single Family	0%	0%	0.0	4,795.4	4,795.4	569.0	18	0	0	N/A	N/A	N/A	N/A	N/A	N/A
2001	Heat pump upgrade to 14.5-15.9 SEER/8.2+ HSPF (HP heating)	Single Family	6%	6%	264.2	4,897.1	4,579.1	543.3	15	113	13	0.08	684	0.71	1.29	7.80	0.55
2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Single Family	13%	13%	465.0	5,003.3	4,353.5	516.5	15	230	27	0.07	589	0.83	1.49	6.72	0.55
2003	Ground Source Heat Pump with Desuperheater (HP heating)	Single Family	21%	21%	4,357.4	4,822.1	3,809.5	452.0	15	514	61	0.42	3,544	0.14	0.25	40.39	0.55
2004	Heat pump tune up	Single Family	1%	1%	191.8	4,822.2	4,774.0	566.4	5	11	1	0.39	3,276	0.05	0.12	37.34	0.47
2005	Heat Pump Filter Replacement	Single Family	1%	1%	27.4	4,823.2	4,774.9	566.5	1	11	1	0.06	468	0.08	0.19	5.33	0.44
2006	Ceiling R-0 to R-38 Insulation (HP heating)	Single Family	19%	19%	1,013.8	4,795.4	3,902.2	463.0	20	71	8	0.11	935	0.65	1.10	10.66	0.58
2007	Ceiling R-0 to R-49 Insulation (HP heating)	Single Family	19%	19%	1,255.1	4,795.4	3,866.4	458.7	20	49	6	0.13	1,113	0.55	0.93	12.68	0.58
2008	Ceiling R-11 to R-38 Insulaton (HP heating)	Single Family	6%	6%	772.7	4,795.4	4,485.2	532.2	20	54	6	0.24	2,052	0.30	0.50	23.39	0.58
2009	Ceiling R-11 to R-49 Insulation (HP heating)	Single Family	7%	7%	1,013.8	4,795.4	4,444.0	527.3	20	40	5	0.28	2,377	0.26	0.43	27.09	0.58
2010	Ceiling R-19 to R-38 Insulation (HP heating)	Single Family	3%	3%	597.2	4,795.4	4,658.5	552.7	20	14	2	0.43	3,595	0.17	0.29	40.97	0.58
2011	Ceiling R-19 to R-49 Insulation (HP heating)	Single Family	4%	4%	838.5	4,795.4	4,615.7	547.6	20	12	1	0.46	3,845	0.16	0.27	43.82	0.58
2012	Crawlspace insulation (HP heating)	Single Family	2%	2%	110.6	4,821.6	4,720.6	560.1	20	16	2	0.11	902	0.67	1.14	10.28	0.58
2013	Basement insulation R-13 (HP heating)	Single Family	18%	18%	1,120.0	5,033.8	4,116.7	488.4	20	99	12	0.12	1,006	0.60	1.03	11.46	0.58
2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	Single Family	8%	8%	1,283.3	4,892.8	4,517.9	536.0	20	2	0	0.33	2,819	0.22	0.37	32.13	0.58
2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Single Family	3%	3%	2,504.3	4,945.2	4,773.2	566.3	20	9	1	1.42	11,995	0.05	0.09	136.72	0.58
2016	Duct Insulation (HP heating)	Single Family	14%	14%	58.8	5,539.0	4,756.2	564.3	20	20	2	0.01	62	9.83	16.69	0.70	0.58
2017	Duct Testing and Sealing (HP heating)	Single Family	4%	5%	346.9	4,974.4	4,750.6	563.6	18	23	3	0.15	1,276	0.44	0.77	14.55	0.57
2018	Heat Recovery Ventilators (HP heating)	Single Family	30%	30%	1,700.0	4,868.4	3,407.9	404.3	20	542	64	0.11	959	0.63	1.08	10.93	0.58
2019	Programmable Thermostat (HP heating)	Single Family	5%	5%	87.8	4,971.9	4,723.3	560.4	12	38	4	0.03	291	1.38	2.62	3.31	0.53
2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Single Family	6%	6%	265.6	4,872.0	4,577.1	543.1	10	114	13	0.09	742	0.46	0.91	8.46	0.51
2021	Self Install Weatherization (HP heating)	Single Family	2%	2%	15.0	4,838.7	4,741.9	562.6	10	28	3	0.02	128	2.66	5.26	1.46	0.51
2022	Door Weatherization (HP heating)	Single Family	2%	2%	23.9	4,833.8	4,747.9	563.3	5	25	3	0.03	229	0.77	1.69	2.61	0.47
2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Single Family	5%	5%	582.9	4,981.0	4,726.7	560.8	20	36	4	0.22	1,888	0.32	0.55	21.51	0.58
2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSPF)	Single Family	0%	0%	0.0	4,575.9	4,575.9	542.9	18	0	0	N/A	N/A	N/A	N/A	N/A	N/A
2101	pump upgrade to 14.5-15.9 SEER/8.2+ HSPF (HP heating early replacer	Single Family	6%	6%	264.2	4,673.0	4,369.6	518.4	15	19	2	0.09	717	0.68	1.23	8.17	0.55
2102	eat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early replaceme	Single Family	13%	13%	465.0	4,774.4	4,154.3	492.9	15	39	5	0.07	618	0.79	1.42	7.04	0.55
2103	ound Source Heat Pump with Desuperheater (HP heating early replacem	Single Family	21%	21%	4,357.4	4,601.5	3,635.2	431.3	15	87	10	0.44	3,714	0.13	0.24	42.33	0.55
2104	Heat pump tune up (heating)	Single Family	1%	1%	191.8	4,601.6	4,555.6	540.5	5	2	0	0.41	3,433	0.05	0.11	39.13	0.47
2105	Heat Pump Filter Replacement (heating)	Single Family	1%	1%	27.4	4,602.5	4,556.5	540.6	1	2	0	0.06	490	0.07	0.18	5.59	0.44
2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Single Family	19%	19%	1,013.8	4,575.9	3,723.7	441.8	20	12	1	0.12	980	0.62	1.05	11.17	0.58
2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Single Family	19%	19%	1,255.1	4,575.9	3,689.5	437.7	20	8	1	0.14	1,166	0.52	0.89	13.29	0.58
2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Single Family	6%	6%	772.7	4,575.9	4,280.0	507.8	20	9	1	0.26	2,150	0.28	0.48	24.51	0.58
2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Single Family	7%	7%	1,013.8	4,575.9	4,240.7	503.1	20	7	1	0.30	2,490	0.24	0.41	28.39	0.58
2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Single Family	3%	3%	597.2	4,575.9	4,445.4	527.4	20	2	0	0.45	3,767	0.16	0.27	42.93	0.58
2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Single Family	4%	4%	838.5	4,575.9	4,404.6	522.6	20	2	0	0.48	4,029	0.15	0.26	45.92	0.58
2112	Crawlspace insulation (HP heating early replacement)	Single Family	2%	2%	110.6	4,601.0	4,504.6	534.5	20	3	0	0.11	945	0.64	1.09	10.77	0.58
2113	Basement insulation R-13 (HP heating early replacement)	Single Family	18%	18%	1,120.0	4,803.5	3,928.3	466.1	20	17	2	0.13	1,054	0.58	0.98	12.01	0.58
2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replacement)	Single Family	8%	8%	1,283.3	4,669.0	4,311.2	511.5	20	0	0	0.35	2,954	0.21	0.35	33.67	0.58
2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacement)	Single Family	3%	3%	2,504.3	4,718.9	4,554.9	540.4	20	1	0	1.49	12,570	0.05	0.08	143.27	0.58
2116	Duct Insulation (HP heating early replacement)	Single Family	14%	14%	58.8	5,285.6	4,538.6	538.5	20	3	0	0.01	65	9.38	15.93	0.74	0.58
2117	Duct Testing and Sealing (HP heating early replacement)	Single Family	4%	5%	346.9	4,746.8	4,533.2	537.9	18	4	0	0.16	1,337	0.42	0.73	15.24	0.57
2118	Heat Recovery Ventilators (HP heating early replacement)	Single Family	30%	30%	1,700.0	4,645.6	3,251.9	385.8	20	91	11	0.12	1,005	0.61	1.03	11.45	0.58
2119	Programmable Thermostat (HP heating early replacement)	Single Family	5%	5%	87.8	4,744.4	4,507.2	534.8	12	6	1	0.04	305	1.32	2.50	3.47	0.53
2120	prehensive Shell Air Sealing - Inf. Reduction (HP heating early replacer	Single Family	6%	6%	265.6	4,649.1	4,367.7	518.2	10	19	2	0.09	777	0.44	0.86	8.86	0.51
2121	Self Install Weatherization (HP heating early replacement)	Single Family	2%	2%	15.0	4,617.3	4,525.0	536.9	10	5	1	0.02	134	2.54	5.02	1.52	0.51
2122	Door Weatherization (HP heating early replacement)	Single Family	2%	2%	23.9	4,614.4	4,528.5	537.3	5	4	1	0.03	229	0.77	1.69	2.61	0.47
2123	DOWS - Double-Glazed Clear to Energy Star (HP heating early replacen	Single Family	5%	5%	582.9	4,753.1	4,510.4	535.2	20	6	1	0.23	1,978	0.31	0.52	22.55	0.58
2200	Base Resistance Space Heating (Primary)	Single Family	0%	0%	0.0	5,615.0	5,615.0	666.2	15	0	0	N/A	N/A	N/A	N/A	N/A	N/A
2201	Air Source Heat Pump (resistance heating)	Single Family	20%	20%	141.6	5,615.0	4,472.6	530.7	15	248	29	0.01	102	4.77	8.62	1.16	0.55
2202	Ground Source Heat Pump with Desuperheater (resistance heating)	Single Family	21%	21%	4,357.4	5,615.0	4,435.8	526.3	15	256	30	0.36	3,044	0.16	0.29	34.69	0.55
2203	Ceiling R-0 to R-38 Insulation (resistance heating)	Single Family	20%	20%	1,013.8	5,615.0	4,484.1	532.0	20	38	4	0.09	738	0.82	1.40	8.42	0.58
2204	Ceiling R-0 to R-49 Insulation (resistance heating)	Single Family	21%	21%	1,255.1	5,615.0	4,448.9	527.9	20	26	3	0.11	886	0.69	1.16	10.10	0.58
2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	Single Family	7%	7%	772.7	5,615.0	5,221.2	619.5	20	28	3	0.19	1,616	0.38	0.64	18.42	0.58
2206	Ceiling R-11 to R-49 Insulation (resistance heating)	Single Family	8%	8%	1,013.8	5,615.0	5,180.3	614.6	20	21	2	0.23	1,921	0.32	0.54	21.89	0.58
2207	Ceiling R-19 to R-38 Insulation (resistance heating)	Single Family	3%	3%	597.2	5,615.0	5,431.4	644.4	20	8	1	0.32	2,680	0.23	0.39	30.55	0.58

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Household	Base UEC	UEC	Peak Watts/ Household	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
2208	Ceiling R-19 to R-49 Insulation (resistance heating)	Single Family	4%	4%	838.5	5,615.0	5,388.9	639.4	20	6	1	0.36	3,054	0.20	0.34	34.81	0.58
2209	Crawlspace insulation (resistance heating)	Single Family	2%	2%	110.6	5,643.2	5,534.7	656.7	20	7	1	0.10	839	0.72	1.23	9.57	0.58
2210	Basement insulation R-13 (resistance heating)	Single Family	18%	18%	1,120.0	5,894.2	4,820.3	571.9	20	74	9	0.10	859	0.71	1.20	9.79	0.58
2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Single Family	11%	11%	1,283.3	5,775.7	5,157.6	611.9	20	1	0	0.20	1,710	0.36	0.60	19.49	0.58
2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Single Family	5%	5%	2,504.3	5,858.9	5,579.0	661.9	20	6	1	0.87	7,369	0.08	0.14	83.99	0.58
2213	Heat Recovery Ventilators (resistance heating)	Single Family	30%	30%	1,700.0	5,700.5	3,990.3	473.4	20	265	31	0.10	819	0.74	1.26	9.33	0.58
2214	Programmable Thermostat (resistance heating)	Single Family	5%	5%	64.1	5,821.7	5,530.6	656.2	12	18	2	0.02	181	2.22	4.21	2.07	0.53
2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance heating)	Single Family	6%	6%	265.6	5,704.8	5,359.5	635.9	10	56	7	0.08	634	0.54	1.06	7.22	0.51
2216	Self Install Weatherization	Single Family	2%	2%	15.0	5,665.7	5,552.4	658.8	10	14	2	0.01	109	3.12	6.16	1.24	0.51
2217	Door Weatherization (resistance heating)	Single Family	3%	3%	23.9	5,692.4	5,519.5	654.9	5	21	2	0.01	114	1.55	3.40	1.30	0.47
2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance heating)	Single Family	6%	6%	582.9	5,863.1	5,523.2	655.3	20	20	2	0.17	1,412	0.43	0.73	16.09	0.58
3000	Base Halogen Lighting - 0.5 hrs/day 2014-2015	Single Family	0%	0%	23.3	109.7	109.7	12.3	5	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3001	CFL (base Halogen 0.5 hrs/day) 2014-2015	Single Family	65%	65%	27.0	156.7	54.7	6.1	32	153	17	0.02	196	3.75	5.74	2.48	0.62
3002	LEDs (base Halogen 0.5 hrs/day) 2014-2015	Single Family	76%	76%	139.8	109.7	26.8	3.0	32	111	12	0.14	1,247	0.59	0.90	15.82	0.62
3010	Base Halogen Lighting - 0.5 hrs/day 2016-2017	Single Family	0%	0%	23.3	109.7	109.7	12.3	5	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3011	CFL (base Halogen 0.5 hrs/day) 2016-2017	Single Family	65%	65%	27.0	109.7	38.3	4.3	32	107	12	0.03	279	2.63	4.02	3.55	0.62
3012	LEDs (base Halogen 0.5 hrs/day) 2016-2017	Single Family	76%	76%	95.3	109.7	26.8	3.0	32	118	13	0.10	850	0.86	1.32	10.79	0.62
3020	Base Halogen Lighting - 0.5 hrs/day 2018-2019	Single Family	0%	0%	23.3	109.7	109.7	12.3	5	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3021	CFL (base Halogen 0.5 hrs/day) 2018-2019	Single Family	65%	65%	27.0	109.7	38.3	4.3	32	107	12	0.03	279	2.63	4.02	3.55	0.62
3022	LEDs (base Halogen 0.5 hrs/day) 2018-2019	Single Family	76%	76%	50.8	109.7	26.8	3.0	32	125	14	0.05	453	1.62	2.48	5.75	0.62
3030	Base Halogen Lighting - 0.5 hrs/day 2020	Single Family	0%	0%	23.3	109.7	109.7	12.3	5	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3032	LEDs (base Halogen 0.5 hrs/day) 2020	Single Family	76%	76%	36.0	109.7	26.8	3.0	32	125	14	0.04	321	2.29	3.50	4.07	0.62
3100	Base Halogen Lighting - 2.5 hrs/day 2014-2015	Single Family	0%	0%	19.2	450.6	450.6	50.5	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3101	CFL (base Halogen 2.5 hrs/day) 2014-2015	Single Family	65%	65%	22.2	450.6	157.3	17.6	9	440	49	0.01	66	4.87	9.99	0.71	0.50
3102	LEDs (base Halogen 2.5 hrs/day) 2014-2015	Single Family	76%	76%	114.8	450.6	110.0	12.3	32	455	51	0.03	249	2.94	4.50	3.16	0.62
3110	Base Halogen Lighting - 2.5 hrs/day 2016-2017	Single Family	0%	0%	19.2	450.6	450.6	50.5	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3111	CFL (base Halogen 2.5 hrs/day) 2016-2017	Single Family	65%	65%	22.2	450.6	157.3	17.6	9	440	49	0.01	66	4.87	9.99	0.71	0.50
3112	LEDs (base Halogen 2.5 hrs/day) 2016-2017	Single Family	76%	76%	78.3	450.6	110.0	12.3	32	483	54	0.02	170	4.32	6.61	2.16	0.62
3120	Base Halogen Lighting - 2.5 hrs/day 2018-2019	Single Family	0%	0%	19.2	450.6	450.6	50.5	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3121	CFL (base Halogen 2.5 hrs/day) 2018-2019	Single Family	65%	65%	22.2	450.6	157.3	17.6	9	440	49	0.01	66	4.87	9.99	0.71	0.50
3122	LEDs (base Halogen 2.5 hrs/day) 2018-2019	Single Family	76%	76%	41.8	450.6	110.0	12.3	32	512	57	0.01	91	8.10	12.39	1.15	0.62
3130	Base Halogen Lighting - 2.5 hrs/day 2020	Single Family	0%	0%	19.2	450.6	450.6	50.5	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3132	LEDs (base Halogen 2.5 hrs/day) 2020	Single Family	82%	82%	29.6	450.6	81.1	9.1	32	555	62	0.01	59	12.40	18.97	0.75	0.62
3200	Base Halogen Lighting - 6 hrs/day 2014-2015	Single Family	0%	0%	5.3	297.8	297.8	33.3	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3201	CFL (base Halogen 6 hrs/day) 2014-2015	Single Family	65%	65%	6.1	297.8	103.9	11.6	4	291	33	0.00	27	5.44	12.33	0.30	0.46
3202	LEDs (base Halogen 6 hrs/day) 2014-2015	Single Family	76%	76%	31.6	297.8	72.7	8.1	16	300	34	0.01	123	4.38	7.90	1.32	0.55
3210	Base Halogen Lighting - 6 hrs/day 2016-2017	Single Family	0%	0%	5.3	297.8	297.8	33.3	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3211	CFL (base Halogen 6 hrs/day) 2016-2017	Single Family	65%	65%	6.1	297.8	103.9	11.6	4	291	33	0.00	27	5.44	12.33	0.30	0.46
3212	LEDs (base Halogen 6 hrs/day) 2016-2017	Single Family	76%	76%	21.6	297.8	72.7	8.1	16	319	36	0.01	84	6.42	11.59	0.90	0.55
3220	Base Halogen Lighting - 6 hrs/day 2018-2019	Single Family	0%	0%	5.3	297.8	297.8	33.3	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3221	CFL (base Halogen 6 hrs/day) 2018-2019	Single Family	65%	65%	6.1	297.8	103.9	11.6	4	291	33	0.00	27	5.44	12.33	0.30	0.46
3222	LEDs (base Halogen 6 hrs/day) 2018-2019	Single Family	76%	76%	11.5	297.8	72.7	8.1	16	338	38	0.00	45	12.05	21.74	0.48	0.55
3230	Base Halogen Lighting - 6 hrs/day 2020	Single Family	0%	0%	5.3	297.8	297.8	33.3	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3232	LEDs (base Halogen 6 hrs/day) 2020	Single Family	76%	76%	8.1	297.8	72.7	8.1	16	338	38	0.00	32	17.01	30.69	0.34	0.55
3300	Base CFL Lighting - 0.5 hrs/day 2014-2015	Single Family	0%	0%	13.3	21.1	21.1	2.4	32	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3301	LEDs (base CFL 0.5 hrs/day) 2014-2015	Single Family	30%	30%	66.8	21.1	14.8	1.7	32	8	1	0.87	7,811	0.09	0.14	99.14	0.62
3310	Base CFL Lighting - 0.5 hrs/day 2016-2017	Single Family	0%	0%	13.3	21.1	21.1	2.4	32	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3311	LEDs (base CFL 0.5 hrs/day) 2016-2017	Single Family	30%	30%	45.0	21.1	14.8	1.7	32	9	1	0.59	5,259	0.14	0.21	66.74	0.62
3320	Base CFL Lighting - 0.5 hrs/day 2018-2019	Single Family	0%	0%	13.3	21.1	21.1	2.4	32	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3321	LEDs (base CFL 0.5 hrs/day) 2018-2019	Single Family	30%	30%	23.2	21.1	14.8	1.7	32	10	1	0.30	2,706	0.27	0.41	34.34	0.62
3330	Base CFL Lighting - 0.5 hrs/day 2020	Single Family	0%	0%	13.3	21.1	21.1	2.4	32	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3331	LEDs (base CFL 0.5 hrs/day) 2020	Single Family	30%	30%	15.9	21.1	14.8	1.7	32	10	1	0.21	1,855	0.40	0.61	23.54	0.62
3400	Base CFL Lighting - 2.5 hrs/day 2014-2015	Single Family	0%	0%	10.9	86.5	86.5	9.7	9	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3401	LEDs (base CFL 2.5 hrs/day) 2014-2015	Single Family	30%	30%	54.9	86.5	60.5	6.8	32	35	4	0.18	1,564	0.47	0.72	19.85	0.62
3410	Base CFL Lighting - 2.5 hrs/day 2016-2017	Single Family	0%	0%	10.9	86.5	86.5	9.7	9	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3411	LEDs (base CFL 2.5 hrs/day) 2016-2017	Single Family	30%	30%	36.9	86.5	60.5	6.8	32	37	4	0.12	1,053	0.70	1.07	13.36	0.62
3420	Base CFL Lighting - 2.5 hrs/day 2018-2019	Single Family	0%	0%	10.9	86.5	86.5	9.7	9	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3421	LEDs (base CFL 2.5 hrs/day) 2018-2019	Single Family	30%	30%	19.0	86.5	60.5	6.8	32	39	4	0.06	542	1.36	2.07	6.88	0.62
3430	Base CFL Lighting - 2.5 hrs/day 2020	Single Family	0%	0%	10.9	86.5	86.5	9.7	9	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3431	LEDs (base CFL 2.5 hrs/day) 2020	Single Family	30%	30%	13.0	86.5	60.5	6.8	32	39	4	0.04	371	1.98	3.02	4.71	0.62
3500	Base CFL Lighting - 6 hrs/day 2014-2015	Single Family	0%	0%	3.0	57.0	57.0	6.4	4	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3501	LEDs (base CFL 6 hrs/day) 2014-2015	Single Family	30%	30%	15.0	57.0	39.9	4.5	16	23	3	0.09	764	0.70	1.27	8.22	0.55
3510	Base CFL Lighting - 6 hrs/day 2016-2017	Single Family	0%	0%	3.0	57.0	57.0	6.4	4	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3511	LEDs (base CFL 6 hrs/day) 2016-2017	Single Family	30%	30%	10.1	57.0	39.9	4.5	16	24	3	0.06	515	1.04	1.88	5.53	0.55
3520	Base CFL Lighting - 6 hrs/day 2018-2019	Single Family	0%	0%	3.0	57.0	57.0	6.4	4	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3521	LEDs (base CFL 6 hrs/day) 2018-2019	Single Family	30%	30%	5.2	57.0	39.9	4.5	16	26	3	0.03	265	2.03	3.66	2.85	0.55

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Household	Base UEC	UEC	Peak Watts/ Household	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
3530	Base CFL Lighting - 6 hrs/day 2020	Single Family	0%	0%	3.0	57.0	57.0	6.4	4	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3531	LEDs (base CFL 6 hrs/day) 2020	Single Family	30%	30%	3.6	57.0	39.9	4.5	16	26	3	0.02	182	2.96	5.34	1.95	0.55
3600	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2014-2015	Single Family	0%	0%	16.1	67.7	67.7	7.6	5	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3601	CFL (base Halogen (Specialty) 0.5 hrs/day 2014-2015	Single Family	65%	65%	29.3	80.8	28.2	3.2	32	59	7	0.05	412	1.78	2.73	5.23	0.62
3602	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2014-2015	Single Family	76%	76%	48.4	67.7	16.5	1.8	32	43	5	0.08	699	1.05	1.61	8.88	0.62
3610	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2016-2017	Single Family	0%	0%	16.1	67.7	67.7	7.6	5	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3611	CFL (base Halogen (Specialty) 0.5 hrs/day) 2016-2017	Single Family	65%	65%	29.3	80.8	28.2	3.2	32	59	7	0.05	412	1.78	2.73	5.23	0.62
3612	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2016-2017	Single Family	76%	76%	30.8	67.7	16.5	1.8	32	51	6	0.05	445	1.65	2.52	5.65	0.62
3620	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2018-2019	Single Family	0%	0%	16.1	67.7	67.7	7.6	5	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3621	CFL (base Halogen (Specialty) 0.5 hrs/day) 2018-2019	Single Family	65%	65%	29.3	80.8	28.2	3.2	32	59	7	0.05	412	1.78	2.73	5.23	0.62
3622	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2018-2019	Single Family	76%	76%	13.2	67.7	16.5	1.8	32	60	7	0.02	191	3.84	5.87	2.43	0.62
3630	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2020	Single Family	0%	0%	16.1	67.7	67.7	7.6	5	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3631	CFL (base Halogen (Specialty) 0.5 hrs/day) 2020	Single Family	65%	65%	29.3	80.8	28.2	3.2	32	59	7	0.05	412	1.78	2.73	5.23	0.62
3632	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Single Family	76%	76%	7.4	67.7	16.5	1.8	32	68	8	0.01	107	6.89	10.54	1.35	0.62
3700	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2014-2015	Single Family	0%	0%	13.3	280.3	280.3	31.4	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3701	CFL (base Halogen (Specialty) 2.5 hrs/day) 2014-2015	Single Family	65%	65%	24.3	334.8	116.9	13.1	9	245	27	0.01	97	3.31	6.78	1.05	0.50
3702	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2014-2015	Single Family	76%	76%	40.1	280.3	68.4	7.7	32	177	20	0.02	140	5.25	8.03	1.78	0.62
3710	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2016-2017	Single Family	0%	0%	13.3	280.3	280.3	31.4	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3711	CFL (base Halogen (Specialty) 2.5 hrs/day) 2016-2017	Single Family	65%	65%	24.3	334.8	116.9	13.1	9	245	27	0.01	97	3.31	6.78	1.05	0.50
3712	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2016-2017	Single Family	76%	76%	25.5	280.3	68.4	7.7	32	212	24	0.01	89	8.24	12.61	1.13	0.62
3720	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2018-2019	Single Family	0%	0%	13.3	280.3	280.3	31.4	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3721	CFL (base Halogen (Specialty) 2.5 hrs/day) 2018-2019	Single Family	65%	65%	24.3	334.8	116.9	13.1	9	245	27	0.01	97	3.31	6.78	1.05	0.50
3722	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2018-2019	Single Family	76%	76%	11.0	280.3	68.4	7.7	32	247	28	0.00	38	19.20	29.36	0.49	0.62
3730	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2020	Single Family	0%	0%	13.3	280.3	280.3	31.4	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3731	CFL (base Halogen (Specialty) 2.5 hrs/day) 2020	Single Family	65%	65%	24.3	334.8	116.9	13.1	9	245	27	0.01	97	3.31	6.78	1.05	0.50
3732	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Single Family	76%	76%	6.1	280.3	68.4	7.7	32	283	32	0.00	21	34.46	52.71	0.27	0.62
3800	Base Halogen (Specialty) Lighting - 6 hrs/day 2014-2015	Single Family	0%	0%	3.7	185.6	185.6	20.8	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3801	CFL (base Halogen (Specialty) 6 hrs/day) 2014-2015	Single Family	65%	65%	6.7	221.7	77.4	8.7	4	163	18	0.00	40	3.69	8.37	0.44	0.46
3802	LEDs (base Halogen (Specialty) 6 hrs/day) 2014-2015	Single Family	76%	76%	11.1	185.6	45.3	5.1	16	117	13	0.01	69	7.81	14.09	0.74	0.55
3810	Base Halogen (Specialty) Lighting - 6 hrs/day 2016-2017	Single Family	0%	0%	3.7	185.6	185.6	20.8	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3811	CFL (base Halogen (Specialty) 6 hrs/day) 2016-2017	Single Family	65%	65%	6.7	221.7	77.4	8.7	4	163	18	0.00	40	3.69	8.37	0.44	0.46
3812	LEDs (base Halogen (Specialty) 6 hrs/day) 2016-2017	Single Family	76%	76%	7.0	185.6	45.3	5.1	16	140	16	0.00	44	12.26	22.12	0.47	0.55
3820	Base Halogen (Specialty) Lighting - 6 hrs/day 2018-2019	Single Family	0%	0%	3.7	185.6	185.6	20.8	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3821	CFL (base Halogen (Specialty) 6 hrs/day) 2018-2019	Single Family	65%	65%	6.7	221.7	77.4	8.7	4	163	18	0.00	40	3.69	8.37	0.44	0.46
3822	LEDs (base Halogen (Specialty) 6 hrs/day) 2018-2019	Single Family	76%	76%	3.0	185.6	45.3	5.1	16	164	18	0.00	19	28.55	51.52	0.20	0.55
3830	Base Halogen (Specialty) Lighting - 6 hrs/day 2020	Single Family	0%	0%	3.7	185.6	185.6	20.8	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3831	CFL (base Halogen (Specialty) 6 hrs/day) 2020	Single Family	65%	65%	6.7	221.7	77.4	8.7	4	163	18	0.00	40	3.69	8.37	0.44	0.46
3832	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Single Family	76%	76%	1.7	185.6	45.3	5.1	16	187	21	0.00	10	51.26	92.50	0.11	0.55
3900	Base Fluorescent Fixture 1.8 hrs/day	Single Family	0%	0%	372.5	466.2	466.2	52.2	32	0	0	N/A	N/A	N/A	N/A	N/A	N/A
3901	RET 2L4'T8, 1EB	Single Family	28%	28%	429.8	472.9	340.5	38.1	32	210	23	0.27	2,401	0.31	0.47	30.48	0.62
3902	ROB 2L4'T8, 1EB	Single Family	28%	28%	57.3	472.9	340.5	38.1	32	210	23	0.04	320	2.29	3.51	4.06	0.62
4000	Base Refrigerator	Single Family	0%	0%	537.8	699.4	699.4	113.4	18	0	0	N/A	N/A	N/A	N/A	N/A	N/A
4001	Refrigerator (Energy Star)	Single Family	26%	26%	616.8	793.1	589.3	95.5	18	156	25	0.30	1,824	0.23	0.39	28.40	0.59
4002	Refrigerator (CEE Tier 2)	Single Family	25%	25%	716.8	790.2	592.7	96.1	18	151	25	0.35	2,187	0.19	0.33	34.06	0.59
4100	Base Refrigerator--Early Replacement	Single Family	0%	0%	0.0	562.2	562.2	91.1	18	0	0	N/A	N/A	N/A	N/A	N/A	N/A
4101	Refrigerator - Early Replacement (Energy Star)	Single Family	60%	60%	204.2	776.6	310.6	50.3	6	63	10	0.04	264	0.59	1.25	4.11	0.48
4200	Base 2nd Refrigerator - Recycling	Single Family	0%	0%	1.2	977.8	977.8	158.5	18	0	0	N/A	N/A	N/A	N/A	N/A	N/A
4201	2nd Refrigerator Recycling	Single Family	99%	99%	153.5	977.8	9.8	1.6	8	460	74	0.02	96	2.13	4.35	1.49	0.50
4500	Base Freezer	Single Family	0%	0%	329.0	824.6	824.6	133.6	11	0	0	N/A	N/A	N/A	N/A	N/A	N/A
4501	Freezer (Energy Star)	Single Family	10%	10%	33.0	835.4	751.9	121.9	11	37	6	0.04	238	1.17	2.21	3.71	0.53
4600	Base Early Replacement Freezer	Single Family	0%	0%	0.0	1,165.6	1,165.6	184.5	11	0	0	N/A	N/A	N/A	N/A	N/A	N/A
4601	Freezer - Early Replacement (Energy Star)	Single Family	58%	58%	110.7	1,259.8	535.4	84.8	5	56	9	0.01	94	1.41	3.08	1.43	0.48
4700	Base 2nd Freezer Recycling	Single Family	0%	0%	0.0	1,161.4	1,161.4	183.8	11	0	0	N/A	N/A	N/A	N/A	N/A	N/A
4701	2nd Freezer Recycling	Single Family	99%	99%	132.0	1,161.4	11.6	1.8	8	16	3	0.01	71	2.94	6.01	1.08	0.50
5000	Base Water Heating (40 gal, EF=0.88)	Single Family	0%	0%	279.5	3,732.1	3,732.1	459.7	15	0	0	N/A	N/A	N/A	N/A	N/A	N/A
5001	HE Water Heater (EF=0.93)	Single Family	3%	3%	350.9	3,754.1	3,649.2	449.4	15	61	8	0.33	2,653	0.18	0.32	31.38	0.55
5002	Tankless Water Heater	Single Family	15%	15%	843.0	3,742.5	3,181.1	391.8	20	306	38	0.15	1,191	0.49	0.83	14.10	0.58
5003	Heat Pump Water Heater - Energy Star	Single Family	60%	60%	1,410.8	4,002.3	1,600.9	197.2	15	394	49	0.06	466	1.00	1.82	5.52	0.55
5004	Solar Domestic Water Heating	Single Family	85%	85%	4,103.0	3,757.7	563.6	69.4	20	1,757	216	0.13	1,019	0.57	0.98	12.06	0.58
5005	DHW Tank Wrap	Single Family	7%	7%	45.9	3,781.9	3,514.7	432.9	5	161	20	0.02	136	1.24	2.74	1.61	0.47
5006	Pipe Wrap	Single Family	4%	4%	22.4	3,747.1	3,597.2	443.0	15	85	10	0.01	119	3.93	7.15	1.40	0.55
5007	Hot water turndown 5 degrees	Single Family	4%	4%	5.1	3,802.2	3,638.7	448.2	2	10	1	0.00	25	2.81	6.62	0.29	0.45
5008	Hot water turndown 10 degrees	Single Family	4%	4%	5.1	3,802.2	3,638.7	448.2	2	13	2	0.00	25	2.81	6.62	0.29	0.45
5009	Hot water turndown 15 degrees	Single Family	4%	4%	5.1	3,802.2	3,638.7	448.2	2	3	0	0.00	25	2.81	6.62	0.29	0.45
5010	Hot water turndown 20 degrees	Single Family	4%	4%	5.1	3,802.2	3,638.7	448.2	2	1	0	0.00	25	2.81	6.62	0.29	0.45
5011	Drain Water Heat Recovery (GFX)	Single Family	38%	38%	670.0	3,732.1	2,329.2	286.9	20	104	13	0.05	379	1.54	2.62	4.48	0.58

Residential Electric Existing Construction

DSM ASSYST SUMMARY

Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Household	Base UEC	UEC	Peak Watts/ Household	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
5012	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	0%	0%	187.0	3,737.9	3,722.1	458.4	14	7	1	1.16	9,427	0.05	0.09	111.53	0.54
5013	Energy Star Dishwasher (EF=0.72)	Single Family	0%	0%	99.9	2,687.7	2,681.2	330.2	13	4	1	1.51	12,293	0.03	0.06	145.45	0.54
5014	Faucent Aerators	Single Family	3%	3%	30.6	3,766.0	3,653.0	449.9	9	58	7	0.03	215	1.36	2.79	2.54	0.50
5015	Low Flow Showerhead 1.5 Gal/Min	Single Family	8%	8%	46.6	3,914.1	3,620.5	445.9	10	82	10	0.02	126	2.58	5.14	1.49	0.51
5100	Base Water Heating Early Replacement to Heat Pump Water Heater	Single Family	0%	0%	0.0	3,732.1	3,732.1	459.7	15	0	0	N/A	N/A	N/A	N/A	N/A	N/A
5101	Heat Pump Water Heater - Energy Star - Early Replacement	Single Family	60%	60%	1,410.8	4,002.3	1,600.9	197.2	15	70	9	0.06	466	1.00	1.82	5.52	0.55
5500	Base Clotheswasher (MEF=1.26)	Single Family	0%	0%	659.0	48.5	48.5	8.8	14	0	0	N/A	N/A	N/A	N/A	N/A	N/A
5501	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	34%	34%	187.0	55.4	36.8	6.7	14	18	3	0.98	5,451	0.06	0.10	94.62	0.58
5600	Base Clothes Dryer (EF=3.01)	Single Family	0%	0%	326.9	735.2	735.2	124.4	12	0	0	N/A	N/A	N/A	N/A	N/A	N/A
5601	Heat Pump Dryer	Single Family	60%	60%	1,852.4	735.2	294.1	49.8	12	634	107	0.41	2,425	0.12	0.22	39.42	0.55
5602	High Efficiency CD (EF=3.01 w/moisture sensor)	Single Family	20%	20%	54.5	750.2	600.2	101.6	12	194	33	0.04	210	1.40	2.55	3.41	0.55
5700	Base Dishwasher (EF=0.65)	Single Family	0%	0%	314.5	197.5	197.5	32.4	13	0	0	N/A	N/A	N/A	N/A	N/A	N/A
5701	Energy Star Dishwasher (EF=0.72)	Single Family	4%	4%	99.9	198.2	190.4	31.2	13	9	1	1.26	7,706	0.04	0.08	121.40	0.57
6000	Base Single Speed Pool Pump (RET)	Single Family	0%	0%	345.0	2,283.8	2,283.8	271.6	10	0	0	N/A	N/A	N/A	N/A	N/A	N/A
6001	PV-Powered Pool Pumps	Single Family	99%	99%	4,655.0	2,283.8	22.8	2.7	10	275	33	0.20	1,692	0.20	0.40	19.33	0.51
6002	Variable-Speed Pool Pump (<1 hp)	Single Family	75%	75%	413.0	2,530.5	632.6	75.2	10	201	24	0.02	179	1.90	3.75	2.04	0.51
7000	Base Plasma TV	Single Family	0%	0%	0.0	356.5	356.5	51.4	7	0	0	N/A	N/A	N/A	N/A	N/A	N/A
7001	Energy Star Plasma TV	Single Family	9%	9%	1.4	358.9	325.5	47.0	7	12	2	0.00	29	6.96	14.52	0.40	0.49
7002	Plug Load Controls - Smart Power Strip (base plasma TV)	Single Family	1%	1%	35.7	356.7	353.8	51.0	4	1	0	1.22	8,467	0.01	0.03	117.35	0.47
7100	Base LCD TV	Single Family	0%	0%	0.0	231.0	231.0	33.3	7	0	0	N/A	N/A	N/A	N/A	N/A	N/A
7101	Energy Star LCD TV	Single Family	40%	40%	2.0	252.2	151.3	21.8	7	109	16	0.00	13	15.36	32.07	0.18	0.49
7102	Plug Load Controls - Smart Power Strip (base LCD TV)	Single Family	2%	2%	48.9	231.3	226.2	32.6	4	7	1	0.94	6,509	0.02	0.04	90.22	0.47
7200	Base CRT TV	Single Family	0%	0%	0.0	165.6	165.6	23.9	9	0	0	N/A	N/A	N/A	N/A	N/A	N/A
7202	Plug Load Controls - Smart Power Strip (base CRT TV)	Single Family	6%	6%	40.8	166.1	156.0	22.5	4	6	1	0.39	2,724	0.04	0.10	37.76	0.47
7300	Base Set-Top Box	Single Family	0%	0%	0.0	315.4	315.4	45.5	7	0	0	N/A	N/A	N/A	N/A	N/A	N/A
7400	Base DVD Player	Single Family	0%	0%	0.0	36.9	36.9	5.3	7	0	0	N/A	N/A	N/A	N/A	N/A	N/A
7401	Energy Star DVD Player	Single Family	55%	55%	1.6	38.6	17.4	2.5	7	25	4	0.01	52	3.89	8.12	0.72	0.49
7402	Plug Load Controls - Smart Power Strip (base DVD player)	Single Family	90%	90%	40.6	38.7	4.0	0.6	4	42	6	0.11	794	0.15	0.33	11.01	0.47
7500	Base Desktop PC	Single Family	0%	0%	0.0	450.4	450.4	59.3	7	0	0	N/A	N/A	N/A	N/A	N/A	N/A
7501	Energy Star Desktop PC	Single Family	13%	13%	1.3	459.0	397.4	52.4	7	50	7	0.00	15	14.43	30.49	0.19	0.49
7502	Plug Load Controls - Smart Power Strip (base Desktop PC)	Single Family	29%	29%	31.4	457.1	324.1	42.7	4	119	16	0.02	175	0.73	1.64	2.22	0.46
7600	Base Laptop PC	Single Family	0%	0%	0.0	64.3	64.3	8.5	7	0	0	N/A	N/A	N/A	N/A	N/A	N/A
7601	Energy Star Laptop PC	Single Family	18%	18%	1.6	65.9	54.1	7.1	7	12	2	0.01	101	2.16	4.57	1.28	0.49
8000	Base Cooking	Single Family	0%	0%	0.0	738.4	738.4	235.7	15	0	0	N/A	N/A	N/A	N/A	N/A	N/A
9000	Base Miscellaneous	Single Family	0%	0%	0.0	339.1	339.1	44.7	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
9900	Base House Use	Single Family	0%	0%	0.0	15,034.6	15,034.6	3,722.9	1	0	0	N/A	N/A	N/A	N/A	N/A	N/A
9901	Indirect Feedback	Single Family	1%	2%	9.3	15,036.9	14,811.3	3,667.6	1	373	92	57.10	0	16.18	1.17	2.60	0.38
9902	Direct Feedback	Single Family	5%	5%	145.0	15,079.9	14,325.9	3,547.4	4	1,182	293	0.02	76	0.97	2.02	1.81	0.50
1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	Multi-Family	0%	0%	0.0	998.9	998.9	593.5	18	0	0	N/A	N/A	N/A	N/A	N/A	N/A
1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Multi-Family	7%	7%	121.2	1,006.9	934.9	555.4	18	10	6	0.16	277	0.61	0.70	15.82	0.86
1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Multi-Family	13%	13%	247.0	1,013.8	878.6	522.0	18	19	11	0.18	301	0.56	0.65	17.15	0.86
1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Multi-Family	24%	24%	521.1	1,025.5	784.2	465.9	18	34	20	0.21	355	0.48	0.55	20.27	0.86
1004	Proper Refrigerant Charging and Air Flow (CAC)	Multi-Family	10%	10%	76.3	1,026.8	927.2	550.9	10	11	7	0.07	126	0.76	1.06	7.19	0.73
1005	Proper Sizing and Quality Install (CAC)	Multi-Family	13%	13%	479.0	1,036.7	901.9	535.8	18	15	9	0.35	585	0.29	0.33	33.36	0.86
1006	AC Maintenance and/or tune-up (CAC)	Multi-Family	1%	1%	89.5	1,005.9	995.8	591.6	4	0	0	0.87	1,464	0.03	0.04	83.56	0.63
1007	AC Filter Changes (CAC)	Multi-Family	1%	1%	21.8	1,006.0	995.9	591.7	1	0	0	0.21	356	0.03	0.05	20.34	0.59
1008	Ceiling R-0 to R-38 Insulation (CAC)	Multi-Family	18%	18%	762.9	998.9	814.7	484.0	20	13	8	0.40	681	0.27	0.30	38.87	0.88
1009	Ceiling R-0 to R-49 Insulation (CAC)	Multi-Family	19%	19%	944.4	998.9	811.4	482.0	20	9	5	0.49	828	0.22	0.25	47.26	0.88
1010	Ceiling R-11 to R-38 Insulaton (CAC)	Multi-Family	6%	6%	581.5	998.9	935.9	556.0	20	2	1	0.90	1,517	0.12	0.14	86.59	0.88
1011	Ceiling R-11 to R-49 Insulation (CAC)	Multi-Family	7%	7%	762.9	998.9	932.0	553.7	20	2	1	1.11	1,876	0.10	0.11	107.05	0.88
1012	Ceiling R-19 to R-38 Insulation (CAC)	Multi-Family	3%	3%	449.4	998.9	969.6	576.0	20	0	0	1.50	2,521	0.07	0.08	143.88	0.88
1013	Ceiling R-19 to R-49 Insulation (CAC)	Multi-Family	3%	3%	630.9	998.9	965.6	573.7	20	0	0	1.85	3,115	0.06	0.07	177.75	0.88
1014	Crawlspace insulation (CAC)	Multi-Family	4%	4%	96.1	1,009.2	969.7	576.1	20	1	0	0.24	400	0.46	0.52	22.82	0.88
1015	Basement insulation R-13 (CAC)	Multi-Family	4%	4%	972.7	1,009.2	969.7	576.1	20	0	0	2.41	4,050	0.05	0.05	231.12	0.88
1016	Floor R-0 to R-19 Insulation-Batts (CAC)	Multi-Family	4%	4%	965.7	1,009.2	969.7	576.1	20	1	0	2.39	4,021	0.05	0.05	229.46	0.88
1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	Multi-Family	4%	4%	429.9	1,026.8	986.6	586.1	20	1	1	1.05	1,759	0.10	0.12	100.40	0.88
1018	Cool Roof (CAC)	Multi-Family	4%	4%	293.9	1,006.5	967.1	574.6	15	5	3	0.73	1,227	0.12	0.14	70.03	0.82
1019	Duct Insulation (CAC)	Multi-Family	4%	4%	64.8	1,037.5	996.9	592.2	20	0	0	0.16	262	0.70	0.79	14.97	0.88
1020	Duct Testing and Sealing (CAC)	Multi-Family	4%	4%	166.5	1,012.8	973.2	578.1	18	4	2	0.41	691	0.25	0.28	39.42	0.86
1021	Return Duct Modification (CAC)	Multi-Family	19%	19%	381.5	1,219.0	987.4	586.6	20	1	1	0.16	271	0.68	0.76	15.46	0.88
1022	Programmable Thermostat (CAC)	Multi-Family	2%	2%	17.0	1,011.4	991.2	588.8	12	1	1	0.08	138	0.85	1.10	7.89	0.78
1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Multi-Family	6%	6%	127.5	1,014.9	953.5	566.4	10	7	4	0.20	341	0.28	0.39	19.48	0.73
1024	Self Install Weatherization (CAC)	Multi-Family	2%	2%	2.8	1,003.1	983.0	584.0	10	3	1	0.01	23	4.25	5.94	1.29	0.73
1025	Door Weatherization (CAC)	Multi-Family	6%	6%	18.0	1,011.6	950.5	564.7	5	8	5	0.03	48	0.97	1.60	2.76	0.63
1026	Ceiling Fans (CAC)	Multi-Family	10%	10%	247.0	1,050.3	945.7	561.8	15	8	5	0.23	388	0.37	0.45	22.16	0.82
1027	Whole House Fans (CAC)	Multi-Family	6%	6%	512.9	1,000.8	940.4	558.7	15	9	5	0.83	1,396	0.10	0.13	79.69	0.82

Residential Electric Existing Construction

DSM ASSYST SUMMARY

Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Household	Base UEC	UEC	Peak Watts/ Household	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)	Revenue Test
1028	Window Film (CAC)	Multi-Family	6%	6%	329.3	998.9	940.0	558.4	10	9	6	0.55	918	0.10	0.15	52.41	0.73
1029	WINDOWS - Default With Sunscreen (CAC)	Multi-Family	8%	8%	271.6	1,006.5	929.8	552.4	10	11	6	0.35	583	0.16	0.23	33.24	0.73
1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Multi-Family	5%	5%	206.7	1,025.1	976.7	580.2	20	4	2	0.42	702	0.26	0.29	40.05	0.88
1100	Base Split-System Air Conditioner - Early Replacement (11 SEER)	Multi-Family	0%	0%	0.0	1,712.0	1,712.0	1,017.1	8	0	0	N/A	N/A	N/A	N/A	N/A	N/A
1101	R (12.15 EER) Split-System Air Conditioner w/ Quality Install - Early Repl	Multi-Family	6%	6%	546.4	1,722.8	1,624.8	965.3	8	2	1	0.54	917	0.08	0.12	52.34	0.67
1102	Proper Refrigerant Charging and Air Flow (CAC early replacement)	Multi-Family	10%	10%	76.3	1,730.5	1,562.6	928.3	10	4	2	0.04	75	1.28	1.79	4.27	0.73
1103	Proper Sizing and Quality Install (CAC early replacement)	Multi-Family	13%	13%	479.0	1,736.9	1,511.1	897.7	18	6	3	0.21	349	0.49	0.56	19.91	0.86
1104	AC Maintenance and/or tune-up (CAC early replacement)	Multi-Family	1%	1%	89.5	1,723.9	1,706.7	1,013.9	4	0	0	0.51	854	0.04	0.07	48.75	0.63
1105	AC Filter Changes (CAC early replacement)	Multi-Family	1%	1%	21.8	1,724.1	1,706.9	1,014.0	1	0	0	0.12	208	0.05	0.08	11.87	0.59
1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Multi-Family	18%	18%	762.9	1,712.0	1,396.3	829.5	20	4	2	0.24	397	0.46	0.52	22.68	0.88
1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Multi-Family	19%	19%	944.4	1,712.0	1,390.5	826.1	20	3	2	0.29	483	0.38	0.43	27.58	0.88
1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Multi-Family	6%	6%	581.5	1,712.0	1,604.0	952.9	20	1	0	0.53	885	0.21	0.23	50.52	0.88
1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Multi-Family	7%	7%	762.9	1,712.0	1,597.4	949.0	20	1	0	0.65	1,095	0.17	0.19	62.46	0.88
1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Multi-Family	3%	3%	449.4	1,712.0	1,661.8	987.2	20	0	0	0.87	1,471	0.13	0.14	83.95	0.88
1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Multi-Family	3%	3%	630.9	1,712.0	1,654.9	983.2	20	0	0	1.08	1,817	0.10	0.11	103.72	0.88
1112	Crawlspace insulation (CAC early replacement)	Multi-Family	4%	4%	96.1	1,729.6	1,661.9	987.3	20	0	0	0.14	233	0.79	0.88	13.32	0.88
1113	Basement insulation R-13 (CAC early replacement)	Multi-Family	18%	18%	972.7	1,797.2	1,469.7	873.1	20	1	0	0.29	489	0.38	0.42	27.89	0.88
1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Multi-Family	4%	4%	965.7	1,729.6	1,661.9	987.3	20	0	0	1.39	2,346	0.08	0.09	133.89	0.88
1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Multi-Family	4%	4%	429.9	1,759.8	1,690.9	1,004.5	20	0	0	0.61	1,026	0.18	0.20	58.58	0.88
1116	Cool Roof (CAC early replacement)	Multi-Family	13%	13%	293.9	1,757.8	1,520.7	903.4	15	5	3	0.12	204	0.71	0.86	11.64	0.82
1117	Duct Insulation (CAC early replacement)	Multi-Family	14%	14%	64.8	1,977.5	1,698.0	1,008.8	20	0	0	0.02	38	4.83	5.41	2.18	0.88
1118	Duct Testing and Sealing (CAC early replacement)	Multi-Family	4%	5%	166.5	1,739.4	1,661.1	986.9	18	1	1	0.21	350	0.48	0.56	19.97	0.86
1119	Return Duct Modification (CAC early replacement)	Multi-Family	19%	19%	381.5	2,089.1	1,692.2	1,005.3	20	0	0	0.09	158	1.16	1.30	9.02	0.88
1120	Programmable Thermostat (CAC early replacement)	Multi-Family	2%	2%	17.0	1,733.4	1,698.7	1,009.2	12	0	0	0.05	81	1.45	1.89	4.60	0.78
1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early replacemen	Multi-Family	6%	6%	127.5	1,739.4	1,634.1	970.8	10	2	1	0.12	199	0.48	0.67	11.37	0.73
1122	Self Install Weatherization (CAC early replacement)	Multi-Family	2%	2%	2.8	1,717.5	1,683.2	999.9	10	1	0	0.01	13	7.28	10.17	0.75	0.73
1123	Door Weatherization (CAC early replacement)	Multi-Family	6%	6%	18.0	1,733.3	1,630.9	968.9	5	2	1	0.02	29	1.63	2.68	1.65	0.63
1124	Ceiling Fans (CAC early replacement)	Multi-Family	5%	5%	247.0	1,755.1	1,667.3	990.5	15	1	1	0.28	463	0.31	0.38	26.42	0.82
1125	Whole House Fans (CAC early replacement)	Multi-Family	20%	20%	512.9	1,722.7	1,378.1	818.7	15	9	6	0.15	245	0.59	0.72	13.97	0.82
1126	Window Film (CAC early replacement)	Multi-Family	5%	5%	329.3	1,712.0	1,633.3	970.3	10	2	1	0.41	688	0.14	0.20	39.25	0.73
1127	WINDOWS - Default With Sunscreen (CAC early replacement)	Multi-Family	5%	5%	271.6	1,720.9	1,630.3	968.5	10	2	1	0.29	493	0.19	0.27	28.14	0.73
1128	VINDOWS - Double-Glazed Clear to Energy Star (CAC early replacemen	Multi-Family	5%	5%	206.7	1,762.1	1,669.4	991.7	20	1	1	0.22	367	0.50	0.56	20.92	0.88
1200	Base Heat Pump Cooling (13 SEER)	Multi-Family	0%	0%	0.0	1,412.4	1,412.4	839.1	15	0	0	N/A	N/A	N/A	N/A	N/A	N/A
1201	Heat pump upgrade to (14.5-15.9 SEER, 8.2+ HSPF) (HP cooling)	Multi-Family	15%	15%	183.6	1,485.6	1,257.0	746.8	15	27	16	0.08	132	1.10	1.33	7.54	0.82
1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Multi-Family	23%	23%	242.4	1,525.1	1,173.1	696.9	15	42	25	0.07	113	1.28	1.55	6.46	0.82

Residential Electric New Construction

DSM ASSYST SUMMARY

Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Household	Base UEC	UEC	Peak Watts/ Household	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
100	Base Code Home - IECC 2006	Single Family	0%	0%	0.0	15,034.8	15,034.8	3,723.0	20	0	0	N/A	N/A	N/A	N/A	N/A
101	Energy Star Home	Single Family	22%	8%	2,176.0	15,034.8	11,721.3	3,425.1	20	53	5	0.06	714	1.07	1.91	6.16
200	Base Dummy Measure	Single Family	0%	0%	0.0	0.0	0.0	0.0	20	0	0	N/A	N/A	N/A	N/A	N/A
201	Dummy Measure	Single Family	0%	0%	0.0	0.0	0.0	0.0	20	0	0	N/A	N/A	99,999.00	99,999.00	N/A

Commercial Electric Existing Construction

DSM ASSYST SUMMARY

Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	Office	0%	0%	0.0	7.7	7.7	1.4	18	0	0	N/A	N/A	N/A	N/A	N/A
1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	Office	10%	10%	0.1	7.7	6.9	1.3	8	111	21	0.01	52	3.54	4.88	1.33
1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	Office	22%	22%	0.3	7.7	6.0	1.1	8	237	44	0.02	82	2.25	3.10	2.09
1003	ROB 4L4'T5, 2014-2015	Office	12%	12%	1.0	7.7	6.8	1.3	5	126	23	0.11	572	0.21	0.31	14.50
1004	ROB 4L4' LED Tube, 2014-2015	Office	34%	34%	3.4	7.7	5.0	0.9	14	373	70	0.12	670	0.47	0.57	16.99
1005	LED Troffer (base 4L4'T8), 2014-2015	Office	40%	40%	4.3	7.7	4.6	0.9	14	434	81	0.14	736	0.43	0.51	18.67
1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	Office	5%	3%	0.0	7.7	7.3	1.4	6	8	1	0.00	39	6.42	10.35	0.50
1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	Office	30%	8%	0.6	8.1	5.7	1.4	10	80	4	0.03	545	1.39	2.21	3.46
1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	Office	25%	20%	0.2	7.7	5.8	1.1	15	81	12	0.01	68	5.80	7.24	1.38
1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	Office	0%	0%	0.0	7.7	7.7	1.4	18	0	0	N/A	N/A	N/A	N/A	N/A
1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	Office	10%	10%	0.1	7.7	6.9	1.3	8	111	21	0.01	52	3.54	4.88	1.33
1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	Office	22%	22%	0.3	7.7	6.0	1.1	8	237	44	0.02	82	2.25	3.10	2.09
1013	ROB 4L4'T5, 2016-2017	Office	12%	12%	1.0	7.7	6.8	1.3	5	126	23	0.11	572	0.21	0.31	14.50
1014	ROB 4L4' LED Tube, 2016-2017	Office	34%	34%	2.3	7.7	5.0	0.9	14	373	70	0.09	460	0.68	0.82	11.67
1015	LED Troffer (base 4L4'T8), 2016-2017	Office	40%	40%	3.0	7.7	4.6	0.9	14	434	81	0.10	517	0.61	0.73	13.10
1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	Office	5%	3%	0.0	7.7	7.3	1.4	6	8	1	0.00	39	6.42	10.35	0.50
1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	Office	30%	8%	0.6	8.1	5.7	1.4	10	80	4	0.03	545	1.39	2.21	3.46
1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	Office	25%	20%	0.2	7.7	5.8	1.1	15	81	12	0.01	68	5.80	7.24	1.38
1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	Office	0%	0%	0.0	7.7	7.7	1.4	18	0	0	N/A	N/A	N/A	N/A	N/A
1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	Office	10%	10%	0.1	7.7	6.9	1.3	8	111	21	0.01	52	3.54	4.88	1.33
1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	Office	22%	22%	0.3	7.7	6.0	1.1	8	237	44	0.02	82	2.25	3.10	2.09
1023	ROB 4L4'T5, 2018-2019	Office	12%	12%	1.0	7.7	6.8	1.3	5	126	23	0.11	572	0.21	0.31	14.50
1024	ROB 4L4' LED Tube, 2018-2019	Office	34%	34%	2.1	7.7	5.0	0.9	14	373	70	0.08	414	0.76	0.91	10.50
1025	LED Troffer (base 4L4'T8), 2018-2019	Office	40%	40%	2.7	7.7	4.6	0.9	14	434	81	0.09	469	0.67	0.81	11.88
1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	Office	5%	3%	0.0	7.7	7.3	1.4	6	8	1	0.00	39	6.42	10.35	0.50
1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	Office	30%	8%	0.6	8.1	5.7	1.4	10	80	4	0.03	545	1.39	2.21	3.46
1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	Office	25%	20%	0.2	7.7	5.8	1.1	15	81	12	0.01	68	5.80	7.24	1.38
1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Office	0%	0%	0.0	7.7	7.7	1.4	18	0	0	N/A	N/A	N/A	N/A	N/A
1031	ROB 4L4' High Performance T8 (86 W), 2020	Office	10%	10%	0.1	7.7	6.9	1.3	8	111	21	0.01	52	3.54	4.88	1.33
1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	22%	22%	0.3	7.7	6.0	1.1	8	237	44	0.02	82	2.25	3.10	2.09
1033	ROB 4L4'T5, 2020	Office	12%	12%	1.0	7.7	6.8	1.3	5	126	23	0.11	572	0.21	0.31	14.50
1034	ROB 4L4' LED Tube, 2020	Office	34%	34%	2.0	7.7	5.0	0.9	14	373	70	0.07	391	0.81	0.97	9.90
1035	LED Troffer (base 4L4'T8), 2020	Office	40%	40%	2.6	7.7	4.6	0.9	14	434	81	0.08	444	0.71	0.85	11.24
1036	Lighting Control Tuneup (base 4L4'T8), 2020	Office	5%	3%	0.0	7.7	7.3	1.4	6	8	1	0.00	39	6.42	10.35	0.50
1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Office	30%	8%	0.6	8.1	5.7	1.4	10	80	4	0.03	545	1.39	2.21	3.46
1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	25%	20%	0.2	7.7	5.8	1.1	15	81	12	0.01	68	5.80	7.24	1.38
1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	Office	0%	0%	0.0	4.5	4.5	0.8	18	0	0	N/A	N/A	N/A	N/A	N/A
1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	Office	10%	10%	0.1	4.5	4.0	0.7	8	2	0	0.01	67	2.79	3.84	1.69
1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	Office	22%	22%	0.2	4.5	3.5	0.7	8	4	1	0.02	104	1.78	2.45	2.64
1103	ROB 2L4'T5, 2014-2015	Office	12%	12%	0.6	4.5	4.0	0.7	5	2	0	0.12	656	0.18	0.27	16.63
1104	ROB 2L4' LED Tube, 2014-2015	Office	34%	34%	1.7	4.5	2.9	0.5	14	2	0	0.11	568	0.55	0.67	14.40
1105	LED Troffer (base 2L4'T8), 2014-2015	Office	40%	40%	2.4	4.5	2.7	0.5	14	7	1	0.13	707	0.45	0.54	17.91
1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	Office	5%	3%	0.0	4.5	4.2	0.8	6	0	0	0.01	68	3.73	6.01	0.86
1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	Office	30%	8%	0.6	4.7	3.3	0.8	10	1	0	0.04	966	0.79	1.25	6.12
1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	Office	25%	20%	0.2	4.5	3.4	0.7	15	1	0	0.02	117	3.37	4.21	2.38
1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	Office	0%	0%	0.0	4.5	4.5	0.8	18	0	0	N/A	N/A	N/A	N/A	N/A
1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	Office	10%	10%	0.1	4.5	4.0	0.7	8	2	0	0.01	67	2.79	3.84	1.69
1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	Office	22%	22%	0.2	4.5	3.5	0.7	8	4	1	0.02	104	1.78	2.45	2.64
1113	ROB 2L4'T5, 2016-2017	Office	12%	12%	0.6	4.5	4.0	0.7	5	2	0	0.12	656	0.18	0.27	16.63
1114	ROB 2L4' LED Tube, 2016-2017	Office	34%	34%	1.2	4.5	2.9	0.5	14	2	0	0.08	404	0.78	0.94	10.23
1115	LED Troffer (base 2L4'T8), 2016-2017	Office	40%	40%	1.8	4.5	2.7	0.5	14	7	1	0.10	515	0.61	0.74	13.06
1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	Office	5%	3%	0.0	4.5	4.2	0.8	6	0	0	0.01	68	3.73	6.01	0.86
1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	Office	30%	8%	0.6	4.7	3.3	0.8	10	1	0	0.04	966	0.79	1.25	6.12
1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	Office	25%	20%	0.2	4.5	3.4	0.7	15	1	0	0.02	117	3.37	4.21	2.38
1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	Office	0%	0%	0.0	4.5	4.5	0.8	18	0	0	N/A	N/A	N/A	N/A	N/A
1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	Office	10%	10%	0.1	4.5	4.0	0.7	8	2	0	0.01	67	2.79	3.84	1.69
1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	Office	22%	22%	0.2	4.5	3.5	0.7	8	4	1	0.02	104	1.78	2.45	2.64
1123	ROB 2L4'T5, 2018-2019	Office	12%	12%	0.6	4.5	4.0	0.7	5	2	0	0.12	656	0.18	0.27	16.63
1124	ROB 2L4' LED Tube, 2018-2019	Office	34%	34%	1.1	4.5	2.9	0.5	14	2	0	0.07	363	0.87	1.04	9.20
1125	LED Troffer (base 2L4'T8), 2018-2019	Office	40%	40%	1.6	4.5	2.7	0.5	14	7	1	0.09	469	0.67	0.81	11.89
1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	Office	5%	3%	0.0	4.5	4.2	0.8	6	0	0	0.01	68	3.73	6.01	0.86
1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	Office	30%	8%	0.6	4.7	3.3	0.8	10	1	0	0.04	966	0.79	1.25	6.12
1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	Office	25%	20%	0.2	4.5	3.4	0.7	15	1	0	0.02	117	3.37	4.21	2.38
1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Office	0%	0%	0.0	4.5	4.5	0.8	18	0	0	N/A	N/A	N/A	N/A	N/A
1131	ROB 2L4' High Performance T8 (86 W), 2020	Office	10%	10%	0.1	4.5	4.0	0.7	8	2	0	0.01	67	2.79	3.84	1.69
1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Office	22%	22%	0.2	4.5	3.5	0.7	8	4	1	0.02	104	1.78	2.45	2.64
1133	ROB 2L4'T5, 2020	Office	12%	12%	0.6	4.5	4.0	0.7	5	2	0	0.12	656	0.18	0.27	16.63
1134	ROB 2L4' LED Tube, 2020	Office	34%	34%	1.0	4.5	2.9	0.5	14	2	0	0.06	342	0.92	1.11	8.66
1135	LED Troffer (base 2L4'T8), 2020	Office	40%	40%	1.5	4.5	2.7	0.5	14	7	1	0.08	445	0.71	0.85	11.29
1136	Lighting Control Tuneup (base 2L4'T8), 2020	Office	5%	3%	0.0	4.5	4.2	0.8	6	0	0	0.01	68	3.73	6.01	0.86

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Office	30%	8%	0.6	4.7	3.3	0.8	10	1	0	0.04	966	0.79	1.25	6.12
1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Office	25%	20%	0.2	4.5	3.4	0.7	15	1	0	0.02	117	3.37	4.21	2.38
1200	Base Other Fluorescent Fixture	Office	0%	0%	0.0	3.6	3.6	0.7	18	0	0	N/A	N/A	N/A	N/A	N/A
1201	ROB High Performance T8 (base other fluorescent)	Office	10%	10%	0.2	3.6	3.2	0.6	8	4	1	0.04	213	0.87	1.20	5.40
1202	ROB Low Watt High Performance T8 (base other fluorescent)	Office	22%	22%	0.5	3.6	2.8	0.5	8	9	2	0.06	334	0.56	0.77	8.46
1203	Lighting Control Tuneup (base other fluorescent fixture)	Office	30%	15%	0.0	3.6	2.5	0.6	6	2	0	0.00	14	18.04	29.10	0.18
1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	52%	13%	1.0	3.9	1.9	0.6	10	5	0	0.05	1,074	0.71	1.12	6.81
1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Office	25%	20%	0.2	3.6	2.7	0.5	15	3	0	0.02	146	2.72	3.40	2.95
1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	Office	0%	0%	0.5	22.2	22.2	4.1	1	0	0	N/A	N/A	N/A	N/A	N/A
1301	CFLs (base incandescent flood) 2014-2015	Office	77%	77%	0.0	22.2	5.1	1.0	3	255	48	0.00	0	3,504.30	5,296.82	0.00
1302	LEDs (base incandescent flood) 2014-2015	Office	83%	83%	0.2	31.5	5.4	1.0	7	280	52	0.00	4	36.38	51.32	0.11
1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	Office	0%	0%	0.5	22.2	22.2	4.1	1	0	0	N/A	N/A	N/A	N/A	N/A
1311	CFLs (base incandescent flood) 2016-2017	Office	77%	77%	0.0	22.2	5.1	1.0	3	255	48	0.00	0	3,504.30	5,296.82	0.00
1312	LEDs (base incandescent flood) 2016-2017	Office	83%	83%	0.0	31.5	5.4	1.0	7	280	52	0.00	0	11,876.08	16,750.97	0.00
1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	Office	0%	0%	0.5	22.2	22.2	4.1	1	0	0	N/A	N/A	N/A	N/A	N/A
1321	CFLs (base incandescent flood) 2018-2019	Office	77%	77%	0.0	22.2	5.1	1.0	3	255	48	0.00	0	3,504.30	5,296.82	0.00
1322	LEDs (base incandescent flood) 2018-2019	Office	83%	83%	0.0	31.5	5.4	1.0	7	280	52	0.00	0	11,876.08	16,750.97	0.00
1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Office	0%	0%	0.5	22.2	22.2	4.1	1	0	0	N/A	N/A	N/A	N/A	N/A
1331	CFLs (base incandescent flood) 2020	Office	77%	77%	0.0	22.2	5.1	1.0	3	255	48	0.00	0	3,504.30	5,296.82	0.00
1332	LEDs (base incandescent flood) 2020	Office	83%	83%	0.0	31.5	5.4	1.0	7	280	52	0.00	0	11,876.08	16,750.97	0.00
1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	Office	0%	0%	0.5	16.0	16.0	3.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1401	CFLs (base incandescent A-line 72W) 2014-2015	Office	74%	74%	0.0	16.0	4.2	0.8	3	88	16	0.00	0	2,411.69	3,645.31	0.00
1402	LEDs (base incandescent A-line 72W) 2014-2015	Office	82%	82%	0.2	22.5	4.2	0.8	7	98	18	0.00	6	25.53	36.01	0.16
1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	Office	0%	0%	0.5	16.0	16.0	3.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1411	CFLs (base incandescent A-line 72W) 2016-2017	Office	74%	74%	0.0	16.0	4.2	0.8	3	88	16	0.00	0	2,411.69	3,645.31	0.00
1412	LEDs (base incandescent A-line 72W) 2016-2017	Office	82%	82%	0.0	22.5	4.2	0.8	7	98	18	0.00	0	8,333.39	11,754.08	0.00
1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	Office	0%	0%	0.5	16.0	16.0	3.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1421	CFLs (base incandescent A-line 72W) 2018-2019	Office	74%	74%	0.0	16.0	4.2	0.8	3	88	16	0.00	0	2,411.69	3,645.31	0.00
1422	LEDs (base incandescent A-line 72W) 2018-2019	Office	82%	82%	0.0	22.5	4.2	0.8	7	98	18	0.00	0	8,333.39	11,754.08	0.00
1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Office	0%	0%	0.5	16.0	16.0	3.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1431	CFLs (base incandescent A-line 72W) 2020	Office	74%	74%	0.0	16.0	4.2	0.8	3	88	16	0.00	0	2,411.69	3,645.31	0.00
1432	LEDs (base incandescent A-line 72W) 2020	Office	82%	82%	0.0	22.5	4.2	0.8	7	98	18	0.00	0	8,333.39	11,754.08	0.00
1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	Office	0%	0%	0.5	11.8	11.8	2.2	1	0	0	N/A	N/A	N/A	N/A	N/A
1501	CFLs (base incandescent A-line 53W) 2014-2015	Office	66%	66%	0.0	11.8	4.0	0.7	3	58	11	0.00	0	1,591.95	2,406.27	0.00
1502	LEDs (base incandescent A-line 53W) 2014-2015	Office	75%	75%	0.2	16.0	4.1	0.8	7	64	12	0.00	10	16.60	23.41	0.25
1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	Office	0%	0%	0.5	11.8	11.8	2.2	1	0	0	N/A	N/A	N/A	N/A	N/A
1511	CFLs (base incandescent A-line 53W) 2016-2017	Office	66%	66%	0.0	11.8	4.0	0.7	3	58	11	0.00	0	1,591.95	2,406.27	0.00
1512	LEDs (base incandescent A-line 53W) 2016-2017	Office	75%	75%	0.0	16.0	4.1	0.8	7	64	12	0.00	0	5,418.15	7,642.19	0.00
1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	Office	0%	0%	0.5	11.8	11.8	2.2	1	0	0	N/A	N/A	N/A	N/A	N/A
1521	CFLs (base incandescent A-line 53W) 2018-2019	Office	66%	66%	0.0	11.8	4.0	0.7	3	58	11	0.00	0	1,591.95	2,406.27	0.00
1522	LEDs (base incandescent A-line 53W) 2018-2019	Office	75%	75%	0.0	16.0	4.1	0.8	7	64	12	0.00	0	5,418.15	7,642.19	0.00
1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Office	0%	0%	0.5	11.8	11.8	2.2	1	0	0	N/A	N/A	N/A	N/A	N/A
1531	CFLs (base incandescent A-line 53W) 2020	Office	66%	66%	0.0	11.8	4.0	0.7	3	58	11	0.00	0	1,591.95	2,406.27	0.00
1532	LEDs (base incandescent A-line 53W) 2020	Office	75%	75%	0.0	16.0	4.1	0.8	7	64	12	0.00	0	5,418.15	7,642.19	0.00
1600	Base CFL 18W to screw-in replacement 2014-2015	Office	0%	0%	0.2	1.3	1.3	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1601	LED screw-in replacement (base CFL 18W) 2014-2015	Office	28%	28%	0.4	1.3	1.0	0.2	7	7	1	0.11	569	0.29	0.41	14.41
1610	Base CFL 18W to screw-in replacement 2016-2017	Office	0%	0%	0.2	1.3	1.3	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1611	LED screw-in replacement (base CFL 18W) 2016-2017	Office	28%	28%	0.2	1.3	1.0	0.2	7	7	1	0.06	296	0.55	0.78	7.50
1620	Base CFL 18W to screw-in replacement 2018-2019	Office	0%	0%	0.2	1.3	1.3	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1621	LED screw-in replacement (base CFL 18W) 2018-2019	Office	28%	28%	0.2	1.3	1.0	0.2	7	7	1	0.04	236	0.69	0.98	5.99
1630	Base CFL 18W to screw-in replacement 2020	Office	0%	0%	0.2	1.3	1.3	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1631	LED screw-in replacement (base CFL 18W) 2020	Office	28%	28%	0.1	1.3	1.0	0.2	7	7	1	0.04	205	0.80	1.12	5.20
1700	Base CFL 23W to screw-in replacement 2014-2015	Office	0%	0%	0.2	1.7	1.7	0.3	3	0	0	N/A	N/A	N/A	N/A	N/A
1701	LED screw-in replacement (base CFL 23W) 2014-2015	Office	26%	26%	0.4	1.7	1.2	0.2	7	8	1	0.09	474	0.34	0.49	12.02
1710	Base CFL 23W to screw-in replacement 2016-2017	Office	0%	0%	0.2	1.7	1.7	0.3	3	0	0	N/A	N/A	N/A	N/A	N/A
1711	LED screw-in replacement (base CFL 23W) 2016-2017	Office	26%	26%	0.2	1.7	1.2	0.2	7	8	1	0.05	247	0.66	0.93	6.26
1720	Base CFL 23W to screw-in replacement 2018-2019	Office	0%	0%	0.2	1.7	1.7	0.3	3	0	0	N/A	N/A	N/A	N/A	N/A
1721	LED screw-in replacement (base CFL 23W) 2018-2019	Office	26%	26%	0.2	1.7	1.2	0.2	7	8	1	0.04	197	0.83	1.17	4.99
1730	Base CFL 23W to screw-in replacement 2020	Office	0%	0%	0.2	1.7	1.7	0.3	3	0	0	N/A	N/A	N/A	N/A	N/A
1731	LED screw-in replacement (base CFL 23W) 2020	Office	26%	26%	0.1	1.7	1.2	0.2	7	8	1	0.03	171	0.95	1.35	4.34
1800	BaseMetal Halide, 465W	Office	0%	0%	0.0	0.0	0.0	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1850	Base CFL Exit Sign	Office	0%	0%	0.0	0.1	0.1	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1851	LED Exit Sign	Office	69%	69%	0.0	0.1	0.0	0.0	7	6	1	0.01	66	2.49	3.51	1.66
1900	Base Outdoor High Pressure Sodium 250W Lamp	Office	0%	0%	0.0	0.9	0.9	0.0	15	0	0	N/A	N/A	N/A	N/A	N/A
1901	Outdoor Lighting Controls (Photocell/Timeclock)	Office	22%	73%	0.1	1.0	0.8	0.0	18	11	0	0.04	853	1.70	2.11	5.28
1902	LED Outdoor Area Lighting	Office	52%	52%	0.3	0.9	0.4	0.0	18	46	1	0.07	5,068	0.82	1.17	9.49
1903	Bi-Level LED Outdoor Lighting	Office	70%	63%	1.1	0.9	0.3	0.0	18	49	1	0.17	13,482	0.34	0.49	22.72
2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Office	0%	0%	0.7	4.7	4.7	3.3	20	0	0	N/A	N/A	N/A	N/A	N/A
2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	12%	12%	0.2	4.8	4.3	3.0	20	12	8	0.03	39	4.37	3.19	3.69
2002	Window Film (Standard) - Chiller	Office	9%	9%	0.2	5.1	4.7	3.3	10	0	0	0.05	67	1.30	1.20	6.39

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
2003	EMS - Chiller	Office	10%	3%	0.2	4.8	4.3	3.3	15	10	2	0.04	209	1.61	2.02	4.97
2004	Cool Roof - Chiller	Office	2%	2%	0.1	4.7	4.6	3.2	10	0	0	0.10	136	0.64	0.59	12.95
2005	Chiller Tune Up/Diagnostics	Office	8%	4%	0.1	5.0	4.6	3.4	10	0	0	0.01	35	3.85	4.56	1.68
2006	VSD for Chiller Pumps and Towers	Office	10%	5%	0.1	5.0	4.5	3.3	15	1	0	0.02	71	2.83	2.97	3.38
2008	New Economizer - Chiller	Office	27%	7%	0.5	6.0	4.4	3.9	10	9	2	0.03	177	1.31	1.82	4.21
2010	Ceiling/roof Insulation - Chiller	Office	12%	12%	0.0	5.2	4.6	3.2	20	1	0	0.01	9	19.11	13.96	0.84
2011	Duct/Pipe Insulation - Chiller	Office	2%	2%	0.8	4.7	4.6	3.2	10	0	0	0.79	1,135	0.08	0.07	108.08
2012	Duct Testing/Sealing - Chiller	Office	19%	19%	1.0	4.7	3.8	2.6	18	26	18	0.11	160	0.97	0.73	15.25
2013	High Efficiency Chiller Motors	Office	3%	3%	0.1	4.8	4.6	3.2	20	0	0	0.04	54	3.12	2.28	5.16
2100	Base DX Packaged System, EER=10.3, 10 tons	Office	0%	0%	2.0	4.7	4.7	3.3	15	0	0	N/A	N/A	N/A	N/A	N/A
2101	DX Packaged System, EER=10.9, 10 tons	Office	6%	6%	0.2	4.7	4.4	3.1	15	34	24	0.06	90	1.48	1.18	8.53
2102	DX Packaged System, EER=13.4, 10 tons	Office	23%	23%	0.2	4.7	3.6	2.5	15	142	99	0.02	29	4.57	3.62	2.77
2103	Geothermal Heat Pump, EER=13, 10 tons - DX	Office	21%	21%	2.4	4.7	3.7	2.6	15	6	4	0.24	345	0.38	0.30	32.89
2105	DX Tune Up/ Advanced Diagnostics	Office	5%	3%	0.1	4.9	4.6	3.3	10	1	0	0.04	116	1.17	1.38	5.55
2106	Prog. Thermostat - DX	Office	5%	1%	0.1	4.8	4.6	3.3	8	13	2	0.03	196	0.95	1.39	4.66
2107	Cool Roof - DX	Office	2%	2%	0.1	4.7	4.6	3.2	10	5	4	0.10	137	0.64	0.58	13.09
2108	Optimize Controls - DX	Office	5%	1%	0.0	4.8	4.6	3.3	5	11	2	0.02	93	1.28	2.00	2.21
2109	Economizer - DX	Office	28%	7%	0.5	5.0	3.6	3.3	10	68	12	0.04	202	1.15	1.59	4.80
2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Office	3%	1%	0.1	4.7	4.6	3.3	10	0	0	0.08	440	0.53	0.73	10.47
2111	Economizer Repair - DX	Office	28%	42%	0.2	5.1	3.7	2.1	5	28	29	0.02	16	2.15	2.00	2.22
2112	Duct Testing/Sealing - DX	Office	19%	19%	1.0	4.7	3.8	2.6	18	38	26	0.11	160	0.97	0.73	15.25
2114	Duct/Pipe Insulation - DX	Office	2%	2%	0.8	4.7	4.6	3.2	10	4	3	0.80	1,140	0.08	0.07	108.57
2115	Window Film (Standard) - DX	Office	9%	9%	0.2	5.0	4.5	3.2	10	13	9	0.05	69	1.27	1.17	6.57
2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Office	0%	0%	0.0	4.7	4.7	3.3	15	0	0	N/A	N/A	N/A	N/A	N/A
2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	13%	13%	0.1	4.7	4.1	2.9	15	52	36	0.01	21	6.41	5.07	1.98
2300	Base PTAC, EER=8.3, 1 ton	Office	0%	0%	0.0	4.7	4.7	3.3	15	0	0	N/A	N/A	N/A	N/A	N/A
3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Office	0%	0%	0.0	3.4	3.4	1.0	20	0	0	N/A	N/A	N/A	N/A	N/A
3001	Fan Motor, 5hp, 1800rpm, 89.5%	Office	2%	2%	0.0	3.5	3.4	1.0	20	5	2	0.02	64	4.49	4.49	2.62
3002	Variable Speed Drive Control, 5 HP	Office	30%	8%	0.1	3.7	2.6	1.0	15	66	5	0.01	155	4.58	6.31	1.59
3003	Demand Controlled Ventilation	Office	15%	29%	2.4	3.8	3.2	0.8	15	18	10	0.41	712	0.21	0.18	55.60
3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Office	0%	0%	0.0	3.4	3.4	1.0	20	0	0	N/A	N/A	N/A	N/A	N/A
3101	Fan Motor, 15hp, 1800rpm, 92.4%	Office	2%	2%	0.0	3.5	3.4	1.0	20	0	0	0.01	29	9.89	9.90	1.19
3102	Variable Speed Drive Control, 15 HP	Office	30%	8%	0.0	3.7	2.6	1.0	15	11	1	0.00	43	16.57	22.83	0.44
3103	Air Handler Optimization, 15 HP	Office	10%	3%	0.0	3.5	3.1	1.0	8	6	0	0.01	113	3.59	5.61	1.16
3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Office	14%	13%	0.1	3.7	3.2	1.0	15	4	1	0.02	55	4.40	4.88	2.05
3105	Energy Recovery Ventilation (ERV)	Office	7%	13%	0.4	3.5	3.3	0.9	20	1	1	0.15	270	0.71	0.56	21.09
3107	Demand Controlled Ventilation	Office	15%	29%	2.4	3.8	3.2	0.8	15	3	2	0.41	712	0.21	0.18	55.60
3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Office	0%	0%	0.0	3.4	3.4	1.0	20	0	0	N/A	N/A	N/A	N/A	N/A
3201	Fan Motor, 40hp, 1800rpm, 94.1%	Office	1%	1%	0.0	3.5	3.4	1.0	20	0	0	0.07	232	1.23	1.23	9.54
3202	Variable Speed Drive Control, 40 HP	Office	30%	8%	0.2	3.7	2.6	1.0	15	7	1	0.02	215	3.29	4.53	2.21
3203	Air Handler Optimization, 40 HP	Office	10%	3%	0.0	3.5	3.1	1.0	8	3	0	0.01	113	3.59	5.61	1.16
3204	Demand Controlled Ventilation	Office	15%	29%	2.4	3.8	3.2	0.8	15	2	1	0.41	712	0.21	0.18	55.60
4000	Base Built-Up Refrigeration System	Office	0%	0%	0.0	0.0	0.0	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
4100	Base Self-Contained Refrigeration	Office	0%	0%	0.0	0.6	0.6	0.1	10	0	0	N/A	N/A	N/A	N/A	N/A
4101	Strip curtains for walk-ins (self-contained)	Office	0%	0%	0.1	0.6	0.6	0.1	4	0	0	2.09	14,900	0.01	0.01	284.51
4103	Night covers for display cases (self-contained)	Office	9%	9%	0.0	0.6	0.6	0.1	5	1	0	0.00	3	52.62	81.94	0.05
4104	Freezer-Cooler Replacement Gaskets (self-contained)	Office	4%	4%	0.0	0.6	0.6	0.1	4	2	0	0.00	5	25.09	39.91	0.09
4105	Bi-level LED Case Lighting (self-contained units) 2014	Office	0%	0%	0.0	0.6	0.6	0.1	8	0	0	0.17	1,216	0.19	0.28	23.22
4106	Energy-Star Refrigerator, solid door	Office	3%	3%	0.0	0.6	0.6	0.1	10	0	0	0.00	33	8.80	12.26	0.62
4107	Energy-Star Freezer, solid door	Office	1%	1%	0.0	0.6	0.6	0.1	9	0	0	0.00	24	10.89	15.60	0.45
4108	Energy-Star Refrigerator, glass door	Office	7%	7%	0.0	0.6	0.6	0.1	10	1	0	0.00	31	9.17	12.78	0.60
4109	Energy-Star Freezer, glass door	Office	2%	2%	0.0	0.6	0.6	0.1	9	0	0	0.00	10	26.67	38.21	0.19
4110	Energy Star Ice Machines	Office	2%	2%	0.0	0.6	0.6	0.1	10	0	0	0.01	88	3.27	4.55	1.68
4112	Reach-in unit occupancy sensors	Office	0%	0%	0.0	0.6	0.6	0.1	10	0	0	0.17	1,248	0.23	0.32	23.83
5000	Base Desktop PC	Office	0%	0%	0.0	0.2	0.2	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5001	PC Network Power Management Enabling	Office	68%	34%	0.0	0.2	0.1	0.0	4	18	1	0.00	49	4.64	7.94	0.46
5002	Energy Star or Better PC	Office	33%	33%	0.0	0.2	0.1	0.0	4	9	1	0.00	29	4.27	6.72	0.54
5100	Base Laptop PC	Office	0%	0%	0.0	0.0	0.0	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5101	Laptop Network Power Management Enabling	Office	7%	7%	0.0	0.0	0.0	0.0	4	0	0	0.26	1,899	0.06	0.10	35.87
5102	Energy Star or Better Laptop	Office	30%	30%	0.0	0.0	0.0	0.0	4	1	0	0.00	20	6.28	9.89	0.37
5200	Base Monitor, CRT	Office	0%	0%	0.0	0.1	0.1	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5201	Energy Star or Better Monitor - CRT	Office	56%	56%	0.0	0.1	0.0	0.0	4	4	1	0.00	2	65.45	103.02	0.04
5202	Monitor Power Management Enabling - CRT	Office	53%	27%	0.0	0.1	0.1	0.0	4	1	0	0.00	23	9.64	16.48	0.22
5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Office	15%	15%	0.0	0.1	0.1	0.0	4	1	0	0.02	132	0.93	1.47	2.49
5300	Base Monitor, LCD	Office	0%	0%	0.0	0.0	0.0	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5301	Energy Star or Better Monitor - LCD	Office	21%	21%	0.0	0.0	0.0	0.0	4	1	0	0.00	16	7.77	12.23	0.30
5302	Monitor Power Management Enabling - LCD	Office	19%	10%	0.0	0.0	0.0	0.0	4	1	0	0.02	261	0.86	1.48	2.47
5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Office	15%	4%	0.0	0.0	0.0	0.0	4	1	0	0.05	1,352	0.32	0.57	6.39
5400	Base Copier	Office	0%	0%	0.0	0.1	0.1	0.0	6	0	0	N/A	N/A	N/A	N/A	N/A
5401	Energy Star or Better Copier	Office	21%	21%	0.0	0.1	0.1	0.0	6	1	0	0.00	5	38.91	58.80	0.09

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
5402	Copier Power Management Enabling	Office	19%	10%	0.0	0.1	0.1	0.0	6	1	0	0.03	427	0.78	1.28	4.04
5500	Base Multifunction	Office	0%	0%	0.0	0.0	0.0	0.0	5	0	0	N/A	N/A	N/A	N/A	N/A
5501	Multifunction Power Management Enabling	Office	49%	25%	0.0	0.0	0.0	0.0	5	0	0	0.06	879	0.32	0.53	8.31
5502	ENERGY STAR Multi-Function Printer	Office	40%	40%	0.0	0.0	0.0	0.0	5	1	0	0.00	14	10.60	16.34	0.27
5600	Base Printer	Office	0%	0%	0.0	0.1	0.1	0.0	5	0	0	N/A	N/A	N/A	N/A	N/A
5601	Printer Power Management Enabling	Office	49%	25%	0.0	0.1	0.0	0.0	5	3	0	0.01	166	1.69	2.81	1.57
5602	ENERGY STAR Printer	Office	40%	40%	0.0	0.1	0.0	0.0	5	5	1	0.00	3	48.72	75.10	0.06
5700	Base Data Center/Server Room	Office	0%	0%	0.0	157.2	157.2	21.8	10	0	0	N/A	N/A	N/A	N/A	N/A
5701	Data Center Improved Operations	Office	20%	20%	0.1	163.8	131.0	18.2	10	7	1	0.00	2	136.37	188.43	0.04
5702	Data Center Best Practices	Office	45%	45%	0.5	164.6	90.5	12.6	10	9	1	0.00	5	61.69	85.24	0.09
5703	Data Center State of the Art practices	Office	56%	56%	1.0	157.2	69.2	9.6	10	4	1	0.00	8	36.66	50.65	0.15
6000	Base Water Heating	Office	0%	0%	0.0	0.4	0.4	0.1	15	0	0	N/A	N/A	N/A	N/A	N/A
6001	Demand controlled circulating systems	Office	5%	5%	0.0	0.4	0.4	0.1	15	2	0	0.11	789	0.55	0.69	14.52
6002	High Efficiency Water Heater (electric)	Office	2%	2%	0.0	0.4	0.4	0.1	15	2	0	0.02	170	2.53	3.20	3.13
6003	Hot Water Pipe Insulation	Office	2%	2%	0.0	0.4	0.4	0.1	15	1	0	0.04	279	1.54	1.95	5.14
6004	Tankless Water Heater	Office	10%	10%	0.0	0.4	0.4	0.0	20	6	1	0.04	293	1.84	2.18	5.39
6005	Heat Pump Water Heater (air source)	Office	20%	20%	0.0	0.4	0.3	0.0	10	13	2	0.05	391	0.77	1.06	7.20
6006	Heat Recovery Unit	Office	65%	65%	0.1	0.4	0.1	0.0	10	5	1	0.03	219	1.37	1.90	4.03
6007	Heat Trap	Office	9%	9%	0.0	0.4	0.4	0.1	10	4	1	0.01	67	4.49	6.24	1.23
6008	Solar Water Heater	Office	70%	70%	0.1	0.4	0.1	0.0	20	44	6	0.04	316	1.70	2.02	5.82
7000	Base Refrigerated Vending Machines	Office	0%	0%	0.0	0.1	0.1	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
7001	Vending Misers (Refrigerated units)	Office	46%	23%	0.0	0.1	0.0	0.0	5	2	0	0.01	134	2.01	3.34	1.32
7002	Vending Misers (Refrigerated glass-front units)	Office	30%	15%	0.0	0.1	0.0	0.0	5	1	0	0.02	209	1.29	2.14	2.07
7100	Base Non-Refrigerated Vending Machines	Office	0%	0%	0.0	0.0	0.0	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
7101	Vending Misers (Non-Refrigerated)	Office	46%	23%	0.0	0.0	0.0	0.0	5	0	0	0.16	2,240	0.12	0.20	22.20
7200	Base Oven	Office	0%	0%	0.0	1.2	1.2	0.2	10	0	0	N/A	N/A	N/A	N/A	N/A
7300	Base Fryer	Office	0%	0%	0.0	0.9	0.9	0.1	10	0	0	N/A	N/A	N/A	N/A	N/A
7400	Base Steamer	Office	0%	0%	0.0	2.6	2.6	0.4	10	0	0	N/A	N/A	N/A	N/A	N/A
8000	Base Heating, Heat Pump (7.7 HSPF)	Office	0%	0%	0.0	0.8	0.8	0.0	15	0	0	N/A	N/A	N/A	N/A	N/A
8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	6%	6%	0.0	0.8	0.7	0.0	15	3	0	0.01	N/A	3.48	5.08	1.97
8100	Base Heating, Other Electric	Office	0%	0%	12.0	0.8	0.8	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
9500	Base Miscellaneous	Office	0%	0%	1.3	2.3	2.3	0.3	10	0	0	N/A	N/A	N/A	N/A	N/A
9501	Xmisc	Office	0%	0%	1.3	2.3	2.3	0.3	10	0	0	N/A	N/A	0.00	0.00	N/A
1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	Office	0%	0%	0.0	7.4	7.4	1.4	18	0	0	N/A	N/A	N/A	N/A	N/A
1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	Office	10%	10%	0.1	7.4	6.6	1.2	8	6	1	0.01	55	3.39	4.68	1.38
1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	Office	22%	22%	0.3	7.4	5.8	1.1	8	12	2	0.02	86	2.16	2.98	2.18
1003	ROB 4L4'T5, 2014-2015	Office	12%	12%	1.0	7.4	6.5	1.2	5	7	1	0.11	596	0.20	0.29	15.11
1004	ROB 4L4' LED Tube, 2014-2015	Office	34%	34%	3.4	7.4	4.8	0.9	14	20	4	0.13	698	0.45	0.54	17.70
1005	LED Troffer (base 4L4'T8), 2014-2015	Office	40%	40%	4.3	7.4	4.4	0.8	14	23	4	0.14	767	0.41	0.49	19.44
1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	Office	5%	3%	0.0	7.4	7.0	1.3	6	0	0	0.00	41	6.16	9.94	0.52
1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	Office	30%	8%	0.6	7.4	5.2	1.3	10	5	0	0.03	594	1.28	2.03	3.77
1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	Office	25%	20%	0.2	7.4	5.5	1.1	15	4	1	0.01	71	5.57	6.95	1.44
1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	Office	0%	0%	0.0	7.4	7.4	1.4	18	0	0	N/A	N/A	N/A	N/A	N/A
1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	Office	10%	10%	0.1	7.4	6.6	1.2	8	6	1	0.01	55	3.39	4.68	1.38
1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	Office	22%	22%	0.3	7.4	5.8	1.1	8	12	2	0.02	86	2.16	2.98	2.18
1013	ROB 4L4'T5, 2016-2017	Office	12%	12%	1.0	7.4	6.5	1.2	5	7	1	0.11	596	0.20	0.29	15.11
1014	ROB 4L4' LED Tube, 2016-2017	Office	34%	34%	2.3	7.4	4.8	0.9	14	20	4	0.09	480	0.66	0.79	12.16
1015	LED Troffer (base 4L4'T8), 2016-2017	Office	40%	40%	3.0	7.4	4.4	0.8	14	23	4	0.10	538	0.59	0.70	13.65
1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	Office	5%	3%	0.0	7.4	7.0	1.3	6	0	0	0.00	41	6.16	9.94	0.52
1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	Office	30%	8%	0.6	7.4	5.2	1.3	10	5	0	0.03	594	1.28	2.03	3.77
1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	Office	25%	20%	0.2	7.4	5.5	1.1	15	4	1	0.01	71	5.57	6.95	1.44
1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	Office	0%	0%	0.0	7.4	7.4	1.4	18	0	0	N/A	N/A	N/A	N/A	N/A
1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	Office	10%	10%	0.1	7.4	6.6	1.2	8	6	1	0.01	55	3.39	4.68	1.38
1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	Office	22%	22%	0.3	7.4	5.8	1.1	8	12	2	0.02	86	2.16	2.98	2.18
1023	ROB 4L4'T5, 2018-2019	Office	12%	12%	1.0	7.4	6.5	1.2	5	7	1	0.11	596	0.20	0.29	15.11
1024	ROB 4L4' LED Tube, 2018-2019	Office	34%	34%	2.1	7.4	4.8	0.9	14	20	4	0.08	432	0.73	0.88	10.94
1025	LED Troffer (base 4L4'T8), 2018-2019	Office	40%	40%	2.7	7.4	4.4	0.8	14	23	4	0.09	488	0.65	0.78	12.37
1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	Office	5%	3%	0.0	7.4	7.0	1.3	6	0	0	0.00	41	6.16	9.94	0.52
1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	Office	30%	8%	0.6	7.4	5.2	1.3	10	5	0	0.03	594	1.28	2.03	3.77
1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	Office	25%	20%	0.2	7.4	5.5	1.1	15	4	1	0.01	71	5.57	6.95	1.44
1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Office	0%	0%	0.0	7.4	7.4	1.4	18	0	0	N/A	N/A	N/A	N/A	N/A
1031	ROB 4L4' High Performance T8 (86 W), 2020	Office	10%	10%	0.1	7.4	6.6	1.2	8	6	1	0.01	55	3.39	4.68	1.38
1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	22%	22%	0.3	7.4	5.8	1.1	8	12	2	0.02	86	2.16	2.98	2.18
1033	ROB 4L4'T5, 2020	Office	12%	12%	1.0	7.4	6.5	1.2	5	7	1	0.11	596	0.20	0.29	15.11
1034	ROB 4L4' LED Tube, 2020	Office	34%	34%	2.0	7.4	4.8	0.9	14	20	4	0.08	407	0.77	0.93	10.31
1035	LED Troffer (base 4L4'T8), 2020	Office	40%	40%	2.6	7.4	4.4	0.8	14	23	4	0.09	462	0.68	0.82	11.71
1036	Lighting Control Tuneup (base 4L4'T8), 2020	Office	5%	3%	0.0	7.4	7.0	1.3	6	0	0	0.00	41	6.16	9.94	0.52
1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Office	30%	8%	0.6	7.4	5.2	1.3	10	5	0	0.03	594	1.28	2.03	3.77
1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	25%	20%	0.2	7.4	5.5	1.1	15	4	1	0.01	71	5.57	6.95	1.44
1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	Office	0%	0%	0.0	4.3	4.3	0.8	18	0	0	N/A	N/A	N/A	N/A	N/A

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	Office	10%	10%	0.1	4.3	3.8	0.7	8	0	0	0.01	69	2.68	3.69	1.76
1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	Office	22%	22%	0.2	4.3	3.4	0.6	8	0	0	0.02	109	1.71	2.35	2.75
1103	ROB 2L4'T5, 2014-2015	Office	12%	12%	0.6	4.3	3.8	0.7	5	0	0	0.13	683	0.17	0.26	17.32
1104	ROB 2L4' LED Tube, 2014-2015	Office	34%	34%	1.7	4.3	2.8	0.5	14	0	0	0.11	592	0.53	0.64	15.00
1105	LED Troffer (base 2L4'T8), 2014-2015	Office	40%	40%	2.4	4.3	2.6	0.5	14	0	0	0.14	736	0.43	0.52	18.66
1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	Office	5%	3%	0.0	4.3	4.1	0.8	6	0	0	0.01	70	3.58	5.77	0.89
1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	Office	30%	8%	0.6	4.3	3.0	0.7	10	0	0	0.05	1,053	0.72	1.15	6.68
1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	Office	25%	20%	0.2	4.3	3.2	0.6	15	0	0	0.02	122	3.24	4.04	2.48
1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	Office	0%	0%	0.0	4.3	4.3	0.8	18	0	0	N/A	N/A	N/A	N/A	N/A
1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	Office	10%	10%	0.1	4.3	3.8	0.7	8	0	0	0.01	69	2.68	3.69	1.76
1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	Office	22%	22%	0.2	4.3	3.4	0.6	8	0	0	0.02	109	1.71	2.35	2.75
1113	ROB 2L4'T5, 2016-2017	Office	12%	12%	0.6	4.3	3.8	0.7	5	0	0	0.13	683	0.17	0.26	17.32
1114	ROB 2L4' LED Tube, 2016-2017	Office	34%	34%	1.2	4.3	2.8	0.5	14	0	0	0.08	421	0.75	0.90	10.66
1115	LED Troffer (base 2L4'T8), 2016-2017	Office	40%	40%	1.8	4.3	2.6	0.5	14	0	0	0.10	537	0.59	0.71	13.61
1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	Office	5%	3%	0.0	4.3	4.1	0.8	6	0	0	0.01	70	3.58	5.77	0.89
1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	Office	30%	8%	0.6	4.3	3.0	0.7	10	0	0	0.05	1,053	0.72	1.15	6.68
1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	Office	25%	20%	0.2	4.3	3.2	0.6	15	0	0	0.02	122	3.24	4.04	2.48
1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	Office	0%	0%	0.0	4.3	4.3	0.8	18	0	0	N/A	N/A	N/A	N/A	N/A
1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	Office	10%	10%	0.1	4.3	3.8	0.7	8	0	0	0.01	69	2.68	3.69	1.76
1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	Office	22%	22%	0.2	4.3	3.4	0.6	8	0	0	0.02	109	1.71	2.35	2.75
1123	ROB 2L4'T5, 2018-2019	Office	12%	12%	0.6	4.3	3.8	0.7	5	0	0	0.13	683	0.17	0.26	17.32
1124	ROB 2L4' LED Tube, 2018-2019	Office	34%	34%	1.1	4.3	2.8	0.5	14	0	0	0.07	378	0.83	1.00	9.58
1125	LED Troffer (base 2L4'T8), 2018-2019	Office	40%	40%	1.6	4.3	2.6	0.5	14	0	0	0.09	489	0.64	0.78	12.39
1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	Office	5%	3%	0.0	4.3	4.1	0.8	6	0	0	0.01	70	3.58	5.77	0.89
1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	Office	30%	8%	0.6	4.3	3.0	0.7	10	0	0	0.05	1,053	0.72	1.15	6.68
1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	Office	25%	20%	0.2	4.3	3.2	0.6	15	0	0	0.02	122	3.24	4.04	2.48
1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Office	0%	0%	0.0	4.3	4.3	0.8	18	0	0	N/A	N/A	N/A	N/A	N/A
1131	ROB 2L4' High Performance T8 (86 W), 2020	Office	10%	10%	0.1	4.3	3.8	0.7	8	0	0	0.01	69	2.68	3.69	1.76
1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Office	22%	22%	0.2	4.3	3.4	0.6	8	0	0	0.02	109	1.71	2.35	2.75
1133	ROB 2L4'T5, 2020	Office	12%	12%	0.6	4.3	3.8	0.7	5	0	0	0.13	683	0.17	0.26	17.32
1134	ROB 2L4' LED Tube, 2020	Office	34%	34%	1.0	4.3	2.8	0.5	14	0	0	0.07	356	0.88	1.06	9.02
1135	LED Troffer (base 2L4'T8), 2020	Office	40%	40%	1.5	4.3	2.6	0.5	14	0	0	0.09	464	0.68	0.82	11.76
1136	Lighting Control Tuneup (base 2L4'T8), 2020	Office	5%	3%	0.0	4.3	4.1	0.8	6	0	0	0.01	70	3.58	5.77	0.89
1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Office	30%	8%	0.6	4.3	3.0	0.7	10	0	0	0.05	1,053	0.72	1.15	6.68
1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Office	25%	20%	0.2	4.3	3.2	0.6	15	0	0	0.02	122	3.24	4.04	2.48
1200	Base Other Fluorescent Fixture	Office	0%	0%	0.0	3.5	3.5	0.6	18	0	0	N/A	N/A	N/A	N/A	N/A
1201	ROB High Performance T8 (base other fluorescent)	Office	10%	10%	0.2	3.5	3.1	0.6	8	0	0	0.04	222	0.84	1.15	5.62
1202	ROB Low Watt High Performance T8 (base other fluorescent)	Office	22%	22%	0.5	3.5	2.7	0.5	8	0	0	0.06	348	0.53	0.74	8.81
1203	Lighting Control Tuneup (base other fluorescent fixture)	Office	30%	15%	0.0	3.5	2.4	0.5	6	0	0	0.00	15	17.31	27.93	0.18
1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	52%	13%	1.0	3.5	1.7	0.6	10	0	0	0.06	1,212	0.63	1.00	7.69
1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Office	25%	20%	0.2	3.5	2.6	0.5	15	0	0	0.02	152	2.61	3.26	3.07
1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	Office	0%	0%	0.5	21.3	21.3	4.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1301	CFLs (base incandescent flood) 2014-2015	Office	77%	77%	0.0	21.3	4.9	0.9	3	10	2	0.00	0	3,364.13	5,084.95	0.00
1302	LEDs (base incandescent flood) 2014-2015	Office	83%	83%	0.2	21.9	3.7	0.7	7	11	2	0.00	6	25.30	35.69	0.16
1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	Office	0%	0%	0.5	21.3	21.3	4.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1311	CFLs (base incandescent flood) 2016-2017	Office	77%	77%	0.0	21.3	4.9	0.9	3	10	2	0.00	0	3,364.13	5,084.95	0.00
1312	LEDs (base incandescent flood) 2016-2017	Office	83%	83%	0.0	21.9	3.7	0.7	7	11	2	0.00	0	8,259.12	11,649.33	0.00
1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	Office	0%	0%	0.5	21.3	21.3	4.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1321	CFLs (base incandescent flood) 2018-2019	Office	77%	77%	0.0	21.3	4.9	0.9	3	10	2	0.00	0	3,364.13	5,084.95	0.00
1322	LEDs (base incandescent flood) 2018-2019	Office	83%	83%	0.0	21.9	3.7	0.7	7	11	2	0.00	0	8,259.12	11,649.33	0.00
1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Office	0%	0%	0.5	21.3	21.3	4.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1331	CFLs (base incandescent flood) 2020	Office	77%	77%	0.0	21.3	4.9	0.9	3	10	2	0.00	0	3,364.13	5,084.95	0.00
1332	LEDs (base incandescent flood) 2020	Office	83%	83%	0.0	21.9	3.7	0.7	7	11	2	0.00	0	8,259.12	11,649.33	0.00
1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	Office	0%	0%	0.5	15.4	15.4	2.9	1	0	0	N/A	N/A	N/A	N/A	N/A
1401	CFLs (base incandescent A-line 72W) 2014-2015	Office	74%	74%	0.0	15.4	4.1	0.8	3	3	1	0.00	0	2,315.22	3,499.50	0.00
1402	LEDs (base incandescent A-line 72W) 2014-2015	Office	82%	82%	0.2	15.8	2.9	0.5	7	4	1	0.00	9	17.88	25.22	0.23
1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	Office	0%	0%	0.5	15.4	15.4	2.9	1	0	0	N/A	N/A	N/A	N/A	N/A
1411	CFLs (base incandescent A-line 72W) 2016-2017	Office	74%	74%	0.0	15.4	4.1	0.8	3	3	1	0.00	0	2,315.22	3,499.50	0.00
1412	LEDs (base incandescent A-line 72W) 2016-2017	Office	82%	82%	0.0	15.8	2.9	0.5	7	4	1	0.00	0	5,836.28	8,231.95	0.00
1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	Office	0%	0%	0.5	15.4	15.4	2.9	1	0	0	N/A	N/A	N/A	N/A	N/A
1421	CFLs (base incandescent A-line 72W) 2018-2019	Office	74%	74%	0.0	15.4	4.1	0.8	3	3	1	0.00	0	2,315.22	3,499.50	0.00
1422	LEDs (base incandescent A-line 72W) 2018-2019	Office	82%	82%	0.0	15.8	2.9	0.5	7	4	1	0.00	0	5,836.28	8,231.95	0.00
1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Office	0%	0%	0.5	15.4	15.4	2.9	1	0	0	N/A	N/A	N/A	N/A	N/A
1431	CFLs (base incandescent A-line 72W) 2020	Office	74%	74%	0.0	15.4	4.1	0.8	3	3	1	0.00	0	2,315.22	3,499.50	0.00
1432	LEDs (base incandescent A-line 72W) 2020	Office	82%	82%	0.0	15.8	2.9	0.5	7	4	1	0.00	0	5,836.28	8,231.95	0.00
1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	Office	0%	0%	0.5	11.3	11.3	2.1	1	0	0	N/A	N/A	N/A	N/A	N/A
1501	CFLs (base incandescent A-line 53W) 2014-2015	Office	66%	66%	0.0	11.3	3.8	0.7	3	2	0	0.00	0	1,528.28	2,310.02	0.00
1502	LEDs (base incandescent A-line 53W) 2014-2015	Office	75%	75%	0.2	11.6	3.0	0.5	7	3	1	0.00	14	12.00	16.93	0.34
1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	Office	0%	0%	0.5	11.3	11.3	2.1	1	0	0	N/A	N/A	N/A	N/A	N/A
1511	CFLs (base incandescent A-line 53W) 2016-2017	Office	66%	66%	0.0	11.3	3.8	0.7	3	2	0	0.00	0	1,528.28	2,310.02	0.00

Commercial Electric Existing Construction

DSM ASSYST SUMMARY

Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
1512	LEDs (base incandescent A-line 53W) 2016-2017	Office	75%	75%	0.0	11.6	3.0	0.5	7	3	1	0.00	0	3,918.32	5,526.71	0.00
1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	Office	0%	0%	0.5	11.3	11.3	2.1	1	0	0	N/A	N/A	N/A	N/A	N/A
1521	CFLs (base incandescent A-line 53W) 2018-2019	Office	66%	66%	0.0	11.3	3.8	0.7	3	2	0	0.00	0	1,528.28	2,310.02	0.00
1522	LEDs (base incandescent A-line 53W) 2018-2019	Office	75%	75%	0.0	11.6	3.0	0.5	7	3	1	0.00	0	3,918.32	5,526.71	0.00
1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Office	0%	0%	0.5	11.3	11.3	2.1	1	0	0	N/A	N/A	N/A	N/A	N/A
1531	CFLs (base incandescent A-line 53W) 2020	Office	66%	66%	0.0	11.3	3.8	0.7	3	2	0	0.00	0	1,528.28	2,310.02	0.00
1532	LEDs (base incandescent A-line 53W) 2020	Office	75%	75%	0.0	11.6	3.0	0.5	7	3	1	0.00	0	3,918.32	5,526.71	0.00
1600	Base CFL 18W to screw-in replacement 2014-2015	Office	0%	0%	0.2	1.3	1.3	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1601	LED screw-in replacement (base CFL 18W) 2014-2015	Office	28%	28%	0.4	1.3	0.9	0.2	7	0	0	0.11	592	0.28	0.39	15.01
1610	Base CFL 18W to screw-in replacement 2016-2017	Office	0%	0%	0.2	1.3	1.3	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1611	LED screw-in replacement (base CFL 18W) 2016-2017	Office	28%	28%	0.2	1.3	0.9	0.2	7	0	0	0.06	308	0.53	0.75	7.82
1620	Base CFL 18W to screw-in replacement 2018-2019	Office	0%	0%	0.2	1.3	1.3	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1621	LED screw-in replacement (base CFL 18W) 2018-2019	Office	28%	28%	0.2	1.3	0.9	0.2	7	0	0	0.05	246	0.66	0.94	6.23
1630	Base CFL 18W to screw-in replacement 2020	Office	0%	0%	0.2	1.3	1.3	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1631	LED screw-in replacement (base CFL 18W) 2020	Office	28%	28%	0.1	1.3	0.9	0.2	7	0	0	0.04	214	0.76	1.08	5.42
1700	Base CFL 23W to screw-in replacement 2014-2015	Office	0%	0%	0.2	1.6	1.6	0.3	3	0	0	N/A	N/A	N/A	N/A	N/A
1701	LED screw-in replacement (base CFL 23W) 2014-2015	Office	26%	26%	0.4	1.6	1.2	0.2	7	0	0	0.09	494	0.33	0.47	12.52
1710	Base CFL 23W to screw-in replacement 2016-2017	Office	0%	0%	0.2	1.6	1.6	0.3	3	0	0	N/A	N/A	N/A	N/A	N/A
1711	LED screw-in replacement (base CFL 23W) 2016-2017	Office	26%	26%	0.2	1.6	1.2	0.2	7	0	0	0.05	257	0.64	0.90	6.52
1720	Base CFL 23W to screw-in replacement 2018-2019	Office	0%	0%	0.2	1.6	1.6	0.3	3	0	0	N/A	N/A	N/A	N/A	N/A
1721	LED screw-in replacement (base CFL 23W) 2018-2019	Office	26%	26%	0.2	1.6	1.2	0.2	7	0	0	0.04	205	0.80	1.12	5.20
1730	Base CFL 23W to screw-in replacement 2020	Office	0%	0%	0.2	1.6	1.6	0.3	3	0	0	N/A	N/A	N/A	N/A	N/A
1731	LED screw-in replacement (base CFL 23W) 2020	Office	26%	26%	0.1	1.6	1.2	0.2	7	0	0	0.03	178	0.92	1.29	4.52
1800	BaseMetal Halide, 465W	Office	0%	0%	0.0	0.0	0.0	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1850	Base CFL Exit Sign	Office	0%	0%	0.0	0.1	0.1	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1851	LED Exit Sign	Office	69%	69%	0.0	0.1	0.0	0.0	7	0	0	0.01	68	2.39	3.37	1.73
1900	Base Outdoor High Pressure Sodium 250W Lamp	Office	0%	0%	0.0	0.9	0.9	0.0	15	0	0	N/A	N/A	N/A	N/A	N/A
1901	Outdoor Lighting Controls (Photocell/Timeclock)	Office	22%	73%	0.1	1.0	0.8	0.0	18	0	0	0.04	857	1.69	2.10	5.31
1902	LED Outdoor Area Lighting	Office	52%	52%	0.3	0.9	0.4	0.0	18	1	0	0.07	5,279	0.79	1.13	9.89
1903	Bi-Level LED Outdoor Lighting	Office	70%	63%	1.1	0.9	0.3	0.0	18	1	0	0.17	14,044	0.33	0.47	23.67
2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Office	0%	0%	0.7	4.5	4.5	3.1	20	0	0	N/A	N/A	N/A	N/A	N/A
2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	12%	12%	0.2	4.7	4.1	2.9	20	0	0	0.03	40	4.19	3.06	3.84
2002	Window Film (Standard) - Chiller	Office	9%	9%	0.2	4.9	4.5	3.1	10	0	0	0.05	70	1.25	1.15	6.65
2003	EMS - Chiller	Office	10%	3%	0.2	4.6	4.2	3.2	15	0	0	0.04	218	1.55	1.94	5.18
2004	Cool Roof - Chiller	Office	2%	2%	0.1	4.5	4.4	3.1	10	0	0	0.10	142	0.62	0.57	13.49
2005	Chiller Tune Up/Diagnostics	Office	8%	4%	0.1	4.9	4.5	3.3	10	0	0	0.01	37	3.70	4.38	1.75
2006	VSD for Chiller Pumps and Towers	Office	10%	5%	0.1	4.8	4.3	3.2	15	0	0	0.03	74	2.72	2.85	3.52
2008	New Economizer - Chiller	Office	27%	7%	0.5	5.7	4.2	3.7	10	0	0	0.03	184	1.26	1.74	4.39
2010	Ceiling/roof Insulation - Chiller	Office	12%	12%	0.0	5.0	4.4	3.1	20	0	0	0.01	9	18.34	13.40	0.88
2011	Duct/Pipe Insulation - Chiller	Office	2%	2%	0.8	4.5	4.5	3.1	10	0	0	0.83	1,182	0.07	0.07	112.58
2012	Duct Testing/Sealing	Office	19%	19%	1.0	4.5	3.6	2.5	18	0	0	0.12	167	0.93	0.70	15.88
2013	High Efficiency Chiller Motors	Office	3%	3%	0.1	4.6	4.4	3.1	20	0	0	0.04	56	3.00	2.19	5.37
2100	Base DX Packaged System, EER=10.3, 10 tons	Office	0%	0%	2.0	4.5	4.5	3.1	15	0	0	N/A	N/A	N/A	N/A	N/A
2101	DX Packaged System, EER=10.9, 10 tons	Office	6%	6%	0.2	4.5	4.2	3.0	15	1	1	0.07	93	1.42	1.13	8.88
2102	DX Packaged System, EER=13.4, 10 tons	Office	23%	23%	0.2	4.5	3.4	2.4	15	4	3	0.02	30	4.39	3.48	2.88
2103	Geothermal Heat Pump, EER=13, 10 tons - DX	Office	21%	21%	2.4	4.5	3.5	2.5	15	0	0	0.25	360	0.37	0.29	34.27
2105	DX Tune Up/ Advanced Diagnostics	Office	5%	3%	0.1	4.7	4.5	3.2	10	0	0	0.04	121	1.12	1.33	5.77
2106	Prog. Thermostat - DX	Office	5%	1%	0.1	4.6	4.4	3.2	8	0	0	0.04	204	0.91	1.34	4.85
2107	Cool Roof - DX	Office	2%	2%	0.1	4.5	4.4	3.1	10	0	0	0.10	143	0.61	0.56	13.64
2108	Optimize Controls - DX	Office	5%	1%	0.0	4.6	4.4	3.2	5	0	0	0.02	97	1.23	1.92	2.30
2109	Economizer - DX	Office	28%	7%	0.5	4.8	3.5	3.2	10	2	0	0.04	210	1.10	1.53	5.00
2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Office	3%	1%	0.1	4.5	4.4	3.2	10	0	0	0.08	458	0.51	0.70	10.90
2111	Economizer Repair - DX	Office	28%	42%	0.2	4.9	3.6	2.0	5	1	1	0.02	16	2.07	1.92	2.31
2112	Aerosol Duct Sealing - DX	Office	19%	19%	1.0	4.5	3.6	2.5	18	1	1	0.12	167	0.93	0.70	15.88
2114	Duct/Pipe Insulation - DX	Office	2%	2%	0.8	4.5	4.4	3.1	10	0	0	0.83	1,187	0.07	0.07	113.09
2115	Window Film (Standard) - DX	Office	9%	9%	0.2	4.8	4.3	3.0	10	0	0	0.05	72	1.22	1.12	6.84
2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Office	0%	0%	0.0	4.5	4.5	3.1	15	0	0	N/A	N/A	N/A	N/A	N/A
2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	13%	13%	0.1	4.5	3.9	2.7	15	2	2	0.02	22	6.15	4.87	2.06
2300	Base PTAC, EER=8.3, 1 ton	Office	0%	0%	0.0	4.5	4.5	3.1	15	0	0	N/A	N/A	N/A	N/A	N/A
3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Office	0%	0%	0.0	3.3	3.3	1.0	20	0	0	N/A	N/A	N/A	N/A	N/A
3001	Fan Motor, 5hp, 1800rpm, 89.5%	Office	2%	2%	0.0	3.3	3.2	1.0	20	0	0	0.02	66	4.31	4.31	2.73
3002	Variable Speed Drive Control, 5 HP	Office	30%	8%	0.1	3.3	2.3	0.9	15	3	0	0.01	174	4.07	5.61	1.79
3003	Demand Controlled Ventilation	Office	15%	29%	2.4	3.6	3.1	0.8	15	1	0	0.43	742	0.21	0.17	57.91
3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Office	0%	0%	0.0	3.3	3.3	1.0	20	0	0	N/A	N/A	N/A	N/A	N/A
3101	Fan Motor, 15hp, 1800rpm, 92.4%	Office	2%	2%	0.0	3.3	3.3	1.0	20	0	0	0.01	30	9.49	9.51	1.24
3102	Variable Speed Drive Control, 15 HP	Office	30%	8%	0.0	3.3	2.3	0.9	15	1	0	0.00	48	14.74	20.31	0.49
3103	Air Handler Optimization, 15 HP	Office	10%	3%	0.0	3.3	3.0	1.0	8	0	0	0.01	117	3.44	5.38	1.20
3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Office	14%	13%	0.1	3.6	3.1	0.9	15	0	0	0.02	58	4.22	4.69	2.14
3105	Energy Recovery Ventilation (ERV)	Office	7%	13%	0.4	3.4	3.2	0.9	20	0	0	0.16	281	0.69	0.54	21.97
3107	Demand Controlled Ventilation	Office	15%	29%	2.4	3.6	3.1	0.8	15	0	0	0.43	742	0.21	0.17	57.91

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Office	0%	0%	0.0	3.3	3.3	1.0	20	0	0	N/A	N/A	N/A	N/A	N/A
3201	Fan Motor, 40hp, 1800rpm, 94.1%	Office	1%	1%	0.0	3.3	3.3	1.0	20	0	0	0.07	242	1.18	1.18	9.94
3202	Variable Speed Drive Control, 40 HP	Office	30%	8%	0.2	3.3	2.3	0.9	15	0	0	0.02	242	2.93	4.03	2.49
3203	Air Handler Optimization, 40 HP	Office	10%	3%	0.0	3.3	3.0	1.0	8	0	0	0.01	117	3.44	5.38	1.20
3204	Demand Controlled Ventilation	Office	15%	29%	2.4	3.6	3.1	0.8	15	0	0	0.43	742	0.21	0.17	57.91
4000	Base Built-Up Refrigeration System	Office	0%	0%	0.0	0.0	0.0	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
4100	Base Self-Contained Refrigeration	Office	0%	0%	0.0	0.6	0.6	0.1	10	0	0	N/A	N/A	N/A	N/A	N/A
4104	Freezer-Cooler Replacement Gaskets (self-contained)	Office	4%	4%	0.0	0.6	0.6	0.1	4	0	0	0.00	5	24.09	38.31	0.10
4110	Energy Star Ice Machines	Office	2%	2%	0.0	0.6	0.6	0.1	10	0	0	0.01	92	3.14	4.37	1.75
5000	Base Desktop PC	Office	0%	0%	0.0	0.9	0.9	0.1	4	0	0	N/A	N/A	N/A	N/A	N/A
5001	PC Network Power Management Enabling	Office	68%	34%	0.0	1.0	0.3	0.1	4	4	0	0.00	51	4.46	7.62	0.48
5002	Energy Star or Better PC	Office	33%	33%	0.0	0.9	0.6	0.1	4	2	0	0.00	30	4.10	6.45	0.57
5100	Base Laptop PC	Office	0%	0%	0.0	0.0	0.0	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5101	Laptop Network Power Management Enabling	Office	7%	7%	0.0	0.0	0.0	0.0	4	0	0	0.27	1,978	0.06	0.10	37.37
5102	Energy Star or Better Laptop	Office	30%	30%	0.0	0.0	0.0	0.0	4	0	0	0.00	20	6.03	9.50	0.38
5200	Base Monitor, CRT	Office	0%	0%	0.0	0.5	0.5	0.1	4	0	0	N/A	N/A	N/A	N/A	N/A
5201	Energy Star or Better Monitor - CRT	Office	56%	56%	0.0	0.6	0.3	0.0	4	1	0	0.00	2	62.83	98.90	0.04
5202	Monitor Power Management Enabling - CRT	Office	53%	27%	0.0	0.8	0.4	0.1	4	0	0	0.00	24	9.25	15.82	0.23
5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Office	15%	15%	0.0	0.5	0.4	0.1	4	0	0	0.02	137	0.89	1.41	2.59
5300	Base Monitor, LCD	Office	0%	0%	0.0	0.1	0.1	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5301	Energy Star or Better Monitor - LCD	Office	21%	21%	0.0	0.2	0.1	0.0	4	0	0	0.00	21	5.74	9.04	0.40
5302	Monitor Power Management Enabling - LCD	Office	19%	10%	0.0	0.2	0.1	0.0	4	0	0	0.02	353	0.64	1.09	3.34
5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Office	15%	4%	0.0	0.1	0.1	0.0	4	0	0	0.06	1,831	0.23	0.42	8.65
5400	Base Copier	Office	0%	0%	0.0	0.4	0.4	0.1	6	0	0	N/A	N/A	N/A	N/A	N/A
5401	Energy Star or Better Copier	Office	21%	21%	0.0	0.4	0.3	0.0	6	0	0	0.00	5	37.36	56.45	0.09
5402	Copier Power Management Enabling	Office	19%	10%	0.0	0.4	0.4	0.1	6	0	0	0.03	445	0.75	1.23	4.20
5500	Base Multifunction	Office	0%	0%	0.0	0.1	0.1	0.0	5	0	0	N/A	N/A	N/A	N/A	N/A
5501	Multifunction Power Management Enabling	Office	49%	25%	0.0	0.1	0.0	0.0	5	0	0	0.06	916	0.31	0.51	8.65
5502	ENERGY STAR Multi-Function Device	Office	40%	40%	0.0	0.1	0.0	0.0	5	0	0	0.00	15	10.18	15.69	0.28
5600	Base Printer	Office	0%	0%	0.0	0.4	0.4	0.1	5	0	0	N/A	N/A	N/A	N/A	N/A
5601	Printer Power Management Enabling	Office	49%	25%	0.0	0.7	0.3	0.1	5	1	0	0.01	173	1.62	2.70	1.64
5602	ENERGY STAR Printer	Office	40%	40%	0.0	0.5	0.3	0.0	5	1	0	0.00	3	46.78	72.10	0.06
5700	Base Data Center/Server Room	Office	0%	0%	0.0	188.7	188.7	26.2	10	0	0	N/A	N/A	N/A	N/A	N/A
5701	Data Center Improved Operations	Office	20%	20%	0.1	196.5	157.2	21.8	10	0	0	0.00	2	163.64	226.12	0.03
5702	Data Center Best Practices	Office	45%	45%	0.5	197.6	108.7	15.1	10	0	0	0.00	4	74.02	102.29	0.07
5703	Data Center State of the Art practices	Office	56%	56%	1.0	188.7	83.0	11.5	10	0	0	0.00	7	43.99	60.78	0.13
6000	Base Water Heating	Office	0%	0%	0.0	0.4	0.4	0.1	15	0	0	N/A	N/A	N/A	N/A	N/A
6001	Demand controlled circulating systems	Office	5%	5%	0.0	0.4	0.4	0.1	15	0	0	0.11	822	0.52	0.66	15.13
6002	High Efficiency Water Heater (electric)	Office	2%	2%	0.0	0.4	0.4	0.1	15	0	0	0.02	177	2.43	3.07	3.26
6003	Hot Water Pipe Insulation	Office	2%	2%	0.0	0.4	0.4	0.1	15	0	0	0.04	291	1.48	1.87	5.36
6004	Tankless Water Heater	Office	10%	10%	0.0	0.4	0.4	0.0	20	0	0	0.04	305	1.77	2.10	5.61
6005	Heat Pump Water Heater (air source)	Office	20%	20%	0.0	0.4	0.3	0.0	10	1	0	0.06	408	0.74	1.02	7.50
6006	Heat Recovery Unit	Office	65%	65%	0.1	0.4	0.1	0.0	10	0	0	0.03	228	1.31	1.82	4.20
6007	Heat Trap	Office	9%	9%	0.0	0.4	0.4	0.0	10	0	0	0.01	69	4.31	5.99	1.28
6008	Solar Water Heater	Office	70%	70%	0.1	0.4	0.1	0.0	20	2	0	0.04	329	1.64	1.94	6.06
7000	Base Refrigerated Vending Machines	Office	0%	0%	0.0	0.2	0.2	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
7001	Vending Misers (Refrigerated units)	Office	46%	23%	0.0	0.2	0.1	0.0	5	0	0	0.01	141	1.91	3.16	1.40
7002	Vending Misers (Refrigerated glass-front units)	Office	30%	15%	0.0	0.2	0.1	0.0	5	0	0	0.02	217	1.24	2.06	2.15
7100	Base Non-Refrigerated Vending Machines	Office	0%	0%	0.0	0.0	0.0	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
7200	Base Oven	Office	0%	0%	0.0	1.0	1.0	0.2	10	0	0	N/A	N/A	N/A	N/A	N/A
7300	Base Fryer	Office	0%	0%	0.0	0.8	0.8	0.1	10	0	0	N/A	N/A	N/A	N/A	N/A
7400	Base Steamer	Office	0%	0%	0.0	2.4	2.4	0.4	10	0	0	N/A	N/A	N/A	N/A	N/A
8000	Base Heating, Heat Pump (7.7 HSPF)	Office	0%	0%	0.0	0.7	0.7	0.0	15	0	0	N/A	N/A	N/A	N/A	N/A
8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	6%	6%	0.0	0.7	0.7	0.0	15	0	0	0.02	N/A	3.34	4.88	2.06
8100	Base Heating, Other Electric	Office	0%	0%	12.0	0.7	0.7	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
9500	Base Miscellaneous	Office	0%	0%	1.3	2.3	2.3	0.3	10	0	0	N/A	N/A	N/A	N/A	N/A
9501	Xmisc	Office	0%	0%	1.3	2.3	2.3	0.3	10	0	0	N/A	N/A	0.00	0.00	N/A
1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	Office	0%	0%	0.0	7.7	7.7	1.4	18	0	0	N/A	N/A	N/A	N/A	N/A
1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	Office	10%	10%	0.1	7.7	6.9	1.3	8	15	3	0.01	52	3.54	4.88	1.33
1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	Office	22%	22%	0.3	7.7	6.0	1.1	8	33	6	0.02	82	2.25	3.10	2.09
1003	ROB 4L4'T5, 2014-2015	Office	12%	12%	1.0	7.7	6.8	1.3	5	18	3	0.11	572	0.21	0.31	14.50
1004	ROB 4L4' LED Tube, 2014-2015	Office	34%	34%	3.4	7.7	5.0	0.9	14	52	10	0.12	670	0.47	0.57	16.99
1005	LED Troffer (base 4L4'T8), 2014-2015	Office	40%	40%	4.3	7.7	4.6	0.9	14	61	11	0.14	736	0.43	0.51	18.67
1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	Office	5%	3%	0.0	7.7	7.3	1.4	6	1	0	0.00	39	6.42	10.35	0.50
1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	Office	30%	8%	0.6	7.7	5.4	1.3	10	13	1	0.03	573	1.33	2.11	3.63
1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	Office	25%	20%	0.2	7.7	5.8	1.1	15	11	2	0.01	68	5.80	7.24	1.38
1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	Office	0%	0%	0.0	7.7	7.7	1.4	18	0	0	N/A	N/A	N/A	N/A	N/A
1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	Office	10%	10%	0.1	7.7	6.9	1.3	8	15	3	0.01	52	3.54	4.88	1.33
1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	Office	22%	22%	0.3	7.7	6.0	1.1	8	33	6	0.02	82	2.25	3.10	2.09
1013	ROB 4L4'T5, 2016-2017	Office	12%	12%	1.0	7.7	6.8	1.3	5	18	3	0.11	572	0.21	0.31	14.50

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
1014	ROB 4L4' LED Tube, 2016-2017	Office	34%	34%	2.3	7.7	5.0	0.9	14	52	10	0.09	460	0.68	0.82	11.67
1015	LED Troffer (base 4L4'T8), 2016-2017	Office	40%	40%	3.0	7.7	4.6	0.9	14	61	11	0.10	517	0.61	0.73	13.10
1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	Office	5%	3%	0.0	7.7	7.3	1.4	6	1	0	0.00	39	6.42	10.35	0.50
1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	Office	30%	8%	0.6	7.7	5.4	1.3	10	13	1	0.03	573	1.33	2.11	3.63
1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	Office	25%	20%	0.2	7.7	5.8	1.1	15	11	2	0.01	68	5.80	7.24	1.38
1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	Office	0%	0%	0.0	7.7	7.7	1.4	18	0	0	N/A	N/A	N/A	N/A	N/A
1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	Office	10%	10%	0.1	7.7	6.9	1.3	8	15	3	0.01	52	3.54	4.88	1.33
1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	Office	22%	22%	0.3	7.7	6.0	1.1	8	33	6	0.02	82	2.25	3.10	2.09
1023	ROB 4L4'T5, 2018-2019	Office	12%	12%	1.0	7.7	6.8	1.3	5	18	3	0.11	572	0.21	0.31	14.50
1024	ROB 4L4' LED Tube, 2018-2019	Office	34%	34%	2.1	7.7	5.0	0.9	14	52	10	0.08	414	0.76	0.91	10.50
1025	LED Troffer (base 4L4'T8), 2018-2019	Office	40%	40%	2.7	7.7	4.6	0.9	14	61	11	0.09	469	0.67	0.81	11.88
1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	Office	5%	3%	0.0	7.7	7.3	1.4	6	1	0	0.00	39	6.42	10.35	0.50
1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	Office	30%	8%	0.6	7.7	5.4	1.3	10	13	1	0.03	573	1.33	2.11	3.63
1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	Office	25%	20%	0.2	7.7	5.8	1.1	15	11	2	0.01	68	5.80	7.24	1.38
1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Office	0%	0%	0.0	7.7	7.7	1.4	18	0	0	N/A	N/A	N/A	N/A	N/A
1031	ROB 4L4' High Performance T8 (86 W), 2020	Office	10%	10%	0.1	7.7	6.9	1.3	8	15	3	0.01	52	3.54	4.88	1.33
1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	22%	22%	0.3	7.7	6.0	1.1	8	33	6	0.02	82	2.25	3.10	2.09
1033	ROB 4L4'T5, 2020	Office	12%	12%	1.0	7.7	6.8	1.3	5	18	3	0.11	572	0.21	0.31	14.50
1034	ROB 4L4' LED Tube, 2020	Office	34%	34%	2.0	7.7	5.0	0.9	14	52	10	0.07	391	0.81	0.97	9.90
1035	LED Troffer (base 4L4'T8), 2020	Office	40%	40%	2.6	7.7	4.6	0.9	14	61	11	0.08	444	0.71	0.85	11.24
1036	Lighting Control Tuneup (base 4L4'T8), 2020	Office	5%	3%	0.0	7.7	7.3	1.4	6	1	0	0.00	39	6.42	10.35	0.50
1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Office	30%	8%	0.6	7.7	5.4	1.3	10	13	1	0.03	573	1.33	2.11	3.63
1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	25%	20%	0.2	7.7	5.8	1.1	15	11	2	0.01	68	5.80	7.24	1.38
1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	Office	0%	0%	0.0	4.5	4.5	0.8	18	0	0	N/A	N/A	N/A	N/A	N/A
1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	Office	10%	10%	0.1	4.5	4.0	0.7	8	0	0	0.01	67	2.79	3.84	1.69
1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	Office	22%	22%	0.2	4.5	3.5	0.7	8	1	0	0.02	104	1.78	2.45	2.64
1103	ROB 2L4'T5, 2014-2015	Office	12%	12%	0.6	4.5	4.0	0.7	5	0	0	0.12	656	0.18	0.27	16.63
1104	ROB 2L4' LED Tube, 2014-2015	Office	34%	34%	1.7	4.5	2.9	0.5	14	0	0	0.11	568	0.55	0.67	14.40
1105	LED Troffer (base 2L4'T8), 2014-2015	Office	40%	40%	2.4	4.5	2.7	0.5	14	1	0	0.13	707	0.45	0.54	17.91
1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	Office	5%	3%	0.0	4.5	4.2	0.8	6	0	0	0.01	68	3.73	6.01	0.86
1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	Office	30%	8%	0.6	4.5	3.1	0.8	10	0	0	0.05	1,015	0.75	1.19	6.43
1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	Office	25%	13%	0.2	4.5	3.4	0.7	15	0	0	0.02	188	3.10	4.21	2.38
1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	Office	0%	0%	0.0	4.5	4.5	0.8	18	0	0	N/A	N/A	N/A	N/A	N/A
1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	Office	10%	10%	0.1	4.5	4.0	0.7	8	0	0	0.01	67	2.79	3.84	1.69
1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	Office	22%	22%	0.2	4.5	3.5	0.7	8	1	0	0.02	104	1.78	2.45	2.64
1113	ROB 2L4'T5, 2016-2017	Office	12%	12%	0.6	4.5	4.0	0.7	5	0	0	0.12	656	0.18	0.27	16.63
1114	ROB 2L4' LED Tube, 2016-2017	Office	34%	34%	1.2	4.5	2.9	0.5	14	0	0	0.08	404	0.78	0.94	10.23
1115	LED Troffer (base 2L4'T8), 2016-2017	Office	40%	40%	1.8	4.5	2.7	0.5	14	1	0	0.10	515	0.61	0.74	13.06
1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	Office	5%	3%	0.0	4.5	4.2	0.8	6	0	0	0.01	68	3.73	6.01	0.86
1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	Office	30%	8%	0.6	4.5	3.1	0.8	10	0	0	0.05	1,015	0.75	1.19	6.43
1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	Office	25%	20%	0.2	4.5	3.4	0.7	15	0	0	0.02	117	3.37	4.21	2.38
1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	Office	0%	0%	0.0	4.5	4.5	0.8	18	0	0	N/A	N/A	N/A	N/A	N/A
1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	Office	10%	10%	0.1	4.5	4.0	0.7	8	0	0	0.01	67	2.79	3.84	1.69
1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	Office	22%	22%	0.2	4.5	3.5	0.7	8	1	0	0.02	104	1.78	2.45	2.64
1123	ROB 2L4'T5, 2018-2019	Office	12%	12%	0.6	4.5	4.0	0.7	5	0	0	0.12	656	0.18	0.27	16.63
1124	ROB 2L4' LED Tube, 2018-2019	Office	34%	34%	1.1	4.5	2.9	0.5	14	0	0	0.07	363	0.87	1.04	9.20
1125	LED Troffer (base 2L4'T8), 2018-2019	Office	40%	40%	1.6	4.5	2.7	0.5	14	1	0	0.09	469	0.67	0.81	11.89
1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	Office	5%	3%	0.0	4.5	4.2	0.8	6	0	0	0.01	68	3.73	6.01	0.86
1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	Office	30%	8%	0.6	4.5	3.1	0.8	10	0	0	0.05	1,015	0.75	1.19	6.43
1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	Office	25%	20%	0.2	4.5	3.4	0.7	15	0	0	0.02	117	3.37	4.21	2.38
1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Office	0%	0%	0.0	4.5	4.5	0.8	18	0	0	N/A	N/A	N/A	N/A	N/A
1131	ROB 2L4' High Performance T8 (86 W), 2020	Office	10%	10%	0.1	4.5	4.0	0.7	8	0	0	0.01	67	2.79	3.84	1.69
1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Office	22%	22%	0.2	4.5	3.5	0.7	8	1	0	0.02	104	1.78	2.45	2.64
1133	ROB 2L4'T5, 2020	Office	12%	12%	0.6	4.5	4.0	0.7	5	0	0	0.12	656	0.18	0.27	16.63
1134	ROB 2L4' LED Tube, 2020	Office	34%	34%	1.0	4.5	2.9	0.5	14	0	0	0.06	342	0.92	1.11	8.66
1135	LED Troffer (base 2L4'T8), 2020	Office	40%	40%	1.5	4.5	2.7	0.5	14	1	0	0.08	445	0.71	0.85	11.29
1136	Lighting Control Tuneup (base 2L4'T8), 2020	Office	5%	3%	0.0	4.5	4.2	0.8	6	0	0	0.01	68	3.73	6.01	0.86
1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Office	30%	8%	0.6	4.5	3.1	0.8	10	0	0	0.05	1,015	0.75	1.19	6.43
1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Office	25%	20%	0.2	4.5	3.4	0.7	15	0	0	0.02	117	3.37	4.21	2.38
1200	Base Other Fluorescent Fixture	Office	0%	0%	0.0	3.6	3.6	0.7	18	0	0	N/A	N/A	N/A	N/A	N/A
1201	ROB High Performance T8 (base other fluorescent)	Office	10%	10%	0.2	3.6	3.2	0.6	8	1	0	0.04	213	0.87	1.20	5.40
1202	ROB Low Watt High Performance T8 (base other fluorescent)	Office	22%	22%	0.5	3.6	2.8	0.5	8	1	0	0.06	334	0.56	0.77	8.46
1203	Lighting Control Tuneup (base other fluorescent fixture)	Office	30%	15%	0.0	3.6	2.5	0.6	6	0	0	0.00	14	18.04	29.10	0.18
1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	52%	13%	1.0	3.6	1.7	0.6	10	1	0	0.05	1,171	0.65	1.03	7.42
1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Office	25%	20%	0.2	3.6	2.7	0.5	15	0	0	0.02	146	2.72	3.40	2.95
1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	Office	0%	0%	0.5	22.2	22.2	4.1	1	0	0	N/A	N/A	N/A	N/A	N/A
1301	CFLs (base incandescent flood) 2014-2015	Office	77%	77%	0.0	22.2	5.1	1.0	3	36	7	0.00	0	3,504.30	5,296.82	0.00
1302	LEDs (base incandescent flood) 2014-2015	Office	83%	83%	0.2	31.5	5.4	1.0	7	39	7	0.00	4	36.38	51.32	0.11
1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	Office	0%	0%	0.5	22.2	22.2	4.1	1	0	0	N/A	N/A	N/A	N/A	N/A
1311	CFLs (base incandescent flood) 2016-2017	Office	77%	77%	0.0	22.2	5.1	1.0	3	36	7	0.00	0	3,504.30	5,296.82	0.00

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
1312	LEDs (base incandescent flood) 2016-2017	Office	83%	83%	0.0	31.5	5.4	1.0	7	39	7	0.00	0	11,876.08	16,750.97	0.00
1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	Office	0%	0%	0.5	22.2	22.2	4.1	1	0	0	N/A	N/A	N/A	N/A	N/A
1321	CFLs (base incandescent flood) 2018-2019	Office	77%	77%	0.0	22.2	5.1	1.0	3	36	7	0.00	0	3,504.30	5,296.82	0.00
1322	LEDs (base incandescent flood) 2018-2019	Office	83%	83%	0.0	31.5	5.4	1.0	7	39	7	0.00	0	11,876.08	16,750.97	0.00
1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Office	0%	0%	0.5	22.2	22.2	4.1	1	0	0	N/A	N/A	N/A	N/A	N/A
1331	CFLs (base incandescent flood) 2020	Office	77%	77%	0.0	22.2	5.1	1.0	3	36	7	0.00	0	3,504.30	5,296.82	0.00
1332	LEDs (base incandescent flood) 2020	Office	83%	83%	0.0	31.5	5.4	1.0	7	39	7	0.00	0	11,876.08	16,750.97	0.00
1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	Office	0%	0%	0.5	16.0	16.0	3.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1401	CFLs (base incandescent A-line 72W) 2014-2015	Office	74%	74%	0.0	16.0	4.2	0.8	3	12	2	0.00	0	2,411.69	3,645.31	0.00
1402	LEDs (base incandescent A-line 72W) 2014-2015	Office	82%	82%	0.2	22.5	4.2	0.8	7	14	3	0.00	6	25.53	36.01	0.16
1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	Office	0%	0%	0.5	16.0	16.0	3.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1411	CFLs (base incandescent A-line 72W) 2016-2017	Office	74%	74%	0.0	16.0	4.2	0.8	3	12	2	0.00	0	2,411.69	3,645.31	0.00
1412	LEDs (base incandescent A-line 72W) 2016-2017	Office	82%	82%	0.0	22.5	4.2	0.8	7	14	3	0.00	0	8,333.39	11,754.08	0.00
1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	Office	0%	0%	0.5	16.0	16.0	3.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1421	CFLs (base incandescent A-line 72W) 2018-2019	Office	74%	74%	0.0	16.0	4.2	0.8	3	12	2	0.00	0	2,411.69	3,645.31	0.00
1422	LEDs (base incandescent A-line 72W) 2018-2019	Office	82%	82%	0.0	22.5	4.2	0.8	7	14	3	0.00	0	8,333.39	11,754.08	0.00
1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Office	0%	0%	0.5	16.0	16.0	3.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1431	CFLs (base incandescent A-line 72W) 2020	Office	74%	74%	0.0	16.0	4.2	0.8	3	12	2	0.00	0	2,411.69	3,645.31	0.00
1432	LEDs (base incandescent A-line 72W) 2020	Office	82%	82%	0.0	22.5	4.2	0.8	7	14	3	0.00	0	8,333.39	11,754.08	0.00
1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	Office	0%	0%	0.5	11.8	11.8	2.2	1	0	0	N/A	N/A	N/A	N/A	N/A
1501	CFLs (base incandescent A-line 53W) 2014-2015	Office	66%	66%	0.0	11.8	4.0	0.7	3	8	2	0.00	0	1,591.95	2,406.27	0.00
1502	LEDs (base incandescent A-line 53W) 2014-2015	Office	75%	75%	0.2	16.0	4.1	0.8	7	9	2	0.00	10	16.60	23.41	0.25
1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	Office	0%	0%	0.5	11.8	11.8	2.2	1	0	0	N/A	N/A	N/A	N/A	N/A
1511	CFLs (base incandescent A-line 53W) 2016-2017	Office	66%	66%	0.0	11.8	4.0	0.7	3	8	2	0.00	0	1,591.95	2,406.27	0.00
1512	LEDs (base incandescent A-line 53W) 2016-2017	Office	75%	75%	0.0	16.0	4.1	0.8	7	9	2	0.00	0	5,418.15	7,642.19	0.00
1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	Office	0%	0%	0.5	11.8	11.8	2.2	1	0	0	N/A	N/A	N/A	N/A	N/A
1521	CFLs (base incandescent A-line 53W) 2018-2019	Office	66%	66%	0.0	11.8	4.0	0.7	3	8	2	0.00	0	1,591.95	2,406.27	0.00
1522	LEDs (base incandescent A-line 53W) 2018-2019	Office	75%	75%	0.0	16.0	4.1	0.8	7	9	2	0.00	0	5,418.15	7,642.19	0.00
1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Office	0%	0%	0.5	11.8	11.8	2.2	1	0	0	N/A	N/A	N/A	N/A	N/A
1531	CFLs (base incandescent A-line 53W) 2020	Office	66%	66%	0.0	11.8	4.0	0.7	3	8	2	0.00	0	1,591.95	2,406.27	0.00
1532	LEDs (base incandescent A-line 53W) 2020	Office	75%	75%	0.0	16.0	4.1	0.8	7	9	2	0.00	0	5,418.15	7,642.19	0.00
1600	Base CFL 18W to screw-in replacement 2014-2015	Office	0%	0%	0.2	1.3	1.3	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1601	LED screw-in replacement (base CFL 18W) 2014-2015	Office	28%	28%	0.4	1.3	1.0	0.2	7	1	0	0.11	569	0.29	0.41	14.41
1610	Base CFL 18W to screw-in replacement 2016-2017	Office	0%	0%	0.2	1.3	1.3	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1611	LED screw-in replacement (base CFL 18W) 2016-2017	Office	28%	28%	0.2	1.3	1.0	0.2	7	1	0	0.06	296	0.55	0.78	7.50
1620	Base CFL 18W to screw-in replacement 2018-2019	Office	0%	0%	0.2	1.3	1.3	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1621	LED screw-in replacement (base CFL 18W) 2018-2019	Office	28%	28%	0.2	1.3	1.0	0.2	7	1	0	0.04	236	0.69	0.98	5.99
1630	Base CFL 18W to screw-in replacement 2020	Office	0%	0%	0.2	1.3	1.3	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1631	LED screw-in replacement (base CFL 18W) 2020	Office	28%	28%	0.1	1.3	1.0	0.2	7	1	0	0.04	205	0.80	1.12	5.20
1700	Base CFL 23W to screw-in replacement 2014-2015	Office	0%	0%	0.2	1.7	1.7	0.3	3	0	0	N/A	N/A	N/A	N/A	N/A
1701	LED screw-in replacement (base CFL 23W) 2014-2015	Office	26%	26%	0.4	1.7	1.2	0.2	7	1	0	0.09	474	0.34	0.49	12.02
1710	Base CFL 23W to screw-in replacement 2016-2017	Office	0%	0%	0.2	1.7	1.7	0.3	3	0	0	N/A	N/A	N/A	N/A	N/A
1711	LED screw-in replacement (base CFL 23W) 2016-2017	Office	26%	26%	0.2	1.7	1.2	0.2	7	1	0	0.05	247	0.66	0.93	6.26
1720	Base CFL 23W to screw-in replacement 2018-2019	Office	0%	0%	0.2	1.7	1.7	0.3	3	0	0	N/A	N/A	N/A	N/A	N/A
1721	LED screw-in replacement (base CFL 23W) 2018-2019	Office	26%	26%	0.2	1.7	1.2	0.2	7	1	0	0.04	197	0.83	1.17	4.99
1730	Base CFL 23W to screw-in replacement 2020	Office	0%	0%	0.2	1.7	1.7	0.3	3	0	0	N/A	N/A	N/A	N/A	N/A
1731	LED screw-in replacement (base CFL 23W) 2020	Office	26%	26%	0.1	1.7	1.2	0.2	7	1	0	0.03	171	0.95	1.35	4.34
1800	BaseMetal Halide, 465W	Office	0%	0%	0.0	0.0	0.0	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1850	Base CFL Exit Sign	Office	0%	0%	0.0	0.1	0.1	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1851	LED Exit Sign	Office	69%	69%	0.0	0.1	0.0	0.0	7	1	0	0.01	66	2.49	3.51	1.66
1900	Base Outdoor High Pressure Sodium 250W Lamp	Office	0%	0%	0.0	0.9	0.9	0.0	15	0	0	N/A	N/A	N/A	N/A	N/A
1901	Outdoor Lighting Controls (Photocell/Timeclock)	Office	22%	73%	0.1	0.9	0.7	0.0	18	2	0	0.04	951	1.52	1.89	5.88
1902	LED Outdoor Area Lighting	Office	52%	52%	0.3	0.9	0.4	0.0	18	6	0	0.07	5,068	0.82	1.17	9.49
1903	Bi-Level LED Outdoor Lighting	Office	70%	63%	1.1	0.9	0.3	0.0	18	7	0	0.17	13,482	0.34	0.49	22.72
2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Office	0%	0%	0.7	4.7	4.7	3.3	20	0	0	N/A	N/A	N/A	N/A	N/A
2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	12%	12%	0.2	4.8	4.3	3.0	20	2	1	0.03	39	4.37	3.19	3.69
2002	Window Film (Standard) - Chiller	Office	9%	9%	0.2	5.1	4.7	3.3	10	0	0	0.05	67	1.30	1.20	6.39
2003	EMS - Chiller	Office	10%	3%	0.2	4.8	4.3	3.3	15	1	0	0.04	209	1.61	2.02	4.97
2004	Cool Roof - Chiller	Office	2%	2%	0.1	4.7	4.6	3.2	10	0	0	0.10	136	0.64	0.59	12.95
2006	VSD for Chiller Pumps and Towers	Office	10%	5%	0.1	5.0	4.5	3.3	15	0	0	0.02	71	2.83	2.97	3.38
2008	New Economizer - Chiller	Office	27%	7%	0.5	6.0	4.4	3.9	10	1	0	0.03	177	1.31	1.82	4.21
2010	Ceiling/roof Insulation - Chiller	Office	12%	12%	0.0	5.2	4.6	3.2	20	0	0	0.01	9	19.11	13.96	0.84
2011	Duct/Pipe Insulation - Chiller	Office	2%	2%	0.8	4.7	4.6	3.2	10	0	0	0.79	1,135	0.08	0.07	108.08
2012	Duct Testing/Sealing	Office	19%	19%	1.0	4.7	3.8	2.6	18	4	3	0.11	160	0.97	0.73	15.25
2013	High Efficiency Chiller Motors	Office	3%	3%	0.1	4.8	4.6	3.2	20	0	0	0.04	54	3.12	2.28	5.16
2100	Base DX Packaged System, EER=10.3, 10 tons	Office	0%	0%	2.0	4.7	4.7	3.3	15	0	0	N/A	N/A	N/A	N/A	N/A
2101	DX Packaged System, EER=10.9, 10 tons	Office	6%	6%	0.2	4.7	4.4	3.1	15	5	3	0.06	90	1.48	1.18	8.53
2102	DX Packaged System, EER=13.4, 10 tons	Office	23%	23%	0.2	4.7	3.6	2.5	15	20	14	0.02	29	4.57	3.62	2.77
2103	Geothermal Heat Pump, EER=13, 10 tons - DX	Office	21%	21%	2.4	4.7	3.7	2.6	15	1	1	0.24	345	0.38	0.30	32.89
2106	Prog. Thermostat - DX	Office	5%	1%	0.1	4.8	4.6	3.3	8	2	0	0.03	196	0.95	1.39	4.66

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
2107	Cool Roof - DX	Office	2%	2%	0.1	4.7	4.6	3.2	10	1	1	0.10	137	0.64	0.58	13.09
2108	Optimize Controls - DX	Office	5%	1%	0.0	4.8	4.6	3.3	5	1	0	0.02	93	1.28	2.00	2.21
2109	Economizer - DX	Office	28%	7%	0.5	5.0	3.6	3.3	10	9	2	0.04	202	1.15	1.59	4.80
2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Office	3%	1%	0.1	4.7	4.6	3.3	10	0	0	0.08	440	0.53	0.73	10.47
2111	Economizer Repair - DX	Office	28%	42%	0.2	5.1	3.7	2.1	5	4	4	0.02	16	2.15	2.00	2.22
2112	Aerosol Duct Sealing - DX	Office	19%	19%	1.0	4.7	3.8	2.6	18	5	4	0.11	160	0.97	0.73	15.25
2114	Duct/Pipe Insulation - DX	Office	2%	2%	0.8	4.7	4.6	3.2	10	1	0	0.80	1,140	0.08	0.07	108.57
2115	Window Film (Standard) - DX	Office	9%	9%	0.2	5.0	4.5	3.2	10	2	1	0.05	69	1.27	1.17	6.57
2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Office	0%	0%	0.0	4.7	4.7	3.3	15	0	0	N/A	N/A	N/A	N/A	N/A
2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	13%	13%	0.1	4.7	4.1	2.9	15	7	5	0.01	21	6.41	5.07	1.98
2300	Base PTAC, EER=8.3, 1 ton	Office	0%	0%	0.0	4.7	4.7	3.3	15	0	0	N/A	N/A	N/A	N/A	N/A
3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Office	0%	0%	0.0	3.4	3.4	1.0	20	0	0	N/A	N/A	N/A	N/A	N/A
3001	Fan Motor, 5hp, 1800rpm, 89.5%	Office	2%	2%	0.0	3.5	3.4	1.0	20	1	0	0.02	64	4.49	4.49	2.62
3002	Variable Speed Drive Control, 5 HP	Office	30%	8%	0.1	3.4	2.4	1.0	15	12	1	0.01	168	4.22	5.81	1.73
3003	Demand Controlled Ventilation	Office	15%	29%	2.4	3.8	3.2	0.8	15	3	1	0.41	712	0.21	0.18	55.60
3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Office	0%	0%	0.0	3.4	3.4	1.0	20	0	0	N/A	N/A	N/A	N/A	N/A
3101	Fan Motor, 15hp, 1800rpm, 92.4%	Office	2%	2%	0.0	3.5	3.4	1.0	20	0	0	0.01	29	9.89	9.90	1.19
3102	Variable Speed Drive Control, 15 HP	Office	30%	8%	0.0	3.4	2.4	1.0	15	2	0	0.00	46	15.26	21.02	0.48
3103	Air Handler Optimization, 15 HP	Office	10%	3%	0.0	3.5	3.1	1.0	8	1	0	0.01	113	3.59	5.61	1.16
3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Office	14%	13%	0.1	3.7	3.2	1.0	15	1	0	0.02	55	4.40	4.88	2.05
3105	Energy Recovery Ventilation (ERV)	Office	7%	13%	0.4	3.5	3.3	0.9	20	0	0	0.15	270	0.71	0.56	21.09
3107	Demand Controlled Ventilation	Office	15%	29%	2.4	3.8	3.2	0.8	15	0	0	0.41	712	0.21	0.18	55.60
3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Office	0%	0%	0.0	3.4	3.4	1.0	20	0	0	N/A	N/A	N/A	N/A	N/A
3201	Fan Motor, 40hp, 1800rpm, 94.1%	Office	1%	1%	0.0	3.5	3.4	1.0	20	0	0	0.07	232	1.23	1.23	9.54
3202	Variable Speed Drive Control, 40 HP	Office	30%	8%	0.2	3.4	2.4	1.0	15	1	0	0.02	234	3.03	4.17	2.40
3203	Air Handler Optimization, 40 HP	Office	10%	3%	0.0	3.5	3.1	1.0	8	0	0	0.01	113	3.59	5.61	1.16
3204	Demand Controlled Ventilation	Office	15%	29%	2.4	3.8	3.2	0.8	15	0	0	0.41	712	0.21	0.18	55.60
4000	Base Built-Up Refrigeration System	Office	0%	0%	0.0	0.0	0.0	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
4100	Base Self-Contained Refrigeration	Office	0%	0%	0.0	0.6	0.6	0.1	10	0	0	N/A	N/A	N/A	N/A	N/A
4101	Strip curtains for walk-ins (self-contained)	Office	0%	0%	0.1	0.6	0.6	0.1	4	0	0	2.09	14,907	0.01	0.01	284.65
4103	Night covers for display cases (self-contained)	Office	9%	9%	0.0	0.6	0.6	0.1	5	0	0	0.00	3	51.18	79.69	0.06
4104	Freezer-Cooler Replacement Gaskets (self-contained)	Office	4%	4%	0.0	0.6	0.6	0.1	4	0	0	0.00	5	25.09	39.91	0.09
4105	Bi-level LED Case Lighting (self-contained units) 2014	Office	0%	0%	0.0	0.6	0.6	0.1	8	0	0	0.17	1,216	0.19	0.28	23.22
4106	Energy-Star Refrigerator, solid door	Office	3%	3%	0.0	0.6	0.6	0.1	10	0	0	0.00	33	8.80	12.26	0.62
4107	Energy-Star Freezer, solid door	Office	1%	1%	0.0	0.6	0.6	0.1	9	0	0	0.00	24	10.89	15.60	0.45
4108	Energy-Star Refrigerator, glass door	Office	7%	7%	0.0	0.6	0.6	0.1	10	0	0	0.00	31	9.17	12.78	0.60
4109	Energy-Star Freezer, glass door	Office	2%	2%	0.0	0.6	0.6	0.1	9	0	0	0.00	10	26.67	38.21	0.19
4110	Energy Star Ice Machines	Office	2%	2%	0.0	0.6	0.6	0.1	10	0	0	0.01	88	3.27	4.55	1.68
4112	Reach-in unit occupancy sensors	Office	0%	0%	0.0	0.6	0.6	0.1	10	0	0	0.17	1,248	0.23	0.32	23.83
5000	Base Desktop PC	Office	0%	0%	0.0	0.2	0.2	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5001	PC Network Power Management Enabling	Office	68%	34%	0.0	0.2	0.1	0.0	4	3	0	0.00	49	4.64	7.94	0.46
5002	Energy Star or Better PC	Office	33%	33%	0.0	0.2	0.1	0.0	4	1	0	0.00	29	4.27	6.72	0.54
5100	Base Laptop PC	Office	0%	0%	0.0	0.0	0.0	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5101	Laptop Network Power Management Enabling	Office	7%	7%	0.0	0.0	0.0	0.0	4	0	0	0.26	1,899	0.06	0.10	35.87
5102	Energy Star or Better Laptop	Office	30%	30%	0.0	0.0	0.0	0.0	4	0	0	0.00	20	6.28	9.89	0.37
5200	Base Monitor, CRT	Office	0%	0%	0.0	0.1	0.1	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5201	Energy Star or Better Monitor - CRT	Office	56%	56%	0.0	0.1	0.0	0.0	4	1	0	0.00	2	65.45	103.02	0.04
5202	Monitor Power Management Enabling - CRT	Office	53%	27%	0.0	0.1	0.1	0.0	4	0	0	0.00	23	9.64	16.48	0.22
5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Office	15%	15%	0.0	0.1	0.1	0.0	4	0	0	0.02	132	0.93	1.47	2.49
5300	Base Monitor, LCD	Office	0%	0%	0.0	0.0	0.0	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5301	Energy Star or Better Monitor - LCD	Office	21%	21%	0.0	0.0	0.0	0.0	4	0	0	0.00	16	7.77	12.23	0.30
5302	Monitor Power Management Enabling - LCD	Office	19%	10%	0.0	0.0	0.0	0.0	4	0	0	0.02	261	0.86	1.48	2.47
5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Office	15%	4%	0.0	0.0	0.0	0.0	4	0	0	0.05	1,352	0.32	0.57	6.39
5400	Base Copier	Office	0%	0%	0.0	0.1	0.1	0.0	6	0	0	N/A	N/A	N/A	N/A	N/A
5401	Energy Star or Better Copier	Office	21%	21%	0.0	0.1	0.1	0.0	6	0	0	0.00	5	38.91	58.80	0.09
5402	Copier Power Management Enabling	Office	19%	10%	0.0	0.1	0.1	0.0	6	0	0	0.03	427	0.78	1.28	4.04
5500	Base Multifunction	Office	0%	0%	0.0	0.0	0.0	0.0	5	0	0	N/A	N/A	N/A	N/A	N/A
5501	Multifunction Power Management Enabling	Office	49%	25%	0.0	0.0	0.0	0.0	5	0	0	0.06	879	0.32	0.53	8.31
5502	ENERGY STAR Multi-Function Device	Office	40%	40%	0.0	0.0	0.0	0.0	5	0	0	0.00	14	10.60	16.34	0.27
5600	Base Printer	Office	0%	0%	0.0	0.1	0.1	0.0	5	0	0	N/A	N/A	N/A	N/A	N/A
5601	Printer Power Management Enabling	Office	49%	25%	0.0	0.1	0.0	0.0	5	0	0	0.01	166	1.69	2.81	1.57
5602	ENERGY STAR Printer	Office	40%	40%	0.0	0.1	0.0	0.0	5	1	0	0.00	3	48.72	75.10	0.06
5700	Base Data Center/Server Room	Office	0%	0%	0.0	196.5	196.5	27.3	10	0	0	N/A	N/A	N/A	N/A	N/A
5701	Data Center Improved Operations	Office	20%	20%	0.1	204.7	163.8	22.7	10	1	0	0.00	2	170.46	235.54	0.03
5702	Data Center Best Practices	Office	45%	45%	0.5	205.8	113.2	15.7	10	2	0	0.00	4	77.11	106.55	0.07
5703	Data Center State of the Art practices	Office	56%	56%	1.0	196.5	86.5	12.0	10	1	0	0.00	6	45.82	63.31	0.12
6000	Base Water Heating	Office	0%	0%	0.0	0.4	0.4	0.1	15	0	0	N/A	N/A	N/A	N/A	N/A
6001	Demand controlled circulating systems	Office	5%	5%	0.0	0.4	0.4	0.1	15	0	0	0.11	789	0.55	0.69	14.52
6002	High Efficiency Water Heater (electric)	Office	2%	2%	0.0	0.4	0.4	0.1	15	0	0	0.02	170	2.53	3.20	3.13
6003	Hot Water Pipe Insulation	Office	2%	2%	0.0	0.4	0.4	0.1	15	0	0	0.04	280	1.54	1.95	5.14

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
6004	Tankless Water Heater	Office	10%	10%	0.0	0.4	0.4	0.0	20	1	0	0.04	293	1.84	2.18	5.39
6005	Heat Pump Water Heater (air source)	Office	20%	20%	0.0	0.4	0.3	0.0	10	2	0	0.05	391	0.77	1.06	7.20
6006	Heat Recovery Unit	Office	65%	65%	0.1	0.4	0.1	0.0	10	1	0	0.03	219	1.37	1.90	4.03
6007	Heat Trap	Office	9%	9%	0.0	0.4	0.4	0.1	10	1	0	0.01	67	4.49	6.24	1.23
6008	Solar Water Heater	Office	70%	70%	0.1	0.4	0.1	0.0	20	6	1	0.04	316	1.70	2.02	5.82
7000	Base Refrigerated Vending Machines	Office	0%	0%	0.0	0.1	0.1	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
7001	Vending Misers (Refrigerated units)	Office	46%	23%	0.0	0.1	0.0	0.0	5	0	0	0.01	141	1.91	3.16	1.40
7002	Vending Misers (Refrigerated glass-front units)	Office	30%	15%	0.0	0.1	0.0	0.0	5	0	0	0.02	217	1.24	2.06	2.15
7100	Base Non-Refrigerated Vending Machines	Office	0%	0%	0.0	0.0	0.0	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
7101	Vending Misers (Non-Refrigerated)	Office	46%	23%	0.0	0.0	0.0	0.0	5	0	0	0.17	2,369	0.11	0.19	23.47
7200	Base Oven	Office	0%	0%	0.0	1.2	1.2	0.2	10	0	0	N/A	N/A	N/A	N/A	N/A
7300	Base Fryer	Office	0%	0%	0.0	0.9	0.9	0.1	10	0	0	N/A	N/A	N/A	N/A	N/A
7400	Base Steamer	Office	0%	0%	0.0	2.6	2.6	0.4	10	0	0	N/A	N/A	N/A	N/A	N/A
8000	Base Heating, Heat Pump (7.7 HSPF)	Office	0%	0%	0.0	0.8	0.8	0.0	15	0	0	N/A	N/A	N/A	N/A	N/A
8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	6%	6%	0.0	0.8	0.7	0.0	15	0	0	0.01	N/A	3.48	5.08	1.97
8100	Base Heating, Other Electric	Office	0%	0%	12.0	0.8	0.8	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
9500	Base Miscellaneous	Office	0%	0%	1.3	2.3	2.3	0.3	10	0	0	N/A	N/A	N/A	N/A	N/A
9501	Xmisc	Office	0%	0%	1.3	2.3	2.3	0.3	10	0	0	N/A	N/A	0.00	0.00	N/A
1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	Restaurant	0%	0%	0.0	7.6	7.6	1.5	18	0	0	N/A	N/A	N/A	N/A	N/A
1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	Restaurant	10%	10%	0.1	7.6	6.8	1.3	7	2	0	0.02	79	1.95	2.76	2.12
1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	Restaurant	22%	22%	0.4	7.6	5.9	1.2	7	3	1	0.02	124	1.25	1.76	3.32
1003	ROB 4L4'T5, 2014-2015	Restaurant	12%	12%	1.5	7.6	6.7	1.3	5	2	0	0.17	858	0.13	0.19	23.07
1004	ROB 4L4' LED Tube, 2014-2015	Restaurant	34%	34%	5.3	7.6	5.0	1.0	12	5	1	0.20	1,005	0.26	0.32	27.02
1005	LED Troffer (base 4L4'T8), 2014-2015	Restaurant	40%	40%	6.7	7.6	4.5	0.9	12	6	1	0.22	1,105	0.24	0.29	29.69
1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	Restaurant	5%	3%	0.0	7.6	7.2	1.5	6	0	0	0.00	38	6.44	10.42	0.49
1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	Restaurant	21%	5%	1.0	7.6	6.0	1.4	10	0	0	0.06	1,280	0.58	0.92	8.33
1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	Restaurant	25%	20%	0.2	7.6	5.6	1.2	15	1	0	0.01	66	5.76	7.18	1.40
1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	Restaurant	0%	0%	0.0	7.6	7.6	1.5	18	0	0	N/A	N/A	N/A	N/A	N/A
1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	Restaurant	10%	10%	0.1	7.6	6.8	1.3	7	2	0	0.02	79	1.95	2.76	2.12
1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	Restaurant	22%	22%	0.4	7.6	5.9	1.2	7	3	1	0.02	124	1.25	1.76	3.32
1013	ROB 4L4'T5, 2016-2017	Restaurant	12%	12%	1.5	7.6	6.7	1.3	5	2	0	0.17	858	0.13	0.19	23.07
1014	ROB 4L4' LED Tube, 2016-2017	Restaurant	34%	34%	3.6	7.6	5.0	1.0	12	5	1	0.14	691	0.38	0.47	18.56
1015	LED Troffer (base 4L4'T8), 2016-2017	Restaurant	40%	40%	4.7	7.6	4.5	0.9	12	6	1	0.15	775	0.34	0.42	20.84
1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	Restaurant	5%	3%	0.0	7.6	7.2	1.5	6	0	0	0.00	38	6.44	10.42	0.49
1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	Restaurant	21%	5%	1.0	7.6	6.0	1.4	10	0	0	0.06	1,280	0.58	0.92	8.33
1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	Restaurant	25%	20%	0.2	7.6	5.6	1.2	15	1	0	0.01	66	5.76	7.18	1.40
1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	Restaurant	0%	0%	0.0	7.6	7.6	1.5	18	0	0	N/A	N/A	N/A	N/A	N/A
1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	Restaurant	10%	10%	0.1	7.6	6.8	1.3	7	2	0	0.02	79	1.95	2.76	2.12
1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	Restaurant	22%	22%	0.4	7.6	5.9	1.2	7	3	1	0.02	124	1.25	1.76	3.32
1023	ROB 4L4'T5, 2018-2019	Restaurant	12%	12%	1.5	7.6	6.7	1.3	5	2	0	0.17	858	0.13	0.19	23.07
1024	ROB 4L4' LED Tube, 2018-2019	Restaurant	34%	34%	3.3	7.6	5.0	1.0	12	5	1	0.12	621	0.42	0.52	16.70
1025	LED Troffer (base 4L4'T8), 2018-2019	Restaurant	40%	40%	4.3	7.6	4.5	0.9	12	6	1	0.14	703	0.37	0.46	18.89
1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	Restaurant	5%	3%	0.0	7.6	7.2	1.5	6	0	0	0.00	38	6.44	10.42	0.49
1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	Restaurant	21%	5%	1.0	7.6	6.0	1.4	10	0	0	0.06	1,280	0.58	0.92	8.33
1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	Restaurant	25%	20%	0.2	7.6	5.6	1.2	15	1	0	0.01	66	5.76	7.18	1.40
1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Restaurant	0%	0%	0.0	7.6	7.6	1.5	18	0	0	N/A	N/A	N/A	N/A	N/A
1031	ROB 4L4' High Performance T8 (86 W), 2020	Restaurant	10%	10%	0.1	7.6	6.8	1.3	7	2	0	0.02	79	1.95	2.76	2.12
1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	22%	22%	0.4	7.6	5.9	1.2	7	3	1	0.02	124	1.25	1.76	3.32
1033	ROB 4L4'T5, 2020	Restaurant	12%	12%	1.5	7.6	6.7	1.3	5	2	0	0.17	858	0.13	0.19	23.07
1034	ROB 4L4' LED Tube, 2020	Restaurant	34%	34%	3.1	7.6	5.0	1.0	12	5	1	0.12	586	0.44	0.55	15.74
1035	LED Troffer (base 4L4'T8), 2020	Restaurant	40%	40%	4.1	7.6	4.5	0.9	12	6	1	0.13	665	0.39	0.49	17.88
1036	Lighting Control Tuneup (base 4L4'T8), 2020	Restaurant	5%	3%	0.0	7.6	7.2	1.5	6	0	0	0.00	38	6.44	10.42	0.49
1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Restaurant	21%	5%	1.0	7.6	6.0	1.4	10	0	0	0.06	1,280	0.58	0.92	8.33
1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Restaurant	25%	20%	0.2	7.6	5.6	1.2	15	1	0	0.01	66	5.76	7.18	1.40
1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	Restaurant	0%	0%	0.0	3.6	3.6	0.7	18	0	0	N/A	N/A	N/A	N/A	N/A
1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	Restaurant	10%	10%	0.1	3.6	3.2	0.6	7	9	2	0.02	100	1.54	2.18	2.68
1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	Restaurant	22%	22%	0.2	3.6	2.8	0.6	7	19	4	0.03	156	0.99	1.39	4.20
1103	ROB 2L4'T5, 2014-2015	Restaurant	12%	12%	0.8	3.6	3.2	0.6	5	10	2	0.19	984	0.11	0.17	26.45
1104	ROB 2L4' LED Tube, 2014-2015	Restaurant	34%	34%	2.1	3.6	2.4	0.5	12	9	2	0.17	852	0.31	0.38	22.91
1105	LED Troffer (base 2L4'T8), 2014-2015	Restaurant	40%	40%	3.1	3.6	2.2	0.4	12	35	7	0.21	1,060	0.25	0.31	28.49
1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	Restaurant	5%	3%	0.0	3.6	3.4	0.7	6	0	0	0.01	79	3.07	4.97	1.04
1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	Restaurant	21%	5%	0.8	3.6	2.9	0.7	10	1	0	0.11	2,269	0.33	0.52	14.76
1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	Restaurant	25%	20%	0.2	3.6	2.7	0.6	15	7	1	0.02	137	2.76	3.44	2.92
1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	Restaurant	0%	0%	0.0	3.6	3.6	0.7	18	0	0	N/A	N/A	N/A	N/A	N/A
1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	Restaurant	10%	10%	0.1	3.6	3.2	0.6	7	9	2	0.02	100	1.54	2.18	2.68
1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	Restaurant	22%	22%	0.2	3.6	2.8	0.6	7	19	4	0.03	156	0.99	1.39	4.20
1113	ROB 2L4'T5, 2016-2017	Restaurant	12%	12%	0.8	3.6	3.2	0.6	5	10	2	0.19	984	0.11	0.17	26.45
1114	ROB 2L4' LED Tube, 2016-2017	Restaurant	34%	34%	1.5	3.6	2.4	0.5	12	9	2	0.12	606	0.43	0.53	16.28
1115	LED Troffer (base 2L4'T8), 2016-2017	Restaurant	40%	40%	2.3	3.6	2.2	0.4	12	35	7	0.15	773	0.34	0.42	20.78
1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	Restaurant	5%	3%	0.0	3.6	3.4	0.7	6	0	0	0.01	79	3.07	4.97	1.04

Commercial Electric Existing Construction

DSM ASSYST SUMMARY

Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	Restaurant	21%	5%	0.8	3.6	2.9	0.7	10	1	0	0.11	2,269	0.33	0.52	14.76
1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	Restaurant	25%	20%	0.2	3.6	2.7	0.6	15	7	1	0.02	137	2.76	3.44	2.92
1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	Restaurant	0%	0%	0.0	3.6	3.6	0.7	18	0	0	N/A	N/A	N/A	N/A	N/A
1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	Restaurant	10%	10%	0.1	3.6	3.2	0.6	7	9	2	0.02	100	1.54	2.18	2.68
1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	Restaurant	22%	22%	0.2	3.6	2.8	0.6	7	19	4	0.03	156	0.99	1.39	4.20
1123	ROB 2L4'T5, 2018-2019	Restaurant	12%	12%	0.8	3.6	3.2	0.6	5	10	2	0.19	984	0.11	0.17	26.45
1124	ROB 2L4' LED Tube, 2018-2019	Restaurant	34%	34%	1.4	3.6	2.4	0.5	12	9	2	0.11	544	0.48	0.59	14.63
1125	LED Troffer (base 2L4'T8), 2018-2019	Restaurant	40%	40%	2.1	3.6	2.2	0.4	12	35	7	0.14	704	0.37	0.46	18.92
1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	Restaurant	5%	3%	0.0	3.6	3.4	0.7	6	0	0	0.01	79	3.07	4.97	1.04
1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	Restaurant	21%	5%	0.8	3.6	2.9	0.7	10	1	0	0.11	2,269	0.33	0.52	14.76
1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	Restaurant	25%	20%	0.2	3.6	2.7	0.6	15	7	1	0.02	137	2.76	3.44	2.92
1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Restaurant	0%	0%	0.0	3.6	3.6	0.7	18	0	0	N/A	N/A	N/A	N/A	N/A
1131	ROB 2L4' High Performance T8 (86 W), 2020	Restaurant	10%	10%	0.1	3.6	3.2	0.6	7	9	2	0.02	100	1.54	2.18	2.68
1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	22%	22%	0.2	3.6	2.8	0.6	7	19	4	0.03	156	0.99	1.39	4.20
1133	ROB 2L4'T5, 2020	Restaurant	12%	12%	0.8	3.6	3.2	0.6	5	10	2	0.19	984	0.11	0.17	26.45
1134	ROB 2L4' LED Tube, 2020	Restaurant	34%	34%	1.3	3.6	2.4	0.5	12	9	2	0.10	513	0.51	0.63	13.78
1135	LED Troffer (base 2L4'T8), 2020	Restaurant	40%	40%	2.0	3.6	2.2	0.4	12	35	7	0.13	668	0.39	0.48	17.96
1136	Lighting Control Tuneup (base 2L4'T8), 2020	Restaurant	5%	3%	0.0	3.6	3.4	0.7	6	0	0	0.01	79	3.07	4.97	1.04
1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Restaurant	21%	5%	0.8	3.6	2.9	0.7	10	1	0	0.11	2,269	0.33	0.52	14.76
1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Restaurant	25%	20%	0.2	3.6	2.7	0.6	15	7	1	0.02	137	2.76	3.44	2.92
1200	Base Other Fluorescent Fixture	Restaurant	0%	0%	0.0	0.0	0.0	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	Restaurant	0%	0%	0.1	3.6	3.6	0.7	1	0	0	N/A	N/A	N/A	N/A	N/A
1301	CFLs (base incandescent flood) 2014-2015	Restaurant	77%	77%	0.0	3.6	0.8	0.2	3	28	6	0.00	0	2,380.39	3,594.73	0.00
1302	LEDs (base incandescent flood) 2014-2015	Restaurant	83%	83%	0.1	4.4	0.8	0.1	6	58	11	0.00	7	18.82	27.09	0.19
1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	Restaurant	0%	0%	0.1	3.6	3.6	0.7	1	0	0	N/A	N/A	N/A	N/A	N/A
1311	CFLs (base incandescent flood) 2016-2017	Restaurant	77%	77%	0.0	3.6	0.8	0.2	3	28	6	0.00	0	2,380.39	3,594.73	0.00
1312	LEDs (base incandescent flood) 2016-2017	Restaurant	83%	83%	0.0	4.4	0.8	0.1	6	58	11	0.00	0	6,141.55	8,842.08	0.00
1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	Restaurant	0%	0%	0.1	3.6	3.6	0.7	1	0	0	N/A	N/A	N/A	N/A	N/A
1321	CFLs (base incandescent flood) 2018-2019	Restaurant	77%	77%	0.0	3.6	0.8	0.2	3	28	6	0.00	0	2,380.39	3,594.73	0.00
1322	LEDs (base incandescent flood) 2018-2019	Restaurant	83%	83%	0.0	4.4	0.8	0.1	6	58	11	0.00	0	6,141.55	8,842.08	0.00
1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Restaurant	0%	0%	0.1	3.6	3.6	0.7	1	0	0	N/A	N/A	N/A	N/A	N/A
1331	CFLs (base incandescent flood) 2020	Restaurant	77%	77%	0.0	3.6	0.8	0.2	3	28	6	0.00	0	2,380.39	3,594.73	0.00
1332	LEDs (base incandescent flood) 2020	Restaurant	83%	83%	0.0	4.4	0.8	0.1	6	58	11	0.00	0	6,141.55	8,842.08	0.00
1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	Restaurant	0%	0%	0.1	2.6	2.6	0.5	1	0	0	N/A	N/A	N/A	N/A	N/A
1401	CFLs (base incandescent A-line 72W) 2014-2015	Restaurant	74%	74%	0.0	2.6	0.7	0.1	3	10	2	0.00	0	1,638.20	2,473.92	0.00
1402	LEDs (base incandescent A-line 72W) 2014-2015	Restaurant	82%	82%	0.1	3.2	0.6	0.1	6	20	4	0.00	10	13.24	19.07	0.27
1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	Restaurant	0%	0%	0.1	2.6	2.6	0.5	1	0	0	N/A	N/A	N/A	N/A	N/A
1411	CFLs (base incandescent A-line 72W) 2016-2017	Restaurant	74%	74%	0.0	2.6	0.7	0.1	3	10	2	0.00	0	1,638.20	2,473.92	0.00
1412	LEDs (base incandescent A-line 72W) 2016-2017	Restaurant	82%	82%	0.0	3.2	0.6	0.1	6	20	4	0.00	0	4,322.55	6,223.24	0.00
1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	Restaurant	0%	0%	0.1	2.6	2.6	0.5	1	0	0	N/A	N/A	N/A	N/A	N/A
1421	CFLs (base incandescent A-line 72W) 2018-2019	Restaurant	74%	74%	0.0	2.6	0.7	0.1	3	10	2	0.00	0	1,638.20	2,473.92	0.00
1422	LEDs (base incandescent A-line 72W) 2018-2019	Restaurant	82%	82%	0.0	3.2	0.6	0.1	6	20	4	0.00	0	4,322.55	6,223.24	0.00
1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Restaurant	0%	0%	0.1	2.6	2.6	0.5	1	0	0	N/A	N/A	N/A	N/A	N/A
1431	CFLs (base incandescent A-line 72W) 2020	Restaurant	74%	74%	0.0	2.6	0.7	0.1	3	10	2	0.00	0	1,638.20	2,473.92	0.00
1432	LEDs (base incandescent A-line 72W) 2020	Restaurant	82%	82%	0.0	3.2	0.6	0.1	6	20	4	0.00	0	4,322.55	6,223.24	0.00
1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	Restaurant	0%	0%	0.1	1.9	1.9	0.4	1	0	0	N/A	N/A	N/A	N/A	N/A
1501	CFLs (base incandescent A-line 53W) 2014-2015	Restaurant	66%	66%	0.0	1.9	0.6	0.1	3	6	1	0.00	0	1,081.38	1,633.03	0.00
1502	LEDs (base incandescent A-line 53W) 2014-2015	Restaurant	75%	75%	0.1	2.3	0.6	0.1	6	13	3	0.00	15	8.73	12.57	0.41
1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	Restaurant	0%	0%	0.1	1.9	1.9	0.4	1	0	0	N/A	N/A	N/A	N/A	N/A
1511	CFLs (base incandescent A-line 53W) 2016-2017	Restaurant	66%	66%	0.0	1.9	0.6	0.1	3	6	1	0.00	0	1,081.38	1,633.03	0.00
1512	LEDs (base incandescent A-line 53W) 2016-2017	Restaurant	75%	75%	0.0	2.3	0.6	0.1	6	13	3	0.00	0	2,849.02	4,101.78	0.00
1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	Restaurant	0%	0%	0.1	1.9	1.9	0.4	1	0	0	N/A	N/A	N/A	N/A	N/A
1521	CFLs (base incandescent A-line 53W) 2018-2019	Restaurant	66%	66%	0.0	1.9	0.6	0.1	3	6	1	0.00	0	1,081.38	1,633.03	0.00
1522	LEDs (base incandescent A-line 53W) 2018-2019	Restaurant	75%	75%	0.0	2.3	0.6	0.1	6	13	3	0.00	0	2,849.02	4,101.78	0.00
1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Restaurant	0%	0%	0.1	1.9	1.9	0.4	1	0	0	N/A	N/A	N/A	N/A	N/A
1531	CFLs (base incandescent A-line 53W) 2020	Restaurant	66%	66%	0.0	1.9	0.6	0.1	3	6	1	0.00	0	1,081.38	1,633.03	0.00
1532	LEDs (base incandescent A-line 53W) 2020	Restaurant	75%	75%	0.0	2.3	0.6	0.1	6	13	3	0.00	0	2,849.02	4,101.78	0.00
1600	Base CFL 18W to screw-in replacement 2014-2015	Restaurant	0%	0%	0.2	0.9	0.9	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1601	LED screw-in replacement (base CFL 18W) 2014-2015	Restaurant	28%	28%	0.4	0.9	0.7	0.1	6	3	1	0.16	790	0.17	0.24	21.24
1610	Base CFL 18W to screw-in replacement 2016-2017	Restaurant	0%	0%	0.2	0.9	0.9	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1611	LED screw-in replacement (base CFL 18W) 2016-2017	Restaurant	28%	28%	0.2	0.9	0.7	0.1	6	3	1	0.08	411	0.32	0.47	11.06
1620	Base CFL 18W to screw-in replacement 2018-2019	Restaurant	0%	0%	0.2	0.9	0.9	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1621	LED screw-in replacement (base CFL 18W) 2018-2019	Restaurant	28%	28%	0.2	0.9	0.7	0.1	6	3	1	0.06	328	0.41	0.58	8.82
1630	Base CFL 18W to screw-in replacement 2020	Restaurant	0%	0%	0.2	0.9	0.9	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1631	LED screw-in replacement (base CFL 18W) 2020	Restaurant	28%	28%	0.1	0.9	0.7	0.1	6	3	1	0.06	285	0.47	0.67	7.67
1700	Base CFL 23W to screw-in replacement 2014-2015	Restaurant	0%	0%	0.2	1.2	1.2	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1701	LED screw-in replacement (base CFL 23W) 2014-2015	Restaurant	26%	26%	0.4	1.2	0.9	0.2	6	4	1	0.13	659	0.20	0.29	17.71
1710	Base CFL 23W to screw-in replacement 2016-2017	Restaurant	0%	0%	0.2	1.2	1.2	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1711	LED screw-in replacement (base CFL 23W) 2016-2017	Restaurant	26%	26%	0.2	1.2	0.9	0.2	6	4	1	0.07	343	0.39	0.56	9.22
1720	Base CFL 23W to screw-in replacement 2018-2019	Restaurant	0%	0%	0.2	1.2	1.2	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
1721	LED screw-in replacement (base CFL 23W) 2018-2019	Restaurant	26%	26%	0.2	1.2	0.9	0.2	6	4	1	0.05	274	0.49	0.70	7.35
1730	Base CFL 23W to screw-in replacement 2020	Restaurant	0%	0%	0.2	1.2	1.2	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1731	LED screw-in replacement (base CFL 23W) 2020	Restaurant	26%	26%	0.1	1.2	0.9	0.2	6	4	1	0.05	238	0.56	0.81	6.39
1800	BaseMetal Halide, 465W	Restaurant	0%	0%	0.0	0.1	0.1	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1801	T5 (240W) (base metal halide)	Restaurant	48%	48%	0.0	0.1	0.1	0.0	18	0	0	0.01	73	5.02	5.67	1.96
1802	Induction High Bay Lighting	Restaurant	37%	37%	0.1	0.1	0.1	0.0	20	0	0	0.10	515	0.77	0.85	13.83
1803	PSMH + electronic ballast	Restaurant	43%	43%	0.0	0.1	0.1	0.0	16	0	0	0.03	167	1.99	2.32	4.50
1804	PSMH, magnetic ballast, 320 W	Restaurant	31%	31%	0.0	0.1	0.1	0.0	0	0	0	0.06	310	0.07	0.12	8.34
1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Restaurant	25%	20%	0.2	0.1	0.1	0.0	15	0	0	0.59	3,751	0.10	0.13	79.94
1806	Occupancy Sensor, High Bay T5	Restaurant	21%	5%	0.0	0.1	0.1	0.0	10	0	0	0.02	373	1.98	3.15	2.43
1850	Base CFL Exit Sign	Restaurant	0%	0%	0.0	0.0	0.0	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1851	LED Exit Sign	Restaurant	69%	69%	0.0	0.1	0.0	0.0	7	2	0	0.03	150	1.03	1.45	4.02
1900	Base Outdoor High Pressure Sodium 250W Lamp	Restaurant	0%	0%	0.0	1.7	1.7	0.1	15	0	0	N/A	N/A	N/A	N/A	N/A
1901	Outdoor Lighting Controls (Photocell/Timeclock)	Restaurant	25%	73%	0.3	1.9	1.4	0.0	18	17	3	0.06	325	1.20	1.27	8.74
1902	LED Outdoor Area Lighting	Restaurant	52%	52%	1.1	1.7	0.8	0.1	18	53	4	0.12	1,879	0.49	0.66	16.95
1903	Bi-Level LED Outdoor Lighting	Restaurant	69%	63%	3.6	1.7	0.5	0.0	18	57	3	0.30	4,998	0.20	0.27	40.77
2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Restaurant	0%	0%	0.7	6.1	6.1	3.8	20	0	0	N/A	N/A	N/A	N/A	N/A
2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Restaurant	12%	12%	0.2	6.3	5.6	3.5	20	7	5	0.02	33	5.40	4.16	2.83
2003	EMS - Chiller	Restaurant	10%	3%	0.2	6.2	5.6	3.8	15	7	1	0.03	182	2.07	2.65	3.79
2005	Chiller Tune Up/Diagnostics	Restaurant	8%	4%	0.1	6.6	6.1	4.0	10	0	0	0.01	30	4.92	6.03	1.27
2010	Ceiling/roof Insulation - Chiller	Restaurant	12%	12%	0.1	6.4	5.6	3.5	20	6	4	0.02	24	7.41	5.71	2.06
2012	Duct Testing/Sealing - Chiller	Restaurant	19%	19%	1.0	6.2	5.0	3.1	18	15	9	0.08	135	1.22	0.97	11.51
2100	Base DX Packaged System, EER=10.3, 10 tons	Restaurant	0%	0%	2.0	6.1	6.1	3.8	15	0	0	N/A	N/A	N/A	N/A	N/A
2101	DX Packaged System, EER=10.9, 10 tons	Restaurant	6%	6%	0.2	6.1	5.7	3.6	15	25	15	0.05	77	1.84	1.53	6.54
2102	DX Packaged System, EER=13.4, 10 tons	Restaurant	23%	23%	0.2	6.1	4.7	2.9	15	103	65	0.02	25	5.66	4.72	2.12
2103	Geothermal Heat Pump, EER=13, 10 tons - DX	Restaurant	21%	21%	2.4	6.1	4.8	3.0	15	5	3	0.19	296	0.48	0.40	25.24
2105	DX Tune Up/ Advanced Diagnostics	Restaurant	5%	3%	0.1	6.4	6.1	3.9	10	1	0	0.03	100	1.49	1.83	4.19
2106	Prog. Thermostat - DX	Restaurant	5%	1%	0.1	6.3	5.9	3.9	8	10	2	0.03	168	1.24	1.85	3.50
2107	Cool Roof - DX	Restaurant	7%	7%	0.3	6.1	5.7	3.6	10	14	9	0.06	92	1.01	0.97	7.87
2108	Optimize Controls - DX	Restaurant	5%	1%	0.0	6.3	6.0	3.9	5	8	1	0.01	79	1.68	2.67	1.66
2109	Economizer - DX	Restaurant	12%	3%	0.5	6.6	5.8	4.0	10	9	1	0.06	400	0.65	0.92	8.34
2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Restaurant	3%	1%	0.1	6.2	6.0	3.8	10	0	0	0.06	402	0.65	0.91	8.38
2111	Economizer Repair - DX	Restaurant	12%	18%	0.2	6.3	5.6	3.2	5	21	19	0.03	33	1.09	1.06	4.16
2112	Duct Testing/Sealing - DX	Restaurant	19%	19%	1.0	6.2	5.0	3.1	18	25	16	0.08	135	1.22	0.97	11.51
2113	Ceiling/roof Insulation - DX	Restaurant	12%	12%	0.1	6.9	6.1	3.8	20	0	0	0.01	22	7.99	6.15	1.91
2114	Duct/Pipe Insulation - DX	Restaurant	2%	2%	0.8	6.1	6.0	3.7	10	5	3	0.62	985	0.09	0.09	83.96
2115	Window Film (Standard) - DX	Restaurant	10%	10%	0.1	6.1	5.5	3.4	10	33	20	0.01	18	5.10	4.91	1.56
2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Restaurant	0%	0%	0.0	6.1	6.1	3.8	15	0	0	N/A	N/A	N/A	N/A	N/A
2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	13%	13%	0.1	6.1	5.3	3.3	15	17	11	0.01	18	7.93	6.61	1.52
2300	Base PTAC, EER=8.3, 1 ton	Restaurant	0%	0%	0.0	6.1	6.1	3.8	15	0	0	N/A	N/A	N/A	N/A	N/A
3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Restaurant	0%	0%	0.1	3.1	3.1	0.8	20	0	0	N/A	N/A	N/A	N/A	N/A
3001	Fan Motor, 5hp, 1800rpm, 89.5%	Restaurant	2%	2%	0.1	3.1	3.1	0.8	20	3	1	0.11	432	0.74	0.78	15.16
3002	Variable Speed Drive Control, 5 HP	Restaurant	30%	8%	0.7	3.1	2.2	0.7	15	45	3	0.07	1,133	0.73	1.02	9.82
3003	Demand Controlled Ventilation	Restaurant	15%	29%	2.4	3.1	2.7	0.6	15	20	10	0.51	1,009	0.16	0.14	69.20
3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Restaurant	0%	0%	0.0	3.1	3.1	0.8	20	0	0	N/A	N/A	N/A	N/A	N/A
3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Restaurant	0%	0%	0.0	3.1	3.1	0.8	20	0	0	N/A	N/A	N/A	N/A	N/A
4000	Base Built-Up Refrigeration System	Restaurant	0%	0%	0.0	0.0	0.0	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
4100	Base Self-Contained Refrigeration	Restaurant	0%	0%	0.0	7.3	7.3	1.1	10	0	0	N/A	N/A	N/A	N/A	N/A
4101	Strip curtains for walk-ins (self-contained)	Restaurant	1%	1%	0.1	7.3	7.3	1.1	4	2	0	0.11	733	0.15	0.24	14.94
4103	Night covers for display cases (self-contained)	Restaurant	9%	9%	0.0	7.3	6.7	1.0	5	29	4	0.00	11	13.26	20.50	0.22
4104	Freezer-Cooler Replacement Gaskets (self-contained)	Restaurant	3%	3%	0.0	7.4	7.2	1.1	4	9	1	0.00	13	8.71	13.76	0.27
4105	Bi-level LED Case Lighting (self-contained units) 2014	Restaurant	0%	0%	0.0	7.3	7.3	1.1	8	1	0	0.17	1,138	0.19	0.28	23.20
4106	Energy-Star Refrigerator, solid door	Restaurant	3%	3%	0.0	7.4	7.1	1.1	10	10	2	0.02	108	2.51	3.47	2.20
4107	Energy-Star Freezer, solid door	Restaurant	1%	1%	0.0	7.3	7.2	1.1	9	4	1	0.01	78	3.12	4.43	1.60
4108	Energy-Star Refrigerator, glass door	Restaurant	2%	2%	0.0	7.3	7.2	1.1	10	5	1	0.02	106	2.56	3.54	2.16
4109	Energy-Star Freezer, glass door	Restaurant	3%	3%	0.0	7.4	7.1	1.1	9	10	2	0.00	32	7.62	10.83	0.65
4110	Energy Star Ice Machines	Restaurant	2%	2%	0.1	7.4	7.2	1.1	10	10	1	0.04	292	0.93	1.29	5.96
4112	Reach-in unit occupancy sensors	Restaurant	0%	0%	0.0	7.3	7.3	1.1	10	0	0	0.17	1,169	0.23	0.32	23.83
5000	Base Desktop PC	Restaurant	0%	0%	0.0	0.1	0.1	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5001	PC Network Power Management Enabling	Restaurant	66%	34%	0.0	0.1	0.0	0.0	4	3	0	0.01	62	2.61	4.33	0.84
5002	Energy Star or Better PC	Restaurant	33%	33%	0.0	0.1	0.1	0.0	4	2	0	0.01	38	2.40	3.59	1.01
5100	Base Laptop PC	Restaurant	0%	0%	0.0	0.0	0.0	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5101	Laptop Network Power Management Enabling	Restaurant	7%	7%	0.0	0.0	0.0	0.0	4	0	0	0.47	2,411	0.04	0.06	64.06
5102	Energy Star or Better Laptop	Restaurant	30%	30%	0.0	0.0	0.0	0.0	4	0	0	0.00	25	3.69	5.54	0.66
5200	Base Monitor, CRT	Restaurant	0%	0%	0.0	0.1	0.1	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5201	Energy Star or Better Monitor - CRT	Restaurant	56%	56%	0.0	0.1	0.0	0.0	4	2	0	0.00	3	29.38	44.05	0.08
5202	Monitor Power Management Enabling - CRT	Restaurant	52%	27%	0.0	0.1	0.0	0.0	4	1	0	0.00	37	4.35	7.21	0.51
5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Restaurant	15%	15%	0.0	0.1	0.1	0.0	4	0	0	0.03	167	0.55	0.82	4.44
5300	Base Monitor, LCD	Restaurant	0%	0%	0.0	0.0	0.0	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5301	Energy Star or Better Monitor - LCD	Restaurant	21%	21%	0.0	0.0	0.0	0.0	4	0	0	0.00	22	4.20	6.30	0.58

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
5302	Monitor Power Management Enabling - LCD	Restaurant	19%	10%	0.0	0.0	0.0	0.0	4	0	0	0.03	339	0.48	0.79	4.61
5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Restaurant	14%	4%	0.0	0.0	0.0	0.0	4	0	0	0.09	1,722	0.17	0.31	11.86
5400	Base Copier	Restaurant	0%	0%	0.0	0.1	0.1	0.0	6	0	0	N/A	N/A	N/A	N/A	N/A
5401	Energy Star or Better Copier	Restaurant	21%	21%	0.0	0.1	0.0	0.0	6	0	0	0.00	6	21.61	31.17	0.17
5402	Copier Power Management Enabling	Restaurant	19%	10%	0.0	0.1	0.0	0.0	6	0	0	0.06	586	0.41	0.65	7.97
5500	Base Multifunction	Restaurant	0%	0%	0.0	0.0	0.0	0.0	5	0	0	N/A	N/A	N/A	N/A	N/A
5501	Multifunction Power Management Enabling	Restaurant	48%	25%	0.0	0.0	0.0	0.0	5	0	0	0.17	1,664	0.12	0.20	22.60
5502	ENERGY STAR Multi-Function Printer	Restaurant	40%	40%	0.0	0.0	0.0	0.0	5	0	0	0.00	18	6.22	9.15	0.48
5600	Base Printer	Restaurant	0%	0%	0.0	0.0	0.0	0.0	5	0	0	N/A	N/A	N/A	N/A	N/A
5601	Printer Power Management Enabling	Restaurant	48%	25%	0.0	0.0	0.0	0.0	5	0	0	0.03	315	0.64	1.03	4.28
5602	ENERGY STAR Printer	Restaurant	40%	40%	0.0	0.0	0.0	0.0	5	0	0	0.00	4	28.59	42.06	0.11
5700	Base Data Center/Server Room	Restaurant	0%	0%	0.0	110.1	110.1	21.5	10	0	0	N/A	N/A	N/A	N/A	N/A
5701	Data Center Improved Operations	Restaurant	20%	20%	0.1	114.6	91.7	17.9	10	1	0	0.00	2	100.89	131.90	0.06
5702	Data Center Best Practices	Restaurant	45%	45%	0.5	115.2	63.4	12.4	10	1	0	0.00	5	45.64	59.67	0.13
5703	Data Center State of the Art practices	Restaurant	56%	56%	1.0	110.1	48.4	9.4	10	0	0	0.00	8	27.12	35.46	0.22
6000	Base Water Heating	Restaurant	0%	0%	0.0	1.6	1.6	0.3	15	0	0	N/A	N/A	N/A	N/A	N/A
6001	Demand controlled circulating systems	Restaurant	5%	5%	0.0	1.6	1.6	0.3	15	2	0	0.05	317	1.14	1.38	7.27
6002	High Efficiency Water Heater (electric)	Restaurant	2%	2%	0.0	1.6	1.6	0.3	15	1	0	0.01	63	5.75	6.96	1.44
6003	Hot Water Pipe Insulation	Restaurant	2%	2%	0.0	1.6	1.6	0.3	15	1	0	0.02	102	3.52	4.26	2.35
6004	Tankless Water Heater	Restaurant	10%	10%	0.0	1.6	1.5	0.2	20	5	1	0.02	108	4.18	4.75	2.48
6005	Heat Pump Water Heater (air source)	Restaurant	20%	20%	0.1	1.6	1.3	0.2	10	10	2	0.02	144	1.73	2.31	3.31
6006	Heat Recovery Unit	Restaurant	65%	65%	0.1	1.6	0.6	0.1	10	32	5	0.01	43	5.74	7.66	1.00
6007	Heat Trap	Restaurant	9%	9%	0.0	1.7	1.5	0.3	10	3	1	0.00	25	10.16	13.57	0.56
6008	Solar Water Heater	Restaurant	70%	70%	0.2	1.6	0.5	0.1	20	9	1	0.02	116	3.87	4.40	2.67
7000	Base Refrigerated Vending Machines	Restaurant	0%	0%	0.0	0.0	0.0	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
7001	Vending Misers (Refrigerated units)	Restaurant	46%	23%	0.0	0.0	0.0	0.0	5	1	0	0.01	105	1.94	3.17	1.40
7002	Vending Misers (Refrigerated glass-front units)	Restaurant	30%	15%	0.0	0.0	0.0	0.0	5	0	0	0.02	160	1.27	2.06	2.14
7100	Base Non-Refrigerated Vending Machines	Restaurant	0%	0%	0.0	0.0	0.0	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
7101	Vending Misers (Non-Refrigerated)	Restaurant	46%	23%	0.0	0.0	0.0	0.0	5	0	0	0.17	1,753	0.12	0.19	23.42
7200	Base Oven	Restaurant	0%	0%	0.0	2.0	2.0	0.4	10	0	0	N/A	N/A	N/A	N/A	N/A
7201	Convection Oven	Restaurant	23%	23%	0.5	2.0	1.5	0.3	12	7	1	0.10	494	0.51	0.63	13.79
7300	Base Fryer	Restaurant	0%	0%	0.0	2.0	2.0	0.4	10	0	0	N/A	N/A	N/A	N/A	N/A
7301	Efficient Fryer	Restaurant	6%	6%	0.4	2.0	1.8	0.4	12	2	0	0.33	1,604	0.16	0.19	44.78
7400	Base Steamer	Restaurant	0%	0%	0.0	3.1	3.1	0.6	10	0	0	N/A	N/A	N/A	N/A	N/A
7401	Efficient Steamer	Restaurant	69%	69%	1.0	3.1	0.9	0.2	12	32	6	0.05	226	1.12	1.38	6.31
8000	Base Heating, Heat Pump (7.7 HSPF)	Restaurant	0%	0%	0.0	0.3	0.3	0.0	15	0	0	N/A	N/A	N/A	N/A	N/A
8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	6%	6%	0.0	0.3	0.2	0.0	15	0	0	0.04	N/A	1.13	1.66	6.05
8100	Base Heating, Other Electric	Restaurant	0%	0%	12.0	0.3	0.3	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
9500	Base Miscellaneous	Restaurant	0%	0%	1.3	2.7	2.7	0.5	10	0	0	N/A	N/A	N/A	N/A	N/A
9501	Xmisc	Restaurant	0%	0%	1.3	2.7	2.7	0.5	10	0	0	N/A	N/A	0.00	0.00	N/A
1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	Restaurant	0%	0%	0.0	7.6	7.6	1.5	18	0	0	N/A	N/A	N/A	N/A	N/A
1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	Restaurant	10%	10%	0.1	7.6	6.8	1.3	7	0	0	0.02	79	1.95	2.76	2.12
1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	Restaurant	22%	22%	0.4	7.6	5.9	1.2	7	0	0	0.02	124	1.25	1.76	3.32
1003	ROB 4L4'T5, 2014-2015	Restaurant	12%	12%	1.5	7.6	6.7	1.3	5	0	0	0.17	858	0.13	0.19	23.07
1004	ROB 4L4' LED Tube, 2014-2015	Restaurant	34%	34%	5.3	7.6	5.0	1.0	12	0	0	0.20	1,005	0.26	0.32	27.02
1005	LED Troffer (base 4L4'T8), 2014-2015	Restaurant	40%	40%	6.7	7.6	4.5	0.9	12	0	0	0.22	1,105	0.24	0.29	29.69
1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	Restaurant	5%	3%	0.0	7.6	7.2	1.5	6	0	0	0.00	38	6.44	10.42	0.49
1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	Restaurant	21%	5%	1.0	7.6	6.0	1.4	10	0	0	0.06	1,283	0.58	0.92	8.35
1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	Restaurant	25%	20%	0.2	7.6	5.6	1.2	15	0	0	0.01	66	5.76	7.18	1.40
1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	Restaurant	0%	0%	0.0	7.6	7.6	1.5	18	0	0	N/A	N/A	N/A	N/A	N/A
1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	Restaurant	10%	10%	0.1	7.6	6.8	1.3	7	0	0	0.02	79	1.95	2.76	2.12
1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	Restaurant	22%	22%	0.4	7.6	5.9	1.2	7	0	0	0.02	124	1.25	1.76	3.32
1013	ROB 4L4'T5, 2016-2017	Restaurant	12%	12%	1.5	7.6	6.7	1.3	5	0	0	0.17	858	0.13	0.19	23.07
1014	ROB 4L4' LED Tube, 2016-2017	Restaurant	34%	34%	3.6	7.6	5.0	1.0	12	0	0	0.14	691	0.38	0.47	18.56
1015	LED Troffer (base 4L4'T8), 2016-2017	Restaurant	40%	40%	4.7	7.6	4.5	0.9	12	0	0	0.15	775	0.34	0.42	20.84
1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	Restaurant	5%	3%	0.0	7.6	7.2	1.5	6	0	0	0.00	38	6.44	10.42	0.49
1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	Restaurant	21%	5%	1.0	7.6	6.0	1.4	10	0	0	0.06	1,283	0.58	0.92	8.35
1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	Restaurant	25%	20%	0.2	7.6	5.6	1.2	15	0	0	0.01	66	5.76	7.18	1.40
1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	Restaurant	0%	0%	0.0	7.6	7.6	1.5	18	0	0	N/A	N/A	N/A	N/A	N/A
1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	Restaurant	10%	10%	0.1	7.6	6.8	1.3	7	0	0	0.02	79	1.95	2.76	2.12
1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	Restaurant	22%	22%	0.4	7.6	5.9	1.2	7	0	0	0.02	124	1.25	1.76	3.32
1023	ROB 4L4'T5, 2018-2019	Restaurant	12%	12%	1.5	7.6	6.7	1.3	5	0	0	0.17	858	0.13	0.19	23.07
1024	ROB 4L4' LED Tube, 2018-2019	Restaurant	34%	34%	3.3	7.6	5.0	1.0	12	0	0	0.12	621	0.42	0.52	16.70
1025	LED Troffer (base 4L4'T8), 2018-2019	Restaurant	40%	40%	4.3	7.6	4.5	0.9	12	0	0	0.14	703	0.37	0.46	18.89
1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	Restaurant	5%	3%	0.0	7.6	7.2	1.5	6	0	0	0.00	38	6.44	10.42	0.49
1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	Restaurant	21%	5%	1.0	7.6	6.0	1.4	10	0	0	0.06	1,283	0.58	0.92	8.35
1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	Restaurant	25%	20%	0.2	7.6	5.6	1.2	15	0	0	0.01	66	5.76	7.18	1.40
1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Restaurant	0%	0%	0.0	7.6	7.6	1.5	18	0	0	N/A	N/A	N/A	N/A	N/A
1031	ROB 4L4' High Performance T8 (86 W), 2020	Restaurant	10%	10%	0.1	7.6	6.8	1.3	7	0	0	0.02	79	1.95	2.76	2.12
1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	22%	22%	0.4	7.6	5.9	1.2	7	0	0	0.02	124	1.25	1.76	3.32

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
1033	ROB 4L4'T5, 2020	Restaurant	12%	12%	1.5	7.6	6.7	1.3	5	0	0	0.17	858	0.13	0.19	23.07
1034	ROB 4L4' LED Tube, 2020	Restaurant	34%	34%	3.1	7.6	5.0	1.0	12	0	0	0.12	586	0.44	0.55	15.74
1035	LED Troffer (base 4L4'T8), 2020	Restaurant	40%	40%	4.1	7.6	4.5	0.9	12	0	0	0.13	665	0.39	0.49	17.88
1036	Lighting Control Tuneup (base 4L4'T8), 2020	Restaurant	5%	3%	0.0	7.6	7.2	1.5	6	0	0	0.00	38	6.44	10.42	0.49
1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Restaurant	21%	5%	1.0	7.6	6.0	1.4	10	0	0	0.06	1,283	0.58	0.92	8.35
1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Restaurant	25%	20%	0.2	7.6	5.6	1.2	15	0	0	0.01	66	5.76	7.18	1.40
1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	Restaurant	0%	0%	0.0	3.6	3.6	0.7	18	0	0	N/A	N/A	N/A	N/A	N/A
1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	Restaurant	10%	10%	0.1	3.6	3.2	0.6	7	0	0	0.02	100	1.54	2.18	2.68
1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	Restaurant	22%	22%	0.2	3.6	2.8	0.6	7	1	0	0.03	156	0.99	1.39	4.20
1103	ROB 2L4'T5, 2014-2015	Restaurant	12%	12%	0.8	3.6	3.2	0.6	5	1	0	0.19	984	0.11	0.17	26.45
1104	ROB 2L4' LED Tube, 2014-2015	Restaurant	34%	34%	2.1	3.6	2.4	0.5	12	0	0	0.17	852	0.31	0.38	22.91
1105	LED Troffer (base 2L4'T8), 2014-2015	Restaurant	40%	40%	3.1	3.6	2.2	0.4	12	2	0	0.21	1,060	0.25	0.31	28.49
1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	Restaurant	5%	3%	0.0	3.6	3.4	0.7	6	0	0	0.01	79	3.07	4.97	1.04
1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	Restaurant	21%	5%	0.8	3.6	2.9	0.7	10	0	0	0.11	2,274	0.32	0.52	14.79
1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	Restaurant	25%	20%	0.2	3.6	2.7	0.6	15	0	0	0.02	137	2.76	3.44	2.92
1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	Restaurant	0%	0%	0.0	3.6	3.6	0.7	18	0	0	N/A	N/A	N/A	N/A	N/A
1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	Restaurant	10%	10%	0.1	3.6	3.2	0.6	7	0	0	0.02	100	1.54	2.18	2.68
1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	Restaurant	22%	22%	0.2	3.6	2.8	0.6	7	1	0	0.03	156	0.99	1.39	4.20
1113	ROB 2L4'T5, 2016-2017	Restaurant	12%	12%	0.8	3.6	3.2	0.6	5	1	0	0.19	984	0.11	0.17	26.45
1114	ROB 2L4' LED Tube, 2016-2017	Restaurant	34%	34%	1.5	3.6	2.4	0.5	12	0	0	0.12	606	0.43	0.53	16.28
1115	LED Troffer (base 2L4'T8), 2016-2017	Restaurant	40%	40%	2.3	3.6	2.2	0.4	12	2	0	0.15	773	0.34	0.42	20.78
1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	Restaurant	5%	3%	0.0	3.6	3.4	0.7	6	0	0	0.01	79	3.07	4.97	1.04
1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	Restaurant	21%	5%	0.8	3.6	2.9	0.7	10	0	0	0.11	2,274	0.32	0.52	14.79
1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	Restaurant	25%	20%	0.2	3.6	2.7	0.6	15	0	0	0.02	137	2.76	3.44	2.92
1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	Restaurant	0%	0%	0.0	3.6	3.6	0.7	18	0	0	N/A	N/A	N/A	N/A	N/A
1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	Restaurant	10%	10%	0.1	3.6	3.2	0.6	7	0	0	0.02	100	1.54	2.18	2.68
1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	Restaurant	22%	22%	0.2	3.6	2.8	0.6	7	1	0	0.03	156	0.99	1.39	4.20
1123	ROB 2L4'T5, 2018-2019	Restaurant	12%	12%	0.8	3.6	3.2	0.6	5	1	0	0.19	984	0.11	0.17	26.45
1124	ROB 2L4' LED Tube, 2018-2019	Restaurant	34%	34%	1.4	3.6	2.4	0.5	12	0	0	0.11	544	0.48	0.59	14.63
1125	LED Troffer (base 2L4'T8), 2018-2019	Restaurant	40%	40%	2.1	3.6	2.2	0.4	12	2	0	0.14	704	0.37	0.46	18.92
1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	Restaurant	5%	3%	0.0	3.6	3.4	0.7	6	0	0	0.01	79	3.07	4.97	1.04
1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	Restaurant	21%	5%	0.8	3.6	2.9	0.7	10	0	0	0.11	2,274	0.32	0.52	14.79
1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	Restaurant	25%	20%	0.2	3.6	2.7	0.6	15	0	0	0.02	137	2.76	3.44	2.92
1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Restaurant	0%	0%	0.0	3.6	3.6	0.7	18	0	0	N/A	N/A	N/A	N/A	N/A
1131	ROB 2L4' High Performance T8 (86 W), 2020	Restaurant	10%	10%	0.1	3.6	3.2	0.6	7	0	0	0.02	100	1.54	2.18	2.68
1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	22%	22%	0.2	3.6	2.8	0.6	7	1	0	0.03	156	0.99	1.39	4.20
1133	ROB 2L4'T5, 2020	Restaurant	12%	12%	0.8	3.6	3.2	0.6	5	1	0	0.19	984	0.11	0.17	26.45
1134	ROB 2L4' LED Tube, 2020	Restaurant	34%	34%	1.3	3.6	2.4	0.5	12	0	0	0.10	513	0.51	0.63	13.78
1135	LED Troffer (base 2L4'T8), 2020	Restaurant	40%	40%	2.0	3.6	2.2	0.4	12	2	0	0.13	668	0.39	0.48	17.96
1136	Lighting Control Tuneup (base 2L4'T8), 2020	Restaurant	5%	3%	0.0	3.6	3.4	0.7	6	0	0	0.01	79	3.07	4.97	1.04
1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Restaurant	21%	5%	0.8	3.6	2.9	0.7	10	0	0	0.11	2,274	0.32	0.52	14.79
1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Restaurant	25%	20%	0.2	3.6	2.7	0.6	15	0	0	0.02	137	2.76	3.44	2.92
1200	Base Other Fluorescent Fixture	Restaurant	0%	0%	0.0	0.0	0.0	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	Restaurant	0%	0%	0.1	3.6	3.6	0.7	1	0	0	N/A	N/A	N/A	N/A	N/A
1301	CFLs (base incandescent flood) 2014-2015	Restaurant	77%	77%	0.0	3.6	0.8	0.2	3	0	0	0.00	0	2,380.39	3,594.73	0.00
1302	LEDs (base incandescent flood) 2014-2015	Restaurant	83%	83%	0.1	4.1	0.7	0.1	6	1	0	0.00	8	17.48	25.17	0.20
1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	Restaurant	0%	0%	0.1	3.6	3.6	0.7	1	0	0	N/A	N/A	N/A	N/A	N/A
1311	CFLs (base incandescent flood) 2016-2017	Restaurant	77%	77%	0.0	3.6	0.8	0.2	3	0	0	0.00	0	2,380.39	3,594.73	0.00
1312	LEDs (base incandescent flood) 2016-2017	Restaurant	83%	83%	0.0	4.1	0.7	0.1	6	1	0	0.00	0	5,705.63	8,214.49	0.00
1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	Restaurant	0%	0%	0.1	3.6	3.6	0.7	1	0	0	N/A	N/A	N/A	N/A	N/A
1321	CFLs (base incandescent flood) 2018-2019	Restaurant	77%	77%	0.0	3.6	0.8	0.2	3	0	0	0.00	0	2,380.39	3,594.73	0.00
1322	LEDs (base incandescent flood) 2018-2019	Restaurant	83%	83%	0.0	4.1	0.7	0.1	6	1	0	0.00	0	5,705.63	8,214.49	0.00
1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Restaurant	0%	0%	0.1	3.6	3.6	0.7	1	0	0	N/A	N/A	N/A	N/A	N/A
1331	CFLs (base incandescent flood) 2020	Restaurant	77%	77%	0.0	3.6	0.8	0.2	3	0	0	0.00	0	2,380.39	3,594.73	0.00
1332	LEDs (base incandescent flood) 2020	Restaurant	83%	83%	0.0	4.1	0.7	0.1	6	1	0	0.00	0	5,705.63	8,214.49	0.00
1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	Restaurant	0%	0%	0.1	2.6	2.6	0.5	1	0	0	N/A	N/A	N/A	N/A	N/A
1401	CFLs (base incandescent A-line 72W) 2014-2015	Restaurant	74%	74%	0.0	2.6	0.7	0.1	3	0	0	0.00	0	1,638.20	2,473.92	0.00
1402	LEDs (base incandescent A-line 72W) 2014-2015	Restaurant	82%	82%	0.1	3.0	0.5	0.1	6	0	0	0.00	11	12.32	17.74	0.29
1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	Restaurant	0%	0%	0.1	2.6	2.6	0.5	1	0	0	N/A	N/A	N/A	N/A	N/A
1411	CFLs (base incandescent A-line 72W) 2016-2017	Restaurant	74%	74%	0.0	2.6	0.7	0.1	3	0	0	0.00	0	1,638.20	2,473.92	0.00
1412	LEDs (base incandescent A-line 72W) 2016-2017	Restaurant	82%	82%	0.0	3.0	0.5	0.1	6	0	0	0.00	0	4,022.16	5,790.76	0.00
1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	Restaurant	0%	0%	0.1	2.6	2.6	0.5	1	0	0	N/A	N/A	N/A	N/A	N/A
1421	CFLs (base incandescent A-line 72W) 2018-2019	Restaurant	74%	74%	0.0	2.6	0.7	0.1	3	0	0	0.00	0	1,638.20	2,473.92	0.00
1422	LEDs (base incandescent A-line 72W) 2018-2019	Restaurant	82%	82%	0.0	3.0	0.5	0.1	6	0	0	0.00	0	4,022.16	5,790.76	0.00
1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Restaurant	0%	0%	0.1	2.6	2.6	0.5	1	0	0	N/A	N/A	N/A	N/A	N/A
1431	CFLs (base incandescent A-line 72W) 2020	Restaurant	74%	74%	0.0	2.6	0.7	0.1	3	0	0	0.00	0	1,638.20	2,473.92	0.00
1432	LEDs (base incandescent A-line 72W) 2020	Restaurant	82%	82%	0.0	3.0	0.5	0.1	6	0	0	0.00	0	4,022.16	5,790.76	0.00
1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	Restaurant	0%	0%	0.1	1.9	1.9	0.4	1	0	0	N/A	N/A	N/A	N/A	N/A
1501	CFLs (base incandescent A-line 53W) 2014-2015	Restaurant	66%	66%	0.0	1.9	0.6	0.1	3	0	0	0.00	0	1,081.38	1,633.03	0.00
1502	LEDs (base incandescent A-line 53W) 2014-2015	Restaurant	75%	75%	0.1	2.2	0.5	0.1	6	0	0	0.00	16	8.18	11.78	0.44

Commercial Electric Existing Construction

DSM ASSYST SUMMARY

Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	Restaurant	0%	0%	0.1	1.9	1.9	0.4	1	0	0	N/A	N/A	N/A	N/A	N/A
1511	CFLs (base incandescent A-line 53W) 2016-2017	Restaurant	66%	66%	0.0	1.9	0.6	0.1	3	0	0	0.00	0	1,081.38	1,633.03	0.00
1512	LEDs (base incandescent A-line 53W) 2016-2017	Restaurant	75%	75%	0.0	2.2	0.5	0.1	6	0	0	0.00	0	2,670.44	3,844.68	0.00
1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	Restaurant	0%	0%	0.1	1.9	1.9	0.4	1	0	0	N/A	N/A	N/A	N/A	N/A
1521	CFLs (base incandescent A-line 53W) 2018-2019	Restaurant	66%	66%	0.0	1.9	0.6	0.1	3	0	0	0.00	0	1,081.38	1,633.03	0.00
1522	LEDs (base incandescent A-line 53W) 2018-2019	Restaurant	75%	75%	0.0	2.2	0.5	0.1	6	0	0	0.00	0	2,670.44	3,844.68	0.00
1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Restaurant	0%	0%	0.1	1.9	1.9	0.4	1	0	0	N/A	N/A	N/A	N/A	N/A
1531	CFLs (base incandescent A-line 53W) 2020	Restaurant	66%	66%	0.0	1.9	0.6	0.1	3	0	0	0.00	0	1,081.38	1,633.03	0.00
1532	LEDs (base incandescent A-line 53W) 2020	Restaurant	75%	75%	0.0	2.2	0.5	0.1	6	0	0	0.00	0	2,670.44	3,844.68	0.00
1600	Base CFL 18W to screw-in replacement 2014-2015	Restaurant	0%	0%	0.2	0.9	0.9	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1601	LED screw-in replacement (base CFL 18W) 2014-2015	Restaurant	28%	28%	0.4	0.9	0.7	0.1	6	0	0	0.16	790	0.17	0.24	21.24
1610	Base CFL 18W to screw-in replacement 2016-2017	Restaurant	0%	0%	0.2	0.9	0.9	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1611	LED screw-in replacement (base CFL 18W) 2016-2017	Restaurant	28%	28%	0.2	0.9	0.7	0.1	6	0	0	0.08	411	0.32	0.47	11.06
1620	Base CFL 18W to screw-in replacement 2018-2019	Restaurant	0%	0%	0.2	0.9	0.9	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1621	LED screw-in replacement (base CFL 18W) 2018-2019	Restaurant	28%	28%	0.2	0.9	0.7	0.1	6	0	0	0.06	328	0.41	0.58	8.82
1630	Base CFL 18W to screw-in replacement 2020	Restaurant	0%	0%	0.2	0.9	0.9	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1631	LED screw-in replacement (base CFL 18W) 2020	Restaurant	28%	28%	0.1	0.9	0.7	0.1	6	0	0	0.06	285	0.47	0.67	7.67
1700	Base CFL 23W to screw-in replacement 2014-2015	Restaurant	0%	0%	0.2	1.2	1.2	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1701	LED screw-in replacement (base CFL 23W) 2014-2015	Restaurant	26%	26%	0.4	1.2	0.9	0.2	6	0	0	0.13	659	0.20	0.29	17.71
1710	Base CFL 23W to screw-in replacement 2016-2017	Restaurant	0%	0%	0.2	1.2	1.2	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1711	LED screw-in replacement (base CFL 23W) 2016-2017	Restaurant	26%	26%	0.2	1.2	0.9	0.2	6	0	0	0.07	343	0.39	0.56	9.22
1720	Base CFL 23W to screw-in replacement 2018-2019	Restaurant	0%	0%	0.2	1.2	1.2	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1721	LED screw-in replacement (base CFL 23W) 2018-2019	Restaurant	26%	26%	0.2	1.2	0.9	0.2	6	0	0	0.05	274	0.49	0.70	7.35
1730	Base CFL 23W to screw-in replacement 2020	Restaurant	0%	0%	0.2	1.2	1.2	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1731	LED screw-in replacement (base CFL 23W) 2020	Restaurant	26%	26%	0.1	1.2	0.9	0.2	6	0	0	0.05	238	0.56	0.81	6.39
1800	BaseMetal Halide, 465W	Restaurant	0%	0%	0.0	0.1	0.1	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1801	T5 (240W) (base metal halide)	Restaurant	48%	48%	0.0	0.1	0.1	0.0	18	0	0	0.01	73	5.02	5.67	1.96
1802	Induction High Bay Lighting	Restaurant	37%	37%	0.1	0.1	0.1	0.0	20	0	0	0.10	515	0.77	0.85	13.83
1803	PSMH + electronic ballast	Restaurant	43%	43%	0.0	0.1	0.1	0.0	16	0	0	0.03	167	1.99	2.32	4.50
1804	PSMH, magnetic ballast, 320 W	Restaurant	31%	31%	0.0	0.1	0.1	0.0	0	0	0	0.06	310	0.07	0.12	8.34
1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Restaurant	25%	20%	0.2	0.1	0.1	0.0	15	0	0	0.59	3,751	0.10	0.13	79.94
1806	Occupancy Sensor, High Bay T5	Restaurant	21%	5%	0.0	0.1	0.1	0.0	10	0	0	0.02	373	1.98	3.15	2.43
1850	Base CFL Exit Sign	Restaurant	0%	0%	0.0	0.0	0.0	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1851	LED Exit Sign	Restaurant	69%	69%	0.0	0.1	0.0	0.0	7	0	0	0.03	150	1.03	1.45	4.02
1900	Base Outdoor High Pressure Sodium 250W Lamp	Restaurant	0%	0%	0.0	1.7	1.7	0.1	15	0	0	N/A	N/A	N/A	N/A	N/A
1901	Outdoor Lighting Controls (Photocell/Timeclock)	Restaurant	25%	73%	0.3	1.9	1.4	0.0	18	0	0	0.06	326	1.20	1.27	8.77
1902	LED Outdoor Area Lighting	Restaurant	52%	52%	1.1	1.7	0.8	0.1	18	1	0	0.12	1,879	0.49	0.66	16.95
1903	Bi-Level LED Outdoor Lighting	Restaurant	69%	63%	3.6	1.7	0.5	0.0	18	1	0	0.30	4,998	0.20	0.27	40.77
2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Restaurant	0%	0%	0.7	6.1	6.1	3.8	20	0	0	N/A	N/A	N/A	N/A	N/A
2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Restaurant	12%	12%	0.2	6.3	5.6	3.5	20	0	0	0.02	33	5.40	4.16	2.83
2003	EMS - Chiller	Restaurant	10%	3%	0.2	6.2	5.6	3.8	15	0	0	0.03	182	2.07	2.65	3.79
2005	Chiller Tune Up/Diagnostics	Restaurant	8%	4%	0.1	6.6	6.1	4.0	10	0	0	0.01	30	4.93	6.04	1.27
2010	Ceiling/roof Insulation - Chiller	Restaurant	12%	12%	0.1	6.4	5.6	3.5	20	0	0	0.02	24	7.41	5.71	2.06
2012	Duct Testing/Sealing	Restaurant	19%	19%	1.0	6.2	5.0	3.1	18	0	0	0.08	135	1.22	0.97	11.51
2100	Base DX Packaged System, EER=10.3, 10 tons	Restaurant	0%	0%	2.0	6.1	6.1	3.8	15	0	0	N/A	N/A	N/A	N/A	N/A
2101	DX Packaged System, EER=10.9, 10 tons	Restaurant	6%	6%	0.2	6.1	5.7	3.6	15	0	0	0.05	77	1.84	1.53	6.54
2102	DX Packaged System, EER=13.4, 10 tons	Restaurant	23%	23%	0.2	6.1	4.7	2.9	15	2	1	0.02	25	5.66	4.72	2.12
2103	Geothermal Heat Pump, EER=13, 10 tons - DX	Restaurant	21%	21%	2.4	6.1	4.8	3.0	15	0	0	0.19	296	0.48	0.40	25.24
2105	DX Tune Up/ Advanced Diagnostics	Restaurant	5%	3%	0.1	6.4	6.1	3.9	10	0	0	0.03	100	1.49	1.83	4.19
2106	Prog. Thermostat - DX	Restaurant	5%	1%	0.1	6.3	5.9	3.9	8	0	0	0.03	168	1.24	1.85	3.50
2107	Cool Roof - DX	Restaurant	7%	7%	0.3	6.1	5.7	3.6	10	0	0	0.06	92	1.01	0.97	7.87
2108	Optimize Controls - DX	Restaurant	5%	1%	0.0	6.3	6.0	3.9	5	0	0	0.01	79	1.68	2.67	1.66
2109	Economizer - DX	Restaurant	12%	3%	0.5	6.6	5.8	4.0	10	0	0	0.06	400	0.65	0.92	8.34
2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Restaurant	3%	1%	0.1	6.2	6.0	3.8	10	0	0	0.06	402	0.65	0.91	8.38
2111	Economizer Repair - DX	Restaurant	12%	18%	0.2	6.3	5.6	3.2	5	0	0	0.03	33	1.09	1.06	4.16
2112	Aerosol Duct Sealing - DX	Restaurant	19%	19%	1.0	6.2	5.0	3.1	18	0	0	0.08	135	1.22	0.97	11.51
2113	Ceiling/roof Insulation - DX	Restaurant	12%	12%	0.1	6.9	6.1	3.8	20	0	0	0.01	22	7.99	6.15	1.91
2114	Duct/Pipe Insulation - DX	Restaurant	2%	2%	0.8	6.1	6.0	3.7	10	0	0	0.62	985	0.09	0.09	83.96
2115	Window Film (Standard) - DX	Restaurant	10%	10%	0.1	6.1	5.5	3.4	10	1	0	0.01	18	5.10	4.91	1.56
2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Restaurant	0%	0%	0.0	6.1	6.1	3.8	15	0	0	N/A	N/A	N/A	N/A	N/A
2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	13%	13%	0.1	6.1	5.3	3.3	15	0	0	0.01	18	7.93	6.61	1.52
2300	Base PTAC, EER=8.3, 1 ton	Restaurant	0%	0%	0.0	6.1	6.1	3.8	15	0	0	N/A	N/A	N/A	N/A	N/A
3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Restaurant	0%	0%	0.1	3.1	3.1	0.8	20	0	0	N/A	N/A	N/A	N/A	N/A
3001	Fan Motor, 5hp, 1800rpm, 89.5%	Restaurant	2%	2%	0.1	3.1	3.1	0.8	20	0	0	0.11	432	0.74	0.78	15.16
3002	Variable Speed Drive Control, 5 HP	Restaurant	30%	8%	0.7	3.1	2.2	0.7	15	1	0	0.07	1,140	0.72	1.02	9.87
3003	Demand Controlled Ventilation	Restaurant	15%	29%	2.4	3.1	2.7	0.6	15	1	0	0.51	1,009	0.16	0.14	69.20
3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Restaurant	0%	0%	0.0	3.1	3.1	0.8	20	0	0	N/A	N/A	N/A	N/A	N/A
3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Restaurant	0%	0%	0.0	3.1	3.1	0.8	20	0	0	N/A	N/A	N/A	N/A	N/A
4000	Base Built-Up Refrigeration System	Restaurant	0%	0%	0.0	0.0	0.0	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
4100	Base Self-Contained Refrigeration	Restaurant	0%	0%	0.0	7.3	7.3	1.1	10	0	0	N/A	N/A	N/A	N/A	N/A

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
4101	Strip curtains for walk-ins (self-contained)	Restaurant	1%	1%	0.1	7.3	7.3	1.1	4	0	0	0.11	732	0.15	0.24	14.92
4103	Night covers for display cases (self-contained)	Restaurant	9%	9%	0.0	7.4	6.7	1.0	5	0	0	0.00	10	13.37	20.68	0.21
4104	Freezer-Cooler Replacement Gaskets (self-contained)	Restaurant	3%	3%	0.0	7.4	7.2	1.1	4	0	0	0.00	13	8.71	13.76	0.27
4105	Bi-level LED Case Lighting (self-contained units) 2014	Restaurant	0%	0%	0.0	7.3	7.3	1.1	8	0	0	0.17	1,138	0.19	0.28	23.21
4106	Energy-Star Refrigerator, solid door	Restaurant	3%	3%	0.0	7.4	7.1	1.1	10	0	0	0.02	108	2.51	3.47	2.20
4107	Energy-Star Freezer, solid door	Restaurant	1%	1%	0.0	7.3	7.2	1.1	9	0	0	0.01	78	3.12	4.43	1.60
4108	Energy-Star Refrigerator, glass door	Restaurant	2%	2%	0.0	7.3	7.2	1.1	10	0	0	0.02	106	2.56	3.54	2.16
4109	Energy-Star Freezer, glass door	Restaurant	3%	3%	0.0	7.4	7.1	1.1	9	0	0	0.00	32	7.62	10.83	0.65
4110	Energy Star Ice Machines	Restaurant	2%	2%	0.1	7.4	7.2	1.1	10	0	0	0.04	292	0.93	1.29	5.96
4112	Reach-in unit occupancy sensors	Restaurant	0%	0%	0.0	7.3	7.3	1.1	10	0	0	0.17	1,169	0.23	0.32	23.82
5000	Base Desktop PC	Restaurant	0%	0%	0.0	0.2	0.2	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5001	PC Network Power Management Enabling	Restaurant	66%	34%	0.0	0.2	0.1	0.0	4	0	0	0.01	62	2.61	4.33	0.84
5002	Energy Star or Better PC	Restaurant	33%	33%	0.0	0.2	0.1	0.0	4	0	0	0.01	38	2.40	3.59	1.01
5100	Base Laptop PC	Restaurant	0%	0%	0.0	0.0	0.0	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5101	Laptop Network Power Management Enabling	Restaurant	7%	7%	0.0	0.0	0.0	0.0	4	0	0	0.47	2,411	0.04	0.06	64.06
5102	Energy Star or Better Laptop	Restaurant	30%	30%	0.0	0.0	0.0	0.0	4	0	0	0.00	25	3.69	5.54	0.66
5200	Base Monitor, CRT	Restaurant	0%	0%	0.0	0.1	0.1	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5201	Energy Star or Better Monitor - CRT	Restaurant	56%	56%	0.0	0.1	0.0	0.0	4	0	0	0.00	3	29.38	44.05	0.08
5202	Monitor Power Management Enabling - CRT	Restaurant	52%	27%	0.0	0.1	0.1	0.0	4	0	0	0.00	37	4.35	7.21	0.51
5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Restaurant	15%	15%	0.0	0.1	0.1	0.0	4	0	0	0.03	167	0.55	0.82	4.44
5300	Base Monitor, LCD	Restaurant	0%	0%	0.0	0.1	0.1	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5301	Energy Star or Better Monitor - LCD	Restaurant	21%	21%	0.0	0.1	0.0	0.0	4	0	0	0.01	28	3.23	4.85	0.75
5302	Monitor Power Management Enabling - LCD	Restaurant	19%	10%	0.0	0.1	0.0	0.0	4	0	0	0.04	441	0.37	0.61	5.99
5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Restaurant	14%	4%	0.0	0.1	0.0	0.0	4	0	0	0.11	2,239	0.13	0.24	15.42
5400	Base Copier	Restaurant	0%	0%	0.0	0.1	0.1	0.0	6	0	0	N/A	N/A	N/A	N/A	N/A
5401	Energy Star or Better Copier	Restaurant	21%	21%	0.0	0.1	0.1	0.0	6	0	0	0.00	6	21.61	31.17	0.17
5402	Copier Power Management Enabling	Restaurant	19%	10%	0.0	0.1	0.1	0.0	6	0	0	0.06	586	0.41	0.65	7.97
5500	Base Multifunction	Restaurant	0%	0%	0.0	0.0	0.0	0.0	5	0	0	N/A	N/A	N/A	N/A	N/A
5501	Multifunction Power Management Enabling	Restaurant	48%	25%	0.0	0.0	0.0	0.0	5	0	0	0.17	1,664	0.12	0.20	22.60
5502	ENERGY STAR Multi-Function Device	Restaurant	40%	40%	0.0	0.0	0.0	0.0	5	0	0	0.00	18	6.22	9.15	0.48
5600	Base Printer	Restaurant	0%	0%	0.0	0.1	0.1	0.0	5	0	0	N/A	N/A	N/A	N/A	N/A
5601	Printer Power Management Enabling	Restaurant	48%	25%	0.0	0.1	0.0	0.0	5	0	0	0.03	315	0.64	1.03	4.28
5602	ENERGY STAR Printer	Restaurant	40%	40%	0.0	0.1	0.0	0.0	5	0	0	0.00	4	28.59	42.06	0.11
5700	Base Data Center/Server Room	Restaurant	0%	0%	0.0	110.1	110.1	21.5	10	0	0	N/A	N/A	N/A	N/A	N/A
5701	Data Center Improved Operations	Restaurant	20%	20%	0.1	114.6	91.7	17.9	10	0	0	0.00	2	100.89	131.90	0.06
5702	Data Center Best Practices	Restaurant	45%	45%	0.5	115.2	63.4	12.4	10	0	0	0.00	5	45.64	59.67	0.13
5703	Data Center State of the Art practices	Restaurant	56%	56%	1.0	110.1	48.4	9.4	10	0	0	0.00	8	27.12	35.46	0.22
6000	Base Water Heating	Restaurant	0%	0%	0.0	1.6	1.6	0.3	15	0	0	N/A	N/A	N/A	N/A	N/A
6001	Demand controlled circulating systems	Restaurant	5%	5%	0.0	1.6	1.6	0.3	15	0	0	0.05	317	1.14	1.38	7.27
6002	High Efficiency Water Heater (electric)	Restaurant	2%	2%	0.0	1.6	1.6	0.3	15	0	0	0.01	63	5.75	6.96	1.44
6003	Hot Water Pipe Insulation	Restaurant	2%	2%	0.0	1.6	1.6	0.3	15	0	0	0.02	103	3.50	4.24	2.37
6004	Tankless Water Heater	Restaurant	10%	10%	0.0	1.6	1.5	0.2	20	0	0	0.02	108	4.18	4.75	2.48
6005	Heat Pump Water Heater (air source)	Restaurant	20%	20%	0.1	1.6	1.3	0.2	10	0	0	0.02	144	1.73	2.31	3.31
6006	Heat Recovery Unit	Restaurant	65%	65%	0.1	1.6	0.6	0.1	10	2	0	0.01	43	5.74	7.66	1.00
6007	Heat Trap	Restaurant	9%	9%	0.0	1.7	1.5	0.3	10	0	0	0.00	25	10.16	13.57	0.56
6008	Solar Water Heater	Restaurant	70%	70%	0.2	1.6	0.5	0.1	20	0	0	0.02	116	3.87	4.40	2.67
7000	Base Refrigerated Vending Machines	Restaurant	0%	0%	0.0	0.1	0.1	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
7001	Vending Misers (Refrigerated units)	Restaurant	46%	23%	0.0	0.1	0.0	0.0	5	0	0	0.01	105	1.94	3.16	1.40
7002	Vending Misers (Refrigerated glass-front units)	Restaurant	30%	15%	0.0	0.1	0.1	0.0	5	0	0	0.02	161	1.26	2.06	2.15
7100	Base Non-Refrigerated Vending Machines	Restaurant	0%	0%	0.0	0.0	0.0	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
7200	Base Oven	Restaurant	0%	0%	0.0	2.6	2.6	0.5	10	0	0	N/A	N/A	N/A	N/A	N/A
7201	Convection Oven	Restaurant	23%	23%	0.5	2.6	2.0	0.4	12	0	0	0.08	367	0.69	0.85	10.26
7300	Base Fryer	Restaurant	0%	0%	0.0	2.6	2.6	0.5	10	0	0	N/A	N/A	N/A	N/A	N/A
7301	Efficient Fryer	Restaurant	6%	6%	0.4	2.6	2.5	0.5	12	0	0	0.24	1,193	0.21	0.26	33.30
7400	Base Steamer	Restaurant	0%	0%	0.0	4.2	4.2	0.9	10	0	0	N/A	N/A	N/A	N/A	N/A
7401	Efficient Steamer	Restaurant	69%	69%	1.0	4.2	1.3	0.3	12	1	0	0.03	168	1.50	1.85	4.69
8000	Base Heating, Heat Pump (7.7 HSPF)	Restaurant	0%	0%	0.0	0.3	0.3	0.0	15	0	0	N/A	N/A	N/A	N/A	N/A
8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	6%	6%	0.0	0.3	0.2	0.0	15	0	0	0.04	N/A	1.13	1.66	6.05
8100	Base Heating, Other Electric	Restaurant	0%	0%	12.0	0.3	0.3	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
9500	Base Miscellaneous	Restaurant	0%	0%	1.3	2.7	2.7	0.5	10	0	0	N/A	N/A	N/A	N/A	N/A
9501	Xmisc	Restaurant	0%	0%	1.3	2.7	2.7	0.5	10	0	0	N/A	N/A	0.00	0.00	N/A
1000	Base Fluorescent Fixture, 4L4'T8, 1EB, 2014-2015	Retail	0%	0%	0.0	5.1	5.1	0.9	18	0	0	N/A	N/A	N/A	N/A	N/A
1001	ROB 4L4' High Performance T8 (86 W), 2014-2015	Retail	10%	10%	0.1	5.1	4.6	0.8	7	93	17	0.01	67	2.49	3.55	1.64
1002	ROB 4L4' Low Watt High Performance T8 (75 W), 2014-2015	Retail	22%	22%	0.2	5.1	4.0	0.7	7	195	35	0.02	104	1.59	2.27	2.57
1003	ROB 4L4'T5, 2014-2015	Retail	12%	12%	0.8	5.1	4.5	0.8	5	104	19	0.13	726	0.17	0.25	17.88
1004	ROB 4L4' LED Tube, 2014-2015	Retail	34%	34%	2.8	5.1	3.3	0.6	12	308	56	0.15	850	0.33	0.42	20.94
1005	LED Troffer (base 4L4'T8), 2014-2015	Retail	40%	40%	3.5	5.1	3.1	0.6	12	358	65	0.17	934	0.30	0.38	23.01
1006	Lighting Control Tuneup (base 4L4'T8), 2014-2015	Retail	5%	3%	0.0	5.1	4.8	0.9	6	2	0	0.01	61	4.32	7.04	0.73
1007	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2014-2015	Retail	21%	5%	0.5	5.2	4.1	0.9	10	13	1	0.05	1,079	0.75	1.20	6.40
1008	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2014-2015	Retail	25%	20%	0.2	5.1	3.8	0.7	15	68	10	0.02	106	3.84	4.86	2.06

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
1010	Base Fluorescent Fixture, 4L4'T8, 1EB, 2016-2017	Retail	0%	0%	0.0	5.1	5.1	0.9	18	0	0	N/A	N/A	N/A	N/A	N/A
1011	ROB 4L4' High Performance T8 (86 W), 2016-2017	Retail	10%	10%	0.1	5.1	4.6	0.8	7	93	17	0.01	67	2.49	3.55	1.64
1012	ROB 4L4' Low Watt High Performance T8 (75 W), 2016-2017	Retail	22%	22%	0.2	5.1	4.0	0.7	7	195	35	0.02	104	1.59	2.27	2.57
1013	ROB 4L4'T5, 2016-2017	Retail	12%	12%	0.8	5.1	4.5	0.8	5	104	19	0.13	726	0.17	0.25	17.88
1014	ROB 4L4' LED Tube, 2016-2017	Retail	34%	34%	1.9	5.1	3.3	0.6	12	308	56	0.11	584	0.48	0.60	14.39
1015	LED Troffer (base 4L4'T8), 2016-2017	Retail	40%	40%	2.5	5.1	3.1	0.6	12	358	65	0.12	655	0.43	0.54	16.15
1016	Lighting Control Tuneup (base 4L4'T8), 2016-2017	Retail	5%	3%	0.0	5.1	4.8	0.9	6	2	0	0.01	61	4.32	7.04	0.73
1017	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2016-2017	Retail	21%	5%	0.5	5.2	4.1	0.9	10	13	1	0.05	1,079	0.75	1.20	6.40
1018	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2016-2017	Retail	25%	20%	0.2	5.1	3.8	0.7	15	68	10	0.02	106	3.84	4.86	2.06
1020	Base Fluorescent Fixture, 4L4'T8, 1EB, 2018-2019	Retail	0%	0%	0.0	5.1	5.1	0.9	18	0	0	N/A	N/A	N/A	N/A	N/A
1021	ROB 4L4' High Performance T8 (86 W), 2018-2019	Retail	10%	10%	0.1	5.1	4.6	0.8	7	93	17	0.01	67	2.49	3.55	1.64
1022	ROB 4L4' Low Watt High Performance T8 (75 W), 2018-2019	Retail	22%	22%	0.2	5.1	4.0	0.7	7	195	35	0.02	104	1.59	2.27	2.57
1023	ROB 4L4'T5, 2018-2019	Retail	12%	12%	0.8	5.1	4.5	0.8	5	104	19	0.13	726	0.17	0.25	17.88
1024	ROB 4L4' LED Tube, 2018-2019	Retail	34%	34%	1.7	5.1	3.3	0.6	12	308	56	0.10	525	0.53	0.67	12.95
1025	LED Troffer (base 4L4'T8), 2018-2019	Retail	40%	40%	2.2	5.1	3.1	0.6	12	358	65	0.11	594	0.47	0.59	14.64
1026	Lighting Control Tuneup (base 4L4'T8), 2018-2019	Retail	5%	3%	0.0	5.1	4.8	0.9	6	2	0	0.01	61	4.32	7.04	0.73
1027	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2018-2019	Retail	21%	5%	0.5	5.2	4.1	0.9	10	13	1	0.05	1,079	0.75	1.20	6.40
1028	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2018-2019	Retail	25%	20%	0.2	5.1	3.8	0.7	15	68	10	0.02	106	3.84	4.86	2.06
1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Retail	0%	0%	0.0	5.1	5.1	0.9	18	0	0	N/A	N/A	N/A	N/A	N/A
1031	ROB 4L4' High Performance T8 (86 W), 2020	Retail	10%	10%	0.1	5.1	4.6	0.8	7	93	17	0.01	67	2.49	3.55	1.64
1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Retail	22%	22%	0.2	5.1	4.0	0.7	7	195	35	0.02	104	1.59	2.27	2.57
1033	ROB 4L4'T5, 2020	Retail	12%	12%	0.8	5.1	4.5	0.8	5	104	19	0.13	726	0.17	0.25	17.88
1034	ROB 4L4' LED Tube, 2020	Retail	34%	34%	1.6	5.1	3.3	0.6	12	308	56	0.09	495	0.56	0.71	12.20
1035	LED Troffer (base 4L4'T8), 2020	Retail	40%	40%	2.1	5.1	3.1	0.6	12	358	65	0.10	563	0.50	0.63	13.86
1036	Lighting Control Tuneup (base 4L4'T8), 2020	Retail	5%	3%	0.0	5.1	4.8	0.9	6	2	0	0.01	61	4.32	7.04	0.73
1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Retail	21%	5%	0.5	5.2	4.1	0.9	10	13	1	0.05	1,079	0.75	1.20	6.40
1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Retail	25%	20%	0.2	5.1	3.8	0.7	15	68	10	0.02	106	3.84	4.86	2.06
1100	Base Fluorescent Fixture, 2L4'T8, 1EB, 2014-2015	Retail	0%	0%	0.0	3.0	3.0	0.5	18	0	0	N/A	N/A	N/A	N/A	N/A
1101	ROB 2L4' High Performance T8 (86 W), 2014-2015	Retail	10%	10%	0.0	3.0	2.7	0.5	7	19	3	0.02	84	1.97	2.81	2.08
1102	ROB 2L4' Low Watt High Performance T8 (75 W), 2014-2015	Retail	22%	22%	0.2	3.0	2.3	0.4	7	39	7	0.02	132	1.26	1.79	3.26
1103	ROB 2L4'T5, 2014-2015	Retail	12%	12%	0.5	3.0	2.6	0.5	5	21	4	0.15	832	0.15	0.22	20.50
1104	ROB 2L4' LED Tube, 2014-2015	Retail	34%	34%	1.4	3.0	2.0	0.4	12	18	3	0.13	721	0.39	0.49	17.76
1105	LED Troffer (base 2L4'T8), 2014-2015	Retail	40%	40%	2.0	3.0	1.8	0.3	12	71	13	0.16	896	0.31	0.39	22.08
1106	Lighting Control Tuneup (base 2L4'T8), 2014-2015	Retail	5%	3%	0.0	3.0	2.8	0.5	6	0	0	0.01	104	2.53	4.12	1.25
1107	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2014-2015	Retail	21%	5%	0.5	3.0	2.4	0.5	10	3	0	0.08	1,912	0.42	0.67	11.34
1108	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2014-2015	Retail	25%	20%	0.2	3.0	2.2	0.4	15	14	2	0.03	181	2.25	2.85	3.52
1110	Base Fluorescent Fixture, 2L4'T8, 1EB, 2016-2017	Retail	0%	0%	0.0	3.0	3.0	0.5	18	0	0	N/A	N/A	N/A	N/A	N/A
1111	ROB 2L4' High Performance T8 (86 W), 2016-2017	Retail	10%	10%	0.0	3.0	2.7	0.5	7	19	3	0.02	84	1.97	2.81	2.08
1112	ROB 2L4' Low Watt High Performance T8 (75 W), 2016-2017	Retail	22%	22%	0.2	3.0	2.3	0.4	7	39	7	0.02	132	1.26	1.79	3.26
1113	ROB 2L4'T5, 2016-2017	Retail	12%	12%	0.5	3.0	2.6	0.5	5	21	4	0.15	832	0.15	0.22	20.50
1114	ROB 2L4' LED Tube, 2016-2017	Retail	34%	34%	1.0	3.0	2.0	0.4	12	18	3	0.09	512	0.55	0.69	12.62
1115	LED Troffer (base 2L4'T8), 2016-2017	Retail	40%	40%	1.4	3.0	1.8	0.3	12	71	13	0.12	654	0.43	0.54	16.10
1116	Lighting Control Tuneup (base 2L4'T8), 2016-2017	Retail	5%	3%	0.0	3.0	2.8	0.5	6	0	0	0.01	104	2.53	4.12	1.25
1117	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2016-2017	Retail	21%	5%	0.5	3.0	2.4	0.5	10	3	0	0.08	1,912	0.42	0.67	11.34
1118	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2016-2017	Retail	25%	20%	0.2	3.0	2.2	0.4	15	14	2	0.03	181	2.25	2.85	3.52
1120	Base Fluorescent Fixture, 2L4'T8, 1EB, 2018-2019	Retail	0%	0%	0.0	3.0	3.0	0.5	18	0	0	N/A	N/A	N/A	N/A	N/A
1121	ROB 2L4' High Performance T8 (86 W), 2018-2019	Retail	10%	10%	0.0	3.0	2.7	0.5	7	19	3	0.02	84	1.97	2.81	2.08
1122	ROB 2L4' Low Watt High Performance T8 (75 W), 2018-2019	Retail	22%	22%	0.2	3.0	2.3	0.4	7	39	7	0.02	132	1.26	1.79	3.26
1123	ROB 2L4'T5, 2018-2019	Retail	12%	12%	0.5	3.0	2.6	0.5	5	21	4	0.15	832	0.15	0.22	20.50
1124	ROB 2L4' LED Tube, 2018-2019	Retail	34%	34%	0.9	3.0	2.0	0.4	12	18	3	0.08	460	0.61	0.77	11.34
1125	LED Troffer (base 2L4'T8), 2018-2019	Retail	40%	40%	1.3	3.0	1.8	0.3	12	71	13	0.11	595	0.47	0.59	14.66
1126	Lighting Control Tuneup (base 2L4'T8), 2018-2019	Retail	5%	3%	0.0	3.0	2.8	0.5	6	0	0	0.01	104	2.53	4.12	1.25
1127	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2018-2019	Retail	21%	5%	0.5	3.0	2.4	0.5	10	3	0	0.08	1,912	0.42	0.67	11.34
1128	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2018-2019	Retail	25%	20%	0.2	3.0	2.2	0.4	15	14	2	0.03	181	2.25	2.85	3.52
1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Retail	0%	0%	0.0	3.0	3.0	0.5	18	0	0	N/A	N/A	N/A	N/A	N/A
1131	ROB 2L4' High Performance T8 (86 W), 2020	Retail	10%	10%	0.0	3.0	2.7	0.5	7	19	3	0.02	84	1.97	2.81	2.08
1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Retail	22%	22%	0.2	3.0	2.3	0.4	7	39	7	0.02	132	1.26	1.79	3.26
1133	ROB 2L4'T5, 2020	Retail	12%	12%	0.5	3.0	2.6	0.5	5	21	4	0.15	832	0.15	0.22	20.50
1134	ROB 2L4' LED Tube, 2020	Retail	34%	34%	0.8	3.0	2.0	0.4	12	18	3	0.08	433	0.64	0.81	10.68
1135	LED Troffer (base 2L4'T8), 2020	Retail	40%	40%	1.3	3.0	1.8	0.3	12	71	13	0.10	565	0.49	0.62	13.92
1136	Lighting Control Tuneup (base 2L4'T8), 2020	Retail	5%	3%	0.0	3.0	2.8	0.5	6	0	0	0.01	104	2.53	4.12	1.25
1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Retail	21%	5%	0.5	3.0	2.4	0.5	10	3	0	0.08	1,912	0.42	0.67	11.34
1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Retail	25%	20%	0.2	3.0	2.2	0.4	15	14	2	0.03	181	2.25	2.85	3.52
1200	Base Other Fluorescent Fixture	Retail	0%	0%	0.0	1.5	1.5	0.3	18	0	0	N/A	N/A	N/A	N/A	N/A
1201	ROB High Performance T8 (base other fluorescent)	Retail	10%	10%	0.1	1.5	1.4	0.2	7	0	0	0.05	270	0.62	0.88	6.65
1202	ROB Low Watt High Performance T8 (base other fluorescent)	Retail	22%	22%	0.3	1.5	1.2	0.2	7	0	0	0.08	423	0.39	0.56	10.43
1203	Lighting Control Tuneup (base other fluorescent fixture)	Retail	31%	15%	0.0	1.5	1.1	0.2	6	0	0	0.00	34	7.82	12.73	0.40
1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Retail	54%	13%	0.6	1.6	0.7	0.2	10	0	0	0.06	1,448	0.56	0.89	8.59
1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Retail	25%	20%	0.2	1.5	1.1	0.2	15	0	0	0.05	351	1.16	1.46	6.85
1300	Base Incandescent Flood, 100W to Screw-in Replacement 2014-2015	Retail	0%	0%	0.2	5.8	5.8	1.0	1	0	0	N/A	N/A	N/A	N/A	N/A

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
1301	CFLs (base incandescent flood) 2014-2015	Retail	77%	77%	0.0	5.8	1.3	0.2	3	130	24	0.00	0	3,127.02	4,786.66	0.00
1302	LEDs (base incandescent flood) 2014-2015	Retail	83%	83%	0.1	6.0	1.0	0.2	6	279	51	0.00	7	20.42	29.75	0.17
1310	Base Incandescent Flood, 100W to Screw-in Replacement 2016-2017	Retail	0%	0%	0.2	5.8	5.8	1.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1311	CFLs (base incandescent flood) 2016-2017	Retail	77%	77%	0.0	5.8	1.3	0.2	3	130	24	0.00	0	3,127.02	4,786.66	0.00
1312	LEDs (base incandescent flood) 2016-2017	Retail	83%	83%	0.0	6.0	1.0	0.2	6	279	51	0.00	0	6,666.83	9,710.49	0.00
1320	Base Incandescent Flood, 100W to Screw-in Replacement 2018-2019	Retail	0%	0%	0.2	5.8	5.8	1.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1321	CFLs (base incandescent flood) 2018-2019	Retail	77%	77%	0.0	5.8	1.3	0.2	3	130	24	0.00	0	3,127.02	4,786.66	0.00
1322	LEDs (base incandescent flood) 2018-2019	Retail	83%	83%	0.0	6.0	1.0	0.2	6	279	51	0.00	0	6,666.83	9,710.49	0.00
1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Retail	0%	0%	0.2	5.8	5.8	1.0	1	0	0	N/A	N/A	N/A	N/A	N/A
1331	CFLs (base incandescent flood) 2020	Retail	77%	77%	0.0	5.8	1.3	0.2	3	130	24	0.00	0	3,127.02	4,786.66	0.00
1332	LEDs (base incandescent flood) 2020	Retail	83%	83%	0.0	6.0	1.0	0.2	6	279	51	0.00	0	6,666.83	9,710.49	0.00
1400	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2014-2015	Retail	0%	0%	0.2	4.2	4.2	0.8	1	0	0	N/A	N/A	N/A	N/A	N/A
1401	CFLs (base incandescent A-line 72W) 2014-2015	Retail	74%	74%	0.0	4.2	1.1	0.2	3	45	8	0.00	0	2,152.04	3,294.22	0.00
1402	LEDs (base incandescent A-line 72W) 2014-2015	Retail	82%	82%	0.1	4.3	0.8	0.1	6	99	18	0.00	10	14.43	21.02	0.25
1410	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2016-2017	Retail	0%	0%	0.2	4.2	4.2	0.8	1	0	0	N/A	N/A	N/A	N/A	N/A
1411	CFLs (base incandescent A-line 72W) 2016-2017	Retail	74%	74%	0.0	4.2	1.1	0.2	3	45	8	0.00	0	2,152.04	3,294.22	0.00
1412	LEDs (base incandescent A-line 72W) 2016-2017	Retail	82%	82%	0.0	4.3	0.8	0.1	6	99	18	0.00	0	4,710.80	6,861.46	0.00
1420	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2018-2019	Retail	0%	0%	0.2	4.2	4.2	0.8	1	0	0	N/A	N/A	N/A	N/A	N/A
1421	CFLs (base incandescent A-line 72W) 2018-2019	Retail	74%	74%	0.0	4.2	1.1	0.2	3	45	8	0.00	0	2,152.04	3,294.22	0.00
1422	LEDs (base incandescent A-line 72W) 2018-2019	Retail	82%	82%	0.0	4.3	0.8	0.1	6	99	18	0.00	0	4,710.80	6,861.46	0.00
1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Retail	0%	0%	0.2	4.2	4.2	0.8	1	0	0	N/A	N/A	N/A	N/A	N/A
1431	CFLs (base incandescent A-line 72W) 2020	Retail	74%	74%	0.0	4.2	1.1	0.2	3	45	8	0.00	0	2,152.04	3,294.22	0.00
1432	LEDs (base incandescent A-line 72W) 2020	Retail	82%	82%	0.0	4.3	0.8	0.1	6	99	18	0.00	0	4,710.80	6,861.46	0.00
1500	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2014-2015	Retail	0%	0%	0.2	3.1	3.1	0.6	1	0	0	N/A	N/A	N/A	N/A	N/A
1501	CFLs (base incandescent A-line 53W) 2014-2015	Retail	66%	66%	0.0	3.1	1.0	0.2	3	30	5	0.00	0	1,420.56	2,174.51	0.00
1502	LEDs (base incandescent A-line 53W) 2014-2015	Retail	75%	75%	0.1	3.1	0.8	0.1	6	66	12	0.00	15	9.69	14.11	0.37
1510	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2016-2017	Retail	0%	0%	0.2	3.1	3.1	0.6	1	0	0	N/A	N/A	N/A	N/A	N/A
1511	CFLs (base incandescent A-line 53W) 2016-2017	Retail	66%	66%	0.0	3.1	1.0	0.2	3	30	5	0.00	0	1,420.56	2,174.51	0.00
1512	LEDs (base incandescent A-line 53W) 2016-2017	Retail	75%	75%	0.0	3.1	0.8	0.1	6	66	12	0.00	0	3,161.81	4,605.29	0.00
1520	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2018-2019	Retail	0%	0%	0.2	3.1	3.1	0.6	1	0	0	N/A	N/A	N/A	N/A	N/A
1521	CFLs (base incandescent A-line 53W) 2018-2019	Retail	66%	66%	0.0	3.1	1.0	0.2	3	30	5	0.00	0	1,420.56	2,174.51	0.00
1522	LEDs (base incandescent A-line 53W) 2018-2019	Retail	75%	75%	0.0	3.1	0.8	0.1	6	66	12	0.00	0	3,161.81	4,605.29	0.00
1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Retail	0%	0%	0.2	3.1	3.1	0.6	1	0	0	N/A	N/A	N/A	N/A	N/A
1531	CFLs (base incandescent A-line 53W) 2020	Retail	66%	66%	0.0	3.1	1.0	0.2	3	30	5	0.00	0	1,420.56	2,174.51	0.00
1532	LEDs (base incandescent A-line 53W) 2020	Retail	75%	75%	0.0	3.1	0.8	0.1	6	66	12	0.00	0	3,161.81	4,605.29	0.00
1600	Base CFL 18W to screw-in replacement 2014-2015	Retail	0%	0%	0.2	1.0	1.0	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1601	LED screw-in replacement (base CFL 18W) 2014-2015	Retail	28%	28%	0.3	1.0	0.7	0.1	6	27	5	0.12	647	0.22	0.32	15.95
1610	Base CFL 18W to screw-in replacement 2016-2017	Retail	0%	0%	0.2	1.0	1.0	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1611	LED screw-in replacement (base CFL 18W) 2016-2017	Retail	28%	28%	0.2	1.0	0.7	0.1	6	27	5	0.06	337	0.43	0.62	8.30
1620	Base CFL 18W to screw-in replacement 2018-2019	Retail	0%	0%	0.2	1.0	1.0	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1621	LED screw-in replacement (base CFL 18W) 2018-2019	Retail	28%	28%	0.1	1.0	0.7	0.1	6	27	5	0.05	269	0.53	0.78	6.62
1630	Base CFL 18W to screw-in replacement 2020	Retail	0%	0%	0.2	1.0	1.0	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1631	LED screw-in replacement (base CFL 18W) 2020	Retail	28%	28%	0.1	1.0	0.7	0.1	6	27	5	0.04	234	0.61	0.90	5.76
1700	Base CFL 23W to screw-in replacement 2014-2015	Retail	0%	0%	0.2	1.2	1.2	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1701	LED screw-in replacement (base CFL 23W) 2014-2015	Retail	26%	26%	0.3	1.2	0.9	0.2	6	33	6	0.10	540	0.27	0.39	13.30
1710	Base CFL 23W to screw-in replacement 2016-2017	Retail	0%	0%	0.2	1.2	1.2	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1711	LED screw-in replacement (base CFL 23W) 2016-2017	Retail	26%	26%	0.2	1.2	0.9	0.2	6	33	6	0.05	281	0.51	0.74	6.92
1720	Base CFL 23W to screw-in replacement 2018-2019	Retail	0%	0%	0.2	1.2	1.2	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1721	LED screw-in replacement (base CFL 23W) 2018-2019	Retail	26%	26%	0.1	1.2	0.9	0.2	6	33	6	0.04	224	0.64	0.93	5.52
1730	Base CFL 23W to screw-in replacement 2020	Retail	0%	0%	0.2	1.2	1.2	0.2	3	0	0	N/A	N/A	N/A	N/A	N/A
1731	LED screw-in replacement (base CFL 23W) 2020	Retail	26%	26%	0.1	1.2	0.9	0.2	6	33	6	0.04	195	0.74	1.07	4.80
1800	BaseMetal Halide, 465W	Retail	0%	0%	0.0	0.0	0.0	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1850	Base CFL Exit Sign	Retail	0%	0%	0.0	0.0	0.0	0.0	18	0	0	N/A	N/A	N/A	N/A	N/A
1851	LED Exit Sign	Retail	69%	69%	0.0	0.0	0.0	0.0	7	6	1	0.02	120	1.38	1.97	2.96
1900	Base Outdoor High Pressure Sodium 250W Lamp	Retail	0%	0%	0.0	0.7	0.7	0.0	15	0	0	N/A	N/A	N/A	N/A	N/A
1901	Outdoor Lighting Controls (Photocell/Timeclock)	Retail	25%	73%	0.1	0.9	0.7	0.0	18	18	3	0.04	234	1.71	1.82	6.10
1902	LED Outdoor Area Lighting	Retail	52%	52%	0.4	0.7	0.4	0.0	18	94	6	0.10	1,480	0.63	0.84	13.18
1903	Bi-Level LED Outdoor Lighting	Retail	69%	63%	1.2	0.7	0.2	0.0	18	101	6	0.23	3,937	0.26	0.35	31.74
2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Retail	0%	0%	0.7	2.9	2.9	2.4	20	0	0	N/A	N/A	N/A	N/A	N/A
2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Retail	12%	12%	0.2	3.0	2.6	2.2	20	2	2	0.04	53	2.93	1.97	5.97
2003	EMS - Chiller	Retail	10%	3%	0.2	2.9	2.6	2.4	15	2	0	0.06	292	0.98	1.18	8.51
2005	Chiller Tune Up/Diagnostics	Retail	8%	4%	0.1	3.1	2.9	2.5	10	0	0	0.02	49	2.43	2.73	2.81
2010	Ceiling/roof Insulation - Chiller	Retail	12%	12%	0.1	3.2	2.8	2.3	20	0	0	0.03	33	4.73	3.19	3.69
2012	Duct Testing/Sealing - Chiller	Retail	19%	19%	1.0	2.9	2.3	1.9	18	5	4	0.18	219	0.65	0.45	24.69
2100	Base DX Packaged System, EER=10.3, 10 tons	Retail	0%	0%	2.0	2.9	2.9	2.4	15	0	0	N/A	N/A	N/A	N/A	N/A
2101	DX Packaged System, EER=10.9, 10 tons	Retail	6%	6%	0.2	2.9	2.7	2.2	15	47	39	0.10	123	0.99	0.73	13.81
2102	DX Packaged System, EER=13.4, 10 tons	Retail	23%	23%	0.2	2.9	2.2	1.8	15	196	162	0.03	40	3.06	2.24	4.48
2103	Geothermal Heat Pump, EER=13, 10 tons - DX	Retail	21%	21%	2.4	2.9	2.3	1.9	15	9	7	0.39	473	0.26	0.19	53.26
2105	DX Tune Up/ Advanced Diagnostics	Retail	5%	3%	0.1	3.0	2.9	2.4	10	3	1	0.07	160	0.74	0.83	9.24
2106	Prog. Thermostat - DX	Retail	5%	1%	0.1	2.9	2.8	2.4	8	24	5	0.06	270	0.58	0.82	7.89

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Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
2107	Cool Roof - DX	Retail	13%	13%	0.2	3.0	2.6	2.2	10	38	31	0.06	68	1.17	1.00	7.65
2108	Optimize Controls - DX	Retail	5%	1%	0.0	3.0	2.8	2.4	5	14	3	0.03	127	0.78	1.19	3.71
2109	Economizer - DX	Retail	26%	7%	0.5	3.2	2.4	2.5	10	73	16	0.06	277	0.71	0.95	8.08
2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Retail	4%	1%	0.1	2.9	2.8	2.4	10	0	0	0.11	504	0.39	0.52	14.70
2111	Economizer Repair - DX	Retail	29%	41%	0.2	3.2	2.3	1.6	5	60	70	0.03	22	1.43	1.26	3.50
2112	Duct Testing/Sealing - DX	Retail	19%	19%	1.0	2.9	2.3	1.9	18	52	43	0.18	219	0.65	0.45	24.69
2114	Duct/Pipe Insulation - DX	Retail	2%	2%	0.8	2.9	2.8	2.4	10	6	5	1.29	1,564	0.05	0.04	175.99
2115	Window Film (Standard) - DX	Retail	2%	2%	0.1	2.9	2.9	2.4	10	3	3	0.14	174	0.46	0.39	19.58
2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Retail	0%	0%	0.0	2.9	2.9	2.4	15	0	0	N/A	N/A	N/A	N/A	N/A
2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	13%	13%	0.1	2.9	2.5	2.1	15	39	32	0.02	28	4.28	3.13	3.20
2300	Base PTAC, EER=8.3, 1 ton	Retail	0%	0%	0.0	2.9	2.9	2.4	15	0	0	N/A	N/A	N/A	N/A	N/A
3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Retail	0%	0%	0.0	2.2	2.2	0.6	20	0	0	N/A	N/A	N/A	N/A	N/A
3001	Fan Motor, 5hp, 1800rpm, 89.5%	Retail	2%	2%	0.0	2.2	2.2	0.6	20	9	3	0.02	84	3.59	3.67	3.21
3002	Variable Speed Drive Control, 5 HP	Retail	30%	8%	0.1	2.3	1.6	0.6	15	168	12	0.02	219	3.46	4.79	2.09
3003	Demand Controlled Ventilation	Retail	15%	29%	2.4	2.2	1.9	0.4	15	61	32	0.69	1,294	0.12	0.11	93.80
3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Retail	0%	0%	0.1	2.2	2.2	0.6	20	0	0	N/A	N/A	N/A	N/A	N/A
3101	Fan Motor, 15hp, 1800rpm, 92.4%	Retail	2%	2%	0.0	2.3	2.2	0.6	20	0	0	0.11	398	0.76	0.77	15.19
3102	Variable Speed Drive Control, 15 HP	Retail	30%	8%	0.3	2.3	1.6	0.6	15	6	0	0.04	634	1.20	1.66	6.05
3103	Air Handler Optimization, 15 HP	Retail	10%	3%	0.0	2.2	2.0	0.6	8	2	0	0.01	188	2.30	3.62	1.79
3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Retail	14%	13%	0.1	2.2	1.9	0.5	15	3	1	0.03	100	2.57	2.91	3.45
3105	Energy Recovery Ventilation (ERV)	Retail	7%	13%	0.4	2.2	2.1	0.5	20	1	1	0.25	461	0.44	0.35	33.42
3107	Demand Controlled Ventilation	Retail	15%	29%	2.4	2.2	1.9	0.4	15	2	1	0.69	1,294	0.12	0.11	93.80
3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Retail	0%	0%	0.1	2.2	2.2	0.6	20	0	0	N/A	N/A	N/A	N/A	N/A
3201	Fan Motor, 40hp, 1800rpm, 94.1%	Retail	1%	1%	0.0	2.3	2.2	0.6	20	0	0	0.17	622	0.49	0.50	23.73
3202	Variable Speed Drive Control, 40 HP	Retail	30%	8%	0.3	2.3	1.6	0.6	15	6	0	0.04	620	1.22	1.69	5.92
3203	Air Handler Optimization, 40 HP	Retail	10%	3%	0.0	2.2	2.0	0.6	8	2	0	0.01	188	2.30	3.62	1.79
3204	Demand Controlled Ventilation	Retail	15%	29%	2.4	2.2	1.9	0.4	15	2	1	0.69	1,294	0.12	0.11	93.80
4000	Base Built-Up Refrigeration System	Retail	0%	0%	0.0	0.0	0.0	0.0	10	0	0	N/A	N/A	N/A	N/A	N/A
4100	Base Self-Contained Refrigeration	Retail	0%	0%	0.0	1.1	1.1	0.2	10	0	0	N/A	N/A	N/A	N/A	N/A
4101	Strip curtains for walk-ins (self-contained)	Retail	1%	1%	0.0	1.1	1.1	0.2	4	0	0	0.59	3,859	0.03	0.05	79.87
4103	Night covers for display cases (self-contained)	Retail	9%	9%	0.0	1.1	1.0	0.2	5	9	1	0.00	25	5.63	8.69	0.51
4104	Freezer-Cooler Replacement Gaskets (self-contained)	Retail	4%	4%	0.0	1.1	1.1	0.2	4	10	2	0.01	75	1.49	2.34	1.56
4105	Bi-level LED Case Lighting (self-contained units) 2014	Retail	3%	3%	0.1	1.1	1.1	0.2	8	2	0	0.17	1,106	0.20	0.28	22.89
4106	Energy-Star Refrigerator, solid door	Retail	2%	2%	0.0	1.1	1.1	0.2	10	1	0	0.07	489	0.55	0.76	10.13
4107	Energy-Star Freezer, solid door	Retail	1%	1%	0.0	1.1	1.1	0.2	9	1	0	0.05	355	0.68	0.96	7.36
4108	Energy-Star Refrigerator, glass door	Retail	10%	10%	0.1	1.1	1.0	0.2	10	8	1	0.07	462	0.58	0.80	9.57
4109	Energy-Star Freezer, glass door	Retail	3%	3%	0.0	1.1	1.1	0.2	9	2	0	0.02	145	1.67	2.36	3.00
4110	Energy Star Ice Machines	Retail	1%	1%	0.0	1.1	1.1	0.2	10	1	0	0.20	1,324	0.20	0.28	27.40
4112	Reach-in unit occupancy sensors	Retail	2%	2%	0.0	1.1	1.1	0.2	10	1	0	0.17	1,143	0.23	0.32	23.66
5000	Base Desktop PC	Retail	0%	0%	0.0	0.0	0.0	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5001	PC Network Power Management Enabling	Retail	67%	34%	0.0	0.1	0.0	0.0	4	10	1	0.00	53	3.35	5.59	0.65
5002	Energy Star or Better PC	Retail	33%	33%	0.0	0.1	0.0	0.0	4	3	1	0.00	27	3.61	5.49	0.66
5100	Base Laptop PC	Retail	0%	0%	0.0	0.0	0.0	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5101	Laptop Network Power Management Enabling	Retail	7%	7%	0.0	0.0	0.0	0.0	4	0	0	0.37	2,050	0.05	0.07	49.82
5102	Energy Star or Better Laptop	Retail	30%	30%	0.0	0.0	0.0	0.0	4	0	0	0.00	21	4.69	7.12	0.51
5200	Base Monitor, CRT	Retail	0%	0%	0.0	0.0	0.0	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5201	Energy Star or Better Monitor - CRT	Retail	56%	56%	0.0	0.0	0.0	0.0	4	3	0	0.00	3	37.31	56.64	0.06
5202	Monitor Power Management Enabling - CRT	Retail	52%	27%	0.0	0.0	0.0	0.0	4	1	0	0.00	27	6.52	10.89	0.34
5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Retail	15%	15%	0.0	0.0	0.0	0.0	4	0	0	0.03	142	0.70	1.06	3.45
5300	Base Monitor, LCD	Retail	0%	0%	0.0	0.0	0.0	0.0	4	0	0	N/A	N/A	N/A	N/A	N/A
5301	Energy Star or Better Monitor - LCD	Retail	21%	21%	0.0	0.0	0.0	0.0	4	0	0	0.00	17	5.75	8.73	0.42
5302	Monitor Power Management Enabling - LCD	Retail	19%	10%	0.0	0.0	0.0	0.0	4	0	0	0.02	269	0.66	1.10	3.33
5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Retail	14%	4%	0.0	0.0	0.0	0.0	4	0	0	0.07	1,464	0.22	0.40	9.17

Commercial Electric New Construction

DSM ASSYST SUMMARY

Measure Number	Measure	Building Type	Energy Savings Fraction	Peak Reduction Fraction	Total Costs/ Sq Ft	Base EUI	EUI	Peak Watts/ Sq Ft	Service Life (yrs)	Technical Potential GWH	System Peak Tech. Potential MW	Levelized Cost of Conserved Energy $/kWH	Levelized Cost of Avoided Peak Capacity $/kW	Total Resource Cost Test (TRC)	Participant Test	Customer Payback (Years)
100	Base Bldg Design - 15%	Office	0%	0%	0.0	26.1	26.1	5.9	20	0	0	N/A	N/A	N/A	N/A	N/A
101	High Performance Building/Int Design - Tier 1 15% - Office	Office	15%	20%	1.7	26.1	22.1	4.8	20	7	2	0.04	145	2.04	2.04	5.76
200	Base Bldg Design - 30%	Office	0%	0%	0.0	26.1	26.1	5.9	20	0	0	N/A	N/A	N/A	N/A	N/A
201	High Performance Building/Int Design - Tier 2 30% - Office	Office	31%	39%	2.5	26.1	18.1	3.6	20	11	3	0.03	104	2.85	2.86	4.11
300	Base Bldg Design - 50%	Office	0%	0%	0.0	26.1	26.1	5.9	20	0	0	N/A	N/A	N/A	N/A	N/A
301	High Performance Building/Int Design - Tier 3 50% - Office	Office	51%	65%	4.3	26.1	12.8	2.1	20	4	1	0.03	109	2.71	2.72	4.32
400	Base Bldg Design - 70%	Office	0%	0%	0.0	26.1	26.1	5.9	20	0	0	N/A	N/A	N/A	N/A	N/A
401	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Office	Office	71%	91%	6.8	26.1	7.5	0.5	20	1	0	0.04	122	2.42	2.43	4.85
100	Base Bldg Design - 15%	Office	0%	0%	0.0	26.1	26.1	5.9	20	0	0	N/A	N/A	N/A	N/A	N/A
101	High Performance Building/Int Design - Tier 1 15% - Office	Office	15%	20%	1.4	26.1	22.1	4.8	20	0	0	0.04	122	2.43	2.43	4.83
200	Base Bldg Design - 30%	Office	0%	0%	0.0	26.1	26.1	5.9	20	0	0	N/A	N/A	N/A	N/A	N/A
201	High Performance Building/Int Design - Tier 2 30% - Office	Office	31%	39%	2.1	26.1	18.1	3.6	20	0	0	0.03	87	3.40	3.41	3.45
300	Base Bldg Design - 50%	Office	0%	0%	0.0	26.1	26.1	5.9	20	0	0	N/A	N/A	N/A	N/A	N/A
301	High Performance Building/Int Design - Tier 3 50% - Office	Office	51%	65%	3.6	26.1	12.8	2.1	20	0	0	0.03	92	3.24	3.25	3.62
400	Base Bldg Design - 70%	Office	0%	0%	0.0	26.1	26.1	5.9	20	0	0	N/A	N/A	N/A	N/A	N/A
401	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Office	Office	71%	91%	5.7	26.1	7.5	0.5	20	0	0	0.03	103	2.88	2.89	4.07
100	Base Bldg Design - 15%	Office	0%	0%	0.0	26.1	26.1	5.9	20	0	0	N/A	N/A	N/A	N/A	N/A
101	High Performance Building/Int Design - Tier 1 15% - Office	Office	15%	20%	1.7	26.1	22.1	4.8	20	1	0	0.04	145	2.04	2.04	5.76
200	Base Bldg Design - 30%	Office	0%	0%	0.0	26.1	26.1	5.9	20	0	0	N/A	N/A	N/A	N/A	N/A
201	High Performance Building/Int Design - Tier 2 30% - Office	Office	31%	39%	2.5	26.1	18.1	3.6	20	2	0	0.03	104	2.85	2.86	4.11
300	Base Bldg Design - 50%	Office	0%	0%	0.0	26.1	26.1	5.9	20	0	0	N/A	N/A	N/A	N/A	N/A
301	High Performance Building/Int Design - Tier 3 50% - Office	Office	51%	65%	4.3	26.1	12.8	2.1	20	1	0	0.03	109	2.71	2.72	4.32
400	Base Bldg Design - 70%	Office	0%	0%	0.0	26.1	26.1	5.9	20	0	0	N/A	N/A	N/A	N/A	N/A
401	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Office	Office	71%	91%	6.8	26.1	7.5	0.5	20	0	0	0.04	122	2.42	2.43	4.85
100	Base Bldg Design - 15%	Restaurant	0%	0%	0.0	27.2	27.2	5.8	20	0	0	N/A	N/A	N/A	N/A	N/A
102	High Performance Building/Int Design - Tier 1 15% - Restaurant	Restaurant	15%	20%	2.1	27.2	23.0	4.6	20	3	1	0.05	184	1.69	1.73	6.81
200	Base Bldg Design - 30%	Restaurant	0%	0%	0.0	27.2	27.2	5.8	20	0	0	N/A	N/A	N/A	N/A	N/A
202	High Performance Building/Int Design - Tier 2 30% - Restaurant	Restaurant	30%	39%	3.0	27.2	18.9	3.5	20	5	1	0.04	132	2.36	2.42	4.86
300	Base Bldg Design - 50%	Restaurant	0%	0%	0.0	27.2	27.2	5.8	20	0	0	N/A	N/A	N/A	N/A	N/A
302	High Performance Building/Int Design - Tier 3 50% - Restaurant	Restaurant	51%	65%	5.3	27.2	13.4	2.0	20	2	0	0.04	138	2.25	2.30	5.10
400	Base Bldg Design - 70%	Restaurant	0%	0%	0.0	27.2	27.2	5.8	20	0	0	N/A	N/A	N/A	N/A	N/A
402	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Restaurant	Restaurant	71%	91%	8.3	27.2	7.9	0.5	20	0	0	0.04	155	2.00	2.05	5.73
100	Base Bldg Design - 15%	Restaurant	0%	0%	0.0	27.2	27.2	5.8	20	0	0	N/A	N/A	N/A	N/A	N/A
102	High Performance Building/Int Design - Tier 1 15% - Restaurant	Restaurant	15%	20%	1.8	27.2	23.0	4.6	20	0	0	0.04	155	2.01	2.06	5.71
200	Base Bldg Design - 30%	Restaurant	0%	0%	0.0	27.2	27.2	5.8	20	0	0	N/A	N/A	N/A	N/A	N/A
202	High Performance Building/Int Design - Tier 2 30% - Restaurant	Restaurant	30%	39%	2.5	27.2	18.9	3.5	20	0	0	0.03	110	2.81	2.88	4.08
300	Base Bldg Design - 50%	Restaurant	0%	0%	0.0	27.2	27.2	5.8	20	0	0	N/A	N/A	N/A	N/A	N/A
302	High Performance Building/Int Design - Tier 3 50% - Restaurant	Restaurant	51%	65%	4.4	27.2	13.4	2.0	20	0	0	0.03	116	2.68	2.75	4.28
400	Base Bldg Design - 70%	Restaurant	0%	0%	0.0	27.2	27.2	5.8	20	0	0	N/A	N/A	N/A	N/A	N/A
402	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Restaurant	Restaurant	71%	91%	7.0	27.2	7.9	0.5	20	0	0	0.04	130	2.39	2.45	4.81

G. SUPPLY-CURVE DATA

Residential Electric Existing Construction

Energy Supply Curve

Measure Number	Measure	Measure GWH Savings	Cumulative Measure GWH Savings	Levelized Energy Cost $/kWH
3832	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	219	219	0.00
3732	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	330	549	0.00
7101	Energy Star LCD TV	135	684	0.00
7501	Energy Star Desktop PC	61	745	0.00
3232	LEDs (base Halogen 6 hrs/day) 2020	384	1,129	0.00
3132	LEDs (base Halogen 2.5 hrs/day) 2020	634	1,764	0.01
7001	Energy Star Plasma TV	14	1,778	0.01
2116	Duct Insulation (HP heating early replacement)	4	1,783	0.01
2016	Duct Insulation (HP heating)	25	1,807	0.01
3632	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	80	1,887	0.01
1117	Duct Insulation (CAC early replacement)	3	1,891	0.01
2201	Air Source Heat Pump (resistance heating)	347	2,237	0.01
1219	Duct Insulation (HP cooling)	18	2,255	0.01
1024	Self Install Weatherization (CAC)	27	2,282	0.01
1122	Self Install Weatherization (CAC early replacement)	7	2,289	0.01
7401	Energy Star DVD Player	31	2,320	0.01
1319	Duct Insulation (HP cooling Early Replacement)	3	2,323	0.02
5006	Pipe Wrap	116	2,439	0.02
4701	2nd Freezer Recycling	19	2,458	0.02
5007	Hot water turndown 5 degrees	14	2,473	0.02
5008	Hot water turndown 10 degrees	19	2,492	0.02
5009	Hot water turndown 15 degrees	5	2,496	0.02
5010	Hot water turndown 20 degrees	2	2,498	0.02
3531	LEDs (base CFL 6 hrs/day) 2020	30	2,528	0.02
2121	Self Install Weatherization (HP heating early replacement)	7	2,535	0.02
5015	Low Flow Showerhead 1.5 Gal/Min	111	2,646	0.02
2216	Self Install Weatherization	17	2,662	0.02
2021	Self Install Weatherization (HP heating)	36	2,698	0.02
9901	Indirect Feedback	457	3,155	0.02
7601	Energy Star Laptop PC	15	3,170	0.03
1413	Self Install Weatherization (RAC)	2	3,172	0.03
4201	2nd Refrigerator Recycling	480	3,652	0.03
1701	ECM Furnace Fan (variable speed motor) - Cooling	926	4,578	0.03
6002	Variable-Speed Pool Pump (<1 hp)	211	4,789	0.03
3032	LEDs (base Halogen 0.5 hrs/day) 2020	143	4,932	0.04
3902	ROB 2L4'T8, 1EB	241	5,173	0.04
1223	Self Install Weatherization (HP cooling)	26	5,199	0.04
4601	Freezer - Early Replacement (Energy Star)	63	5,262	0.04
2217	Door Weatherization (resistance heating)	31	5,293	0.04
1323	Self Install Weatherization (HP cooling Early Replacement)	4	5,297	0.04
3431	LEDs (base CFL 2.5 hrs/day) 2020	46	5,343	0.04
4001	Refrigerator (Energy Star)	211	5,553	0.04
5602	High Efficiency CD (EF=3.01 w/moisture sensor)	253	5,806	0.04
5014	Faucent Aerators	72	5,879	0.05
2214	Programmable Thermostat (resistance heating)	21	5,900	0.05
1022	Programmable Thermostat (CAC)	14	5,914	0.05
1120	Programmable Thermostat (CAC early replacement)	2	5,916	0.05
5005	DHW Tank Wrap	191	6,107	0.05
4501	Freezer (Energy Star)	42	6,149	0.05
5011	Drain Water Heat Recovery (GFX)	132	6,280	0.05
1123	Door Weatherization (CAC early replacement)	9	6,289	0.06
2119	Programmable Thermostat (HP heating early replacement)	8	6,297	0.06
2019	Programmable Thermostat (HP heating)	47	6,344	0.06
9902	Direct Feedback	1,421	7,765	0.06
1221	Programmable Thermostat (HP cooling)	33	7,798	0.07
5003	Heat Pump Water Heater - Energy Star	443	8,240	0.07
1021	Return Duct Modification (CAC)	13	8,254	0.07
2122	Door Weatherization (HP heating early replacement)	7	8,260	0.07
2022	Door Weatherization (HP heating)	38	8,298	0.07
5101	Heat Pump Water Heater - Energy Star - Early Replacement	95	8,392	0.07
1119	Return Duct Modification (CAC early replacement)	2	8,395	0.07

Residential Electric Existing Construction

Capacity Supply Curve

Measure Number	Measure	Measure MW Savings	Cumulative Measure MW Savings	Levelized Capacity Cost $/kW
3832	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	25	25	0.01
3732	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	37	61	0.02
1117	Duct Insulation (CAC early replacement)	2	63	0.02
1219	Duct Insulation (HP cooling)	11	74	0.02
1024	Self Install Weatherization (CAC)	16	90	0.02
1122	Self Install Weatherization (CAC early replacement)	4	94	0.02
7101	Energy Star LCD TV	19	114	0.03
1319	Duct Insulation (HP cooling Early Replacement)	2	115	0.03
7501	Energy Star Desktop PC	8	123	0.03
3232	LEDs (base Halogen 6 hrs/day) 2020	43	166	0.04
1413	Self Install Weatherization (RAC)	1	167	0.05
1701	ECM Furnace Fan (variable speed motor) - Cooling	475	642	0.05
7001	Energy Star Plasma TV	2	644	0.06
3132	LEDs (base Halogen 2.5 hrs/day) 2020	71	715	0.06
1223	Self Install Weatherization (HP cooling)	15	731	0.06
1323	Self Install Weatherization (HP cooling Early Replacement)	2	733	0.07
2116	Duct Insulation (HP heating early replacement)	1	734	0.08
2016	Duct Insulation (HP heating)	3	737	0.08
1022	Programmable Thermostat (CAC)	8	745	0.08
1120	Programmable Thermostat (CAC early replacement)	1	746	0.08
1123	Door Weatherization (CAC early replacement)	5	752	0.10
9901	Indirect Feedback	113	865	0.10
7401	Energy Star DVD Player	4	869	0.10
3632	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	9	878	0.11
1221	Programmable Thermostat (HP cooling)	19	898	0.11
1021	Return Duct Modification (CAC)	8	905	0.12
2201	Air Source Heat Pump (resistance heating)	41	947	0.12
1119	Return Duct Modification (CAC early replacement)	1	948	0.12
4701	2nd Freezer Recycling	3	951	0.12
1025	Door Weatherization (CAC)	24	975	0.12
1324	Door Weatherization (HP cooling Early Replacement)	4	979	0.12
1224	Door Weatherization (HP cooling)	21	1,000	0.13
1004	Proper Refrigerant Charging and Air Flow (CAC)	97	1,097	0.14
1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	212	1,309	0.14
1102	Proper Refrigerant Charging and Air Flow (CAC early replacement)	19	1,328	0.14
5006	Pipe Wrap	14	1,342	0.15
1302	at pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Early Replacem	34	1,375	0.15
5007	Hot water turndown 5 degrees	2	1,377	0.16
5008	Hot water turndown 10 degrees	2	1,380	0.16
5009	Hot water turndown 15 degrees	1	1,380	0.16
5010	Hot water turndown 20 degrees	0	1,380	0.16
1204	Proper Refrigerant Charging and Air Flow (HP cooling)	74	1,455	0.17
4201	2nd Refrigerator Recycling	78	1,533	0.17
1019	Duct Insulation (CAC)	2	1,534	0.17
1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Replacement)	11	1,546	0.19
5015	Low Flow Showerhead 1.5 Gal/Min	14	1,559	0.19
7601	Energy Star Laptop PC	2	1,561	0.19
2121	Self Install Weatherization (HP heating early replacement)	1	1,562	0.20
1321	Programmable Thermostat (HP cooling Early Replacement)	3	1,565	0.20
1414	Door Weatherization (RAC)	2	1,566	0.20
2216	Self Install Weatherization	2	1,568	0.20
3531	LEDs (base CFL 6 hrs/day) 2020	3	1,572	0.20
2021	Self Install Weatherization (HP heating)	4	1,576	0.20
1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	75	1,651	0.23
1116	Cool Roof (CAC early replacement)	22	1,673	0.24
4601	Freezer - Early Replacement (Energy Star)	10	1,683	0.24
9902	Direct Feedback	352	2,035	0.25
4001	Refrigerator (Energy Star)	34	2,069	0.26
5602	High Efficiency CD (EF=3.01 w/moisture sensor)	43	2,112	0.26
6002	Variable-Speed Pool Pump (<1 hp)	25	2,137	0.27
1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	66	2,203	0.27

Residential Electric Existing Construction

Energy Supply Curve

Measure Number	Measure	Measure GWH Savings	Cumulative Measure GWH Savings	Levelized Energy Cost $/kWH
1025	Door Weatherization (CAC)	40	8,435	0.07
7502	Plug Load Controls - Smart Power Strip (base Desktop PC)	140	8,575	0.07
1324	Door Weatherization (HP cooling Early Replacement)	7	8,581	0.07
1224	Door Weatherization (HP cooling)	36	8,617	0.08
1004	Proper Refrigerant Charging and Air Flow (CAC)	163	8,781	0.08
1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	356	9,137	0.08
1102	Proper Refrigerant Charging and Air Flow (CAC early replacement)	32	9,169	0.09
2102	eat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early replacemer	48	9,217	0.09
2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	270	9,487	0.09
1302	at pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Early Replacem	56	9,543	0.09
1204	Proper Refrigerant Charging and Air Flow (HP cooling)	125	9,669	0.10
1019	Duct Insulation (CAC)	3	9,671	0.10
4101	Refrigerator - Early Replacement (Energy Star)	82	9,754	0.10
1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Replacement	19	9,773	0.11
1321	Programmable Thermostat (HP cooling Early Replacement)	4	9,777	0.12
1414	Door Weatherization (RAC)	3	9,780	0.12
2012	Crawlspace insulation (HP heating)	15	9,795	0.13
1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	127	9,922	0.14
2112	Crawlspace insulation (HP heating early replacement)	3	9,925	0.14
1116	Cool Roof (CAC early replacement)	37	9,962	0.14
2203	Ceiling R-0 to R-38 Insulation (resistance heating)	54	10,017	0.15
2209	Crawlspace insulation (resistance heating)	6	10,022	0.16
1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	111	10,133	0.16
2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	17	10,150	0.16
5004	Solar Domestic Water Heating	1,068	11,218	0.16
2213	Heat Recovery Ventilators (resistance heating)	259	11,478	0.17
2118	Heat Recovery Ventilators (HP heating early replacement)	97	11,574	0.17
2018	Heat Recovery Ventilators (HP heating)	543	12,118	0.17
1218	Cool Roof (HP cooling)	168	12,285	0.17
1125	Whole House Fans (CAC early replacement)	58	12,343	0.17
2006	Ceiling R-0 to R-38 Insulation (HP heating)	88	12,432	0.18
1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/day)	5	12,436	0.18
2210	Basement insulation R-13 (resistance heating)	48	12,484	0.19
2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance heating)	45	12,529	0.19
2013	Basement insulation R-13 (HP heating)	68	12,597	0.19
1318	Cool Roof (HP cooling Early Replacement)	26	12,623	0.19
1005	Proper Sizing and Quality Install (CAC)	176	12,800	0.20
2113	Basement insulation R-13 (HP heating early replacement)	12	12,812	0.20
2120	nprehensive Shell Air Sealing - Inf. Reduction (HP heating early replacem	16	12,828	0.20
3331	LEDs (base CFL 0.5 hrs/day) 2020	11	12,839	0.21
2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	91	12,930	0.21
1226	Whole House Fans (HP cooling)	262	13,192	0.21
1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	170	13,362	0.23
1326	Whole House Fans (HP cooling early replacement)	41	13,403	0.24
2117	Duct Testing and Sealing (HP heating early replacement)	5	13,407	0.24
1411	Cool Roof (RAC)	14	13,421	0.24
1103	Proper Sizing and Quality Install (CAC early replacement)	29	13,450	0.25
2017	Duct Testing and Sealing (HP heating)	24	13,474	0.27
1014	Crawlspace insulation (CAC)	9	13,483	0.27
1416	Whole House Fans (RAC)	21	13,504	0.30
1112	Crawlspace insulation (CAC early replacement)	1	13,506	0.30
2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance heating)	18	13,523	0.31

Residential Electric Existing Construction

Capacity Supply Curve

Measure Number	Measure	Measure MW Savings	Cumulative Measure MW Savings	Levelized Capacity Cost $/kW
1218	Cool Roof (HP cooling)	100	2,302	0.29
1125	Whole House Fans (CAC early replacement)	35	2,337	0.29
1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/day)	3	2,340	0.31
3032	LEDs (base Halogen 0.5 hrs/day) 2020	16	2,356	0.32
3902	ROB 2L4'T8, 1EB	27	2,383	0.32
1318	Cool Roof (HP cooling Early Replacement)	16	2,398	0.32
1005	Proper Sizing and Quality Install (CAC)	105	2,503	0.33
4501	Freezer (Energy Star)	7	2,510	0.33
2217	Door Weatherization (resistance heating)	4	2,514	0.33
1226	Whole House Fans (HP cooling)	155	2,669	0.36
5014	Faucent Aerators	9	2,678	0.37
3431	LEDs (base CFL 2.5 hrs/day) 2020	5	2,683	0.37
1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	101	2,784	0.39
2214	Programmable Thermostat (resistance heating)	3	2,786	0.39
1326	Whole House Fans (HP cooling early replacement)	24	2,811	0.40
1411	Cool Roof (RAC)	8	2,819	0.41
5005	DHW Tank Wrap	23	2,842	0.42
1103	Proper Sizing and Quality Install (CAC early replacement)	17	2,859	0.42
5011	Drain Water Heat Recovery (GFX)	16	2,875	0.44
1014	Crawlspace insulation (CAC)	6	2,881	0.45
2119	Programmable Thermostat (HP heating early replacement)	1	2,882	0.49
1416	Whole House Fans (RAC)	13	2,894	0.50
2019	Programmable Thermostat (HP heating)	6	2,900	0.50
1112	Crawlspace insulation (CAC early replacement)	1	2,901	0.51
1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	3	2,904	0.52
7502	Plug Load Controls - Smart Power Strip (base Desktop PC)	18	2,922	0.55
1205	Proper Sizing and Quality Install (HP cooling)	67	2,989	0.55
5003	Heat Pump Water Heater - Energy Star	55	3,044	0.56
5101	Heat Pump Water Heater - Energy Star - Early Replacement	12	3,055	0.57
2122	Door Weatherization (HP heating early replacement)	1	3,056	0.58
1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	39	3,095	0.58
2022	Door Weatherization (HP heating)	4	3,100	0.58
1008	Ceiling R-0 to R-38 Insulation (CAC)	28	3,127	0.59
1214	Crawlspace insulation (HP cooling)	4	3,131	0.59
4101	Refrigerator - Early Replacement (Energy Star)	13	3,144	0.62
1305	Proper Sizing and Quality Install (HP cooling Early Replacement)	10	3,155	0.63
1113	Basement insulation R-13 (CAC early replacement)	5	3,160	0.63
1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	5	3,164	0.64
1029	WINDOWS - Default With Sunscreen (CAC)	78	3,242	0.66
1314	Crawlspace insulation (HP cooling Early Replacement)	1	3,243	0.67
1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early replacement	6	3,248	0.71
1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early replacement	2	3,250	0.72
1215	Basement insulation R-13 (HP cooling)	21	3,271	0.73
2102	eat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early replacemer	6	3,277	0.73
1417	Window Film (RAC)	11	3,287	0.74
2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	32	3,319	0.74
1208	Ceiling R-0 to R-38 Insulation (HP cooling)	21	3,341	0.75
1026	Ceiling Fans (CAC)	11	3,352	0.80
1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	27	3,379	0.80
1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	3	3,382	0.82
1118	Duct Testing and Sealing (CAC early replacement)	1	3,383	0.83
1315	Basement insulation R-13 (HP cooling Early Replacement)	3	3,387	0.84

Residential Electric New Construction

Energy Supply Curve

Measure Number	Measure	Measure GWH Savings	Cumulative Measure GWH Savings	Levelized Energy Cost $/kWH
101	Energy Star Home	65	65	0.06

Residential Electric New Construction

Capacity Supply Curve

Measure Number	Measure	Measure MW Savings	Cumulative Measure MW Savings	Levelized Capacity Cost $/kW
101	Energy Star Home	6	6	0.70

Commecial Electric Existing Construction

Energy Supply Curve

Measure Number	Measure	Measure GWH Savings	Cumulative Measure GWH Savings	Levelized Energy Cost $/kWH
5701	Data Center Improved Operations	233	233	0.00
5201	Energy Star or Better Monitor - CRT	32	265	0.00
5602	ENERGY STAR Printer	25	290	0.00
5702	Data Center Best Practices	267	556	0.00
5401	Energy Star or Better Copier	10	566	0.00
5703	Data Center State of the Art practices	102	669	0.00
4103	Night covers for display cases (self-contained)	69	738	0.00
1332	LEDs (base incandescent flood) 2020	1,205	1,943	0.00
1203	Lighting Control Tuneup (base other fluorescent fixture)	4	1,947	0.01
1432	LEDs (base incandescent A-line 72W) 2020	424	2,371	0.01
5502	ENERGY STAR Multi-Function Printer	3	2,374	0.01
1532	LEDs (base incandescent A-line 53W) 2020	279	2,653	0.01
5301	Energy Star or Better Monitor - LCD	8	2,660	0.01
5102	Energy Star or Better Laptop	3	2,664	0.01
1801	T5 (240W) (base metal halide)	213	2,877	0.01
4104	Freezer-Cooler Replacement Gaskets (self-contained)	38	2,915	0.01
4109	Energy-Star Freezer, glass door	19	2,934	0.01
5001	PC Network Power Management Enabling	109	3,043	0.01
2010	Ceiling/roof Insulation - Chiller	14	3,057	0.01
1036	Lighting Control Tuneup (base 4L4'T8), 2020	39	3,096	0.02
4007	Efficient compressor motor	1	3,097	0.02
5202	Monitor Power Management Enabling - CRT	6	3,103	0.02
4011	Demand Hot Gas Defrost	13	3,116	0.02
1136	Lighting Control Tuneup (base 2L4'T8), 2020	6	3,122	0.02
4106	Energy-Star Refrigerator, solid door	24	3,146	0.02
1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	383	3,529	0.02
4009	Floating head pressure controls	1	3,530	0.02
1031	ROB 4L4' High Performance T8 (86 W), 2020	494	4,024	0.02
8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	12	4,036	0.03
5002	Energy Star or Better PC	37	4,074	0.03
7001	Vending Misers (Refrigerated units)	23	4,096	0.03
2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	314	4,410	0.03
1131	ROB 2L4' High Performance T8 (86 W), 2020	96	4,506	0.03
1806	Occupancy Sensor, High Bay T5	13	4,519	0.03
3203	Air Handler Optimization, 40 HP	71	4,591	0.03
1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	77	4,667	0.03
6007	Heat Trap	31	4,698	0.03
4107	Energy-Star Freezer, solid door	8	4,706	0.03
3002	Variable Speed Drive Control, 5 HP	643	5,349	0.03
1851	LED Exit Sign	35	5,384	0.03
3102	Variable Speed Drive Control, 15 HP	268	5,651	0.04
2005	Chiller Tune Up/Diagnostics	8	5,659	0.04
3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	130	5,789	0.04
4013	Anti-sweat (humidistat) controls	6	5,796	0.04
6006	Heat Recovery Unit	68	5,864	0.04
2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	124	5,988	0.04
1805	High Performance Lighting R/R - 25% Savings (base metal halide)	31	6,018	0.04
3103	Air Handler Optimization, 15 HP	56	6,074	0.04
3001	Fan Motor, 5hp, 1800rpm, 89.5%	42	6,116	0.05
1731	LED screw-in replacement (base CFL 23W) 2020	114	6,231	0.05
4110	Energy Star Ice Machines	25	6,256	0.05
1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	546	6,802	0.05
1901	Outdoor Lighting Controls (Photocell/Timeclock)	92	6,894	0.05
4006	Electronically commutated evaporator fan motor	54	6,948	0.05
4108	Energy-Star Refrigerator, glass door	21	6,969	0.05
7002	Vending Misers (Refrigerated glass-front units)	12	6,981	0.05
2113	Ceiling/roof Insulation - DX	11	6,992	0.05
1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	6	6,999	0.05
4014	Freezer-Cooler Replacement Gaskets	16	7,014	0.05
2102	DX Packaged System, EER=13.4, 10 tons	1,056	8,070	0.05
5601	Printer Power Management Enabling	8	8,078	0.05

Commecial Electric Existing Construction

Capacity Supply Curve

Measure Number	Measure	Measure MW Savings	Cumulative Measure MW Savings	Levelized Capacity Cost $/kW
5701	Data Center Improved Operations	39	39	0.00
5702	Data Center Best Practices	44	83	0.01
5201	Energy Star or Better Monitor - CRT	5	88	0.01
5602	ENERGY STAR Printer	4	91	0.01
5401	Energy Star or Better Copier	2	93	0.01
5703	Data Center State of the Art practices	17	110	0.02
2010	Ceiling/roof Insulation - Chiller	10	119	0.02
4103	Night covers for display cases (self-contained)	10	130	0.02
1332	LEDs (base incandescent flood) 2020	214	344	0.03
1432	LEDs (base incandescent A-line 72W) 2020	75	419	0.03
2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	221	640	0.04
5502	ENERGY STAR Multi-Function Printer	1	641	0.04
1532	LEDs (base incandescent A-line 53W) 2020	50	690	0.05
2113	Ceiling/roof Insulation - DX	10	701	0.06
5301	Energy Star or Better Monitor - LCD	1	702	0.06
1203	Lighting Control Tuneup (base other fluorescent fixture)	0	702	0.06
2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	82	784	0.07
1801	T5 (240W) (base metal halide)	37	821	0.07
5102	Energy Star or Better Laptop	0	821	0.07
2102	DX Packaged System, EER=13.4, 10 tons	750	1,571	0.08
4104	Freezer-Cooler Replacement Gaskets (self-contained)	6	1,576	0.08
4109	Energy-Star Freezer, glass door	3	1,579	0.09
2013	High Efficiency Chiller Motors	1	1,581	0.10
4007	Efficient compressor motor	0	1,581	0.10
2005	Chiller Tune Up/Diagnostics	3	1,583	0.11
4011	Demand Hot Gas Defrost	2	1,585	0.11
1031	ROB 4L4' High Performance T8 (86 W), 2020	87	1,672	0.13
2111	Economizer Repair - DX	109	1,781	0.13
4106	Energy-Star Refrigerator, solid door	4	1,785	0.14
1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	54	1,838	0.15
2006	VSD for Chiller Pumps and Towers	7	1,845	0.15
3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	30	1,875	0.16
2301	HE PTAC, EER=9.6, 1 ton	48	1,923	0.16
3001	Fan Motor, 5hp, 1800rpm, 89.5%	11	1,934	0.17
1131	ROB 2L4' High Performance T8 (86 W), 2020	17	1,951	0.17
1036	Lighting Control Tuneup (base 4L4'T8), 2020	3	1,954	0.17
5002	Energy Star or Better PC	6	1,960	0.18
5001	PC Network Power Management Enabling	8	1,968	0.18
1851	LED Exit Sign	6	1,974	0.19
4107	Energy-Star Freezer, solid door	1	1,975	0.22
6007	Heat Trap	5	1,980	0.22
1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	11	1,990	0.23
5202	Monitor Power Management Enabling - CRT	0	1,991	0.24
1136	Lighting Control Tuneup (base 2L4'T8), 2020	1	1,991	0.24
4009	Floating head pressure controls	0	1,991	0.26
2107	Cool Roof - DX	57	2,048	0.26
1731	LED screw-in replacement (base CFL 23W) 2020	20	2,068	0.27
1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	96	2,164	0.27
6006	Heat Recovery Unit	10	2,174	0.29
4006	Electronically commutated evaporator fan motor	9	2,183	0.29
4110	Energy Star Ice Machines	4	2,187	0.32
1805	High Performance Lighting R/R - 25% Savings (base metal halide)	4	2,191	0.32
4108	Energy-Star Refrigerator, glass door	3	2,194	0.33
7401	Efficient Steamer	10	2,204	0.33
4014	Freezer-Cooler Replacement Gaskets	3	2,207	0.34
4018	Oversized Air Cooled Condenser	5	2,212	0.34
1901	Outdoor Lighting Controls (Photocell/Timeclock)	13	2,225	0.35
7001	Vending Misers (Refrigerated units)	2	2,227	0.35
2002	Window Film (Standard) - Chiller	10	2,237	0.35
2012	Duct Testing/Sealing - Chiller	143	2,380	0.35
1631	LED screw-in replacement (base CFL 18W) 2020	17	2,397	0.35

Commecial Electric Existing Construction

Energy Supply Curve

Measure Number	Measure	Measure GWH Savings	Cumulative Measure GWH Savings	Levelized Energy Cost $/kWH
2006	VSD for Chiller Pumps and Towers	18	8,097	0.06
4018	Oversized Air Cooled Condenser	32	8,128	0.06
7401	Efficient Steamer	56	8,184	0.06
1631	LED screw-in replacement (base CFL 18W) 2020	95	8,279	0.06
1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	110	8,389	0.06
4004	Night covers for display cases	22	8,411	0.07
2013	High Efficiency Chiller Motors	2	8,413	0.07
6002	High Efficiency Water Heater (electric)	11	8,425	0.07
4002	Strip curtains for walk-ins (built-up)	6	8,430	0.07
3202	Variable Speed Drive Control, 40 HP	164	8,594	0.07
1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	163	8,757	0.08
2003	EMS - Chiller	70	8,827	0.08
5302	Monitor Power Management Enabling - LCD	2	8,830	0.08
1201	ROB High Performance T8 (base other fluorescent)	8	8,837	0.09
2108	Optimize Controls - DX	58	8,895	0.09
5402	Copier Power Management Enabling	3	8,898	0.10
4008	Compressor VSD retrofit	24	8,922	0.10
6003	Hot Water Pipe Insulation	6	8,928	0.11
1902	LED Outdoor Area Lighting	461	9,389	0.11
1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	9	9,397	0.11
2301	HE PTAC, EER=9.6, 1 ton	72	9,470	0.11
6004	Tankless Water Heater	37	9,507	0.11
4010	Refrigeration Commissioning	3	9,511	0.12
3101	Fan Motor, 15hp, 1800rpm, 92.4%	7	9,518	0.14
2105	DX Tune Up/ Advanced Diagnostics	11	9,529	0.14
2111	Economizer Repair - DX	102	9,630	0.14
7201	Convection Oven	12	9,642	0.15
6008	Solar Water Heater	84	9,727	0.18
1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	21	9,747	0.18
2109	Economizer - DX	145	9,893	0.18
5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	2	9,894	0.19
2008	New Economizer - Chiller	112	10,006	0.19
2107	Cool Roof - DX	72	10,079	0.20
1202	ROB Low Watt High Performance T8 (base other fluorescent)	7	10,086	0.21
6001	Demand controlled circulating systems	12	10,098	0.21
4005	Evaporator fan controller for MT walk-ins	0	10,098	0.23
5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	3	10,101	0.23
2012	Duct Testing/Sealing - Chiller	216	10,317	0.23
4001	High-efficiency fan motors	23	10,340	0.24
2002	Window Film (Standard) - Chiller	14	10,354	0.24
2106	Prog. Thermostat - DX	76	10,430	0.24
1134	ROB 2L4' LED Tube, 2020	36	10,467	0.24
1035	LED Troffer (base 4L4'T8), 2020	260	10,726	0.24
4017	Multiplex Compressor System	6	10,733	0.26
4112	Reach-in unit occupancy sensors	2	10,734	0.28
1034	ROB 4L4' LED Tube, 2020	586	11,321	0.29
2302	Occupancy Sensor (hotels)	12	11,333	0.29
2115	Window Film (Standard) - DX	84	11,416	0.30
5501	Multifunction Power Management Enabling	2	11,418	0.30
1135	LED Troffer (base 2L4'T8), 2020	60	11,478	0.31
4105	Bi-level LED Case Lighting (self-contained units) 2014	4	11,483	0.33
3201	Fan Motor, 40hp, 1800rpm, 94.1%	2	11,484	0.33
2112	Duct Testing/Sealing - DX	189	11,673	0.39
3105	Energy Recovery Ventilation (ERV)	23	11,696	0.41

Commecial Electric Existing Construction

Capacity Supply Curve

Measure Number	Measure	Measure MW Savings	Cumulative Measure MW Savings	Levelized Capacity Cost $/kW
1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	19	2,416	0.36
2302	Occupancy Sensor (hotels)	9	2,425	0.37
1205	gh Performance Lighting R/R - 25% Savings, Base Other Fluoresce	1	2,426	0.38
2105	DX Tune Up/ Advanced Diagnostics	4	2,430	0.40
4002	Strip curtains for walk-ins (built-up)	1	2,431	0.41
2115	Window Film (Standard) - DX	56	2,487	0.45
6002	High Efficiency Water Heater (electric)	2	2,488	0.47
2003	EMS - Chiller	12	2,500	0.47
3002	Variable Speed Drive Control, 5 HP	44	2,544	0.48
3203	Air Handler Optimization, 40 HP	5	2,549	0.48
1201	ROB High Performance T8 (base other fluorescent)	1	2,550	0.49
3101	Fan Motor, 15hp, 1800rpm, 92.4%	2	2,552	0.51
2108	Optimize Controls - DX	10	2,563	0.53
4013	Anti-sweat (humidistat) controls	1	2,563	0.53
2112	Duct Testing/Sealing - DX	134	2,697	0.55
3102	Variable Speed Drive Control, 15 HP	17	2,714	0.57
7002	Vending Misers (Refrigerated glass-front units)	1	2,715	0.64
3103	Air Handler Optimization, 15 HP	4	2,719	0.66
4010	Refrigeration Commissioning	1	2,719	0.72
6003	Hot Water Pipe Insulation	1	2,720	0.72
5601	Printer Power Management Enabling	1	2,721	0.75
1806	Occupancy Sensor, High Bay T5	1	2,721	0.75
6004	Tankless Water Heater	5	2,727	0.79
4004	Night covers for display cases	2	2,728	0.82
7201	Convection Oven	2	2,731	0.83
2004	Cool Roof - Chiller	3	2,733	0.90
3105	Energy Recovery Ventilation (ERV)	10	2,744	0.91
2109	Economizer - DX	27	2,771	0.99
3202	Variable Speed Drive Control, 40 HP	11	2,782	1.02
5302	Monitor Power Management Enabling - LCD	0	2,782	1.10
1202	ROB Low Watt High Performance T8 (base other fluorescent)	1	2,783	1.16
3201	Fan Motor, 40hp, 1800rpm, 94.1%	0	2,784	1.18
2008	New Economizer - Chiller	17	2,801	1.25
4008	Compressor VSD retrofit	2	2,803	1.26
6008	Solar Water Heater	12	2,815	1.26
5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	0	2,815	1.27
5402	Copier Power Management Enabling	0	2,815	1.32
2106	Prog. Thermostat - DX	14	2,829	1.32
1035	LED Troffer (base 4L4'T8), 2020	46	2,875	1.37
4001	High-efficiency fan motors	4	2,879	1.37
1134	ROB 2L4' LED Tube, 2020	6	2,885	1.38
6001	Demand controlled circulating systems	2	2,887	1.50
4017	Multiplex Compressor System	1	2,888	1.64
1034	ROB 4L4' LED Tube, 2020	103	2,991	1.64
1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	7	2,998	1.76
1135	LED Troffer (base 2L4'T8), 2020	11	3,008	1.77
4112	Reach-in unit occupancy sensors	0	3,009	1.86
4105	Bi-level LED Case Lighting (self-contained units) 2014	1	3,009	2.15
3003	Demand Controlled Ventilation	78	3,087	2.17
3204	Demand Controlled Ventilation	30	3,117	2.28
1902	LED Outdoor Area Lighting	21	3,137	2.35
1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	0	3,138	2.40
4016	LED Display Lighting	4	3,142	2.70
4005	Evaporator fan controller for MT walk-ins	0	3,142	2.74

Commecial Electric New Construction

Energy Supply Curve

Measure Number	Measure	Measure GWH Savings	Cumulative Measure GWH Savings	Levelized Energy Cost $/kWH
209	High Performance Building/Int Design - Tier 2 30% - Data Centers	3.9	4	0.01
309	High Performance Building/Int Design - Tier 3 50% - Data Centers	1.5	5	0.01
409	Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Data Ce	0.2	6	0.01
109	High Performance Building/Int Design - Tier 1 15% - Data Centers	2.4	8	0.01
204	High Performance Building/Int Design - Tier 2 30% - Grocery	2.2	10	0.02
304	High Performance Building/Int Design - Tier 3 50% - Grocery	0.8	11	0.02
404	gh Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Groce	0.1	11	0.03
201	High Performance Building/Int Design - Tier 2 30% - Office	13.1	24	0.03
104	High Performance Building/Int Design - Tier 1 15% - Grocery	1.4	26	0.03
301	High Performance Building/Int Design - Tier 3 50% - Office	4.9	31	0.03
401	igh Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Offic	0.8	31	0.04
202	High Performance Building/Int Design - Tier 2 30% - Restaurant	4.9	36	0.04
302	High Performance Building/Int Design - Tier 3 50% - Restaurant	1.8	38	0.04
210	High Performance Building/Int Design - Tier 2 30% - Non-Jurisdictional	19.5	58	0.04
402	h Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Restau	0.3	58	0.04
101	High Performance Building/Int Design - Tier 1 15% - Office	8.2	66	0.04
310	High Performance Building/Int Design - Tier 3 50% - Non-Jurisdictional	7.3	73	0.04
410	erformance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Non-Jurisd	1.1	74	0.05
102	High Performance Building/Int Design - Tier 1 15% - Restaurant	3.1	78	0.05
110	High Performance Building/Int Design - Tier 1 15% - Non-Jurisdictional	12.2	90	0.06
203	High Performance Building/Int Design - Tier 2 30% - Retail	10.5	100	0.06
208	High Performance Building/Int Design - Tier 2 30% - Lodging	4.2	104	0.07
303	High Performance Building/Int Design - Tier 3 50% - Retail	3.9	108	0.07
212	High Performance Building/Int Design - Tier 2 30% - Miscellaneous	10.4	119	0.07
308	High Performance Building/Int Design - Tier 3 50% - Lodging	1.6	120	0.07
312	High Performance Building/Int Design - Tier 3 50% - Miscellaneous	3.9	124	0.07
205	High Performance Building/Int Design - Tier 2 30% - Warehouse	4.1	128	0.07
403	igh Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Reta	0.6	129	0.07
408	gh Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Lodgi	0.2	129	0.08
305	High Performance Building/Int Design - Tier 3 50% - Warehouse	1.5	131	0.08
412	Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Miscellar	0.6	131	0.08
206	High Performance Building/Int Design - Tier 2 30% - School	2.8	134	0.09
405	ı Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Warehc	0.2	134	0.09
207	High Performance Building/Int Design - Tier 2 30% - Health	3.7	138	0.09
103	High Performance Building/Int Design - Tier 1 15% - Retail	6.5	145	0.09
306	High Performance Building/Int Design - Tier 3 50% - School	1.0	146	0.09
108	High Performance Building/Int Design - Tier 1 15% - Lodging	2.7	148	0.09
307	High Performance Building/Int Design - Tier 3 50% - Health	1.4	150	0.09
112	High Performance Building/Int Design - Tier 1 15% - Miscellaneous	6.5	156	0.09
406	igh Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Scho	0.2	156	0.10
407	igh Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Heal	0.2	156	0.10
105	High Performance Building/Int Design - Tier 1 15% - Warehouse	2.5	159	0.10
211	High Performance Building/Int Design - Tier 2 30% - Religious Worship	2.4	161	0.12
106	High Performance Building/Int Design - Tier 1 15% - School	1.7	163	0.12
107	High Performance Building/Int Design - Tier 1 15% - Health	2.3	165	0.12
311	High Performance Building/Int Design - Tier 3 50% - Religious Worship	0.9	166	0.13
411	erformance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Religious V	0.1	166	0.14
111	High Performance Building/Int Design - Tier 1 15% - Religious Worship	1.5	168	0.17

Commecial Electric New Construction

Capacity Supply Curve

Measure Number	Measure	Measure MW Savings	Cumulative Measure MW Savings	Levelized Capacity Cost $/kW
209	High Performance Building/Int Design - Tier 2 30% - Data Centers	0.9	1	0.04
309	High Performance Building/Int Design - Tier 3 50% - Data Centers	0.3	1	0.04
409	h Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Data Cent	0.1	1	0.05
109	High Performance Building/Int Design - Tier 1 15% - Data Centers	0.5	2	0.06
204	High Performance Building/Int Design - Tier 2 30% - Grocery	0.5	2	0.10
201	High Performance Building/Int Design - Tier 2 30% - Office	3.8	6	0.10
304	High Performance Building/Int Design - Tier 3 50% - Grocery	0.2	6	0.11
301	High Performance Building/Int Design - Tier 3 50% - Office	1.4	8	0.11
404	igh Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Grocer	0.0	8	0.12
401	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Office	0.2	8	0.12
202	High Performance Building/Int Design - Tier 2 30% - Restaurant	1.3	9	0.13
302	High Performance Building/Int Design - Tier 3 50% - Restaurant	0.5	10	0.14
104	High Performance Building/Int Design - Tier 1 15% - Grocery	0.3	10	0.14
101	High Performance Building/Int Design - Tier 1 15% - Office	2.4	12	0.14
210	High Performance Building/Int Design - Tier 2 30% - Non-Jurisdictional	5.3	18	0.15
402	gh Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Restaura	0.1	18	0.15
310	High Performance Building/Int Design - Tier 3 50% - Non-Jurisdictional	2.0	20	0.16
410	Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Non-Jurisdic	0.3	20	0.18
102	High Performance Building/Int Design - Tier 1 15% - Restaurant	0.8	21	0.18
203	High Performance Building/Int Design - Tier 2 30% - Retail	3.1	24	0.21
110	High Performance Building/Int Design - Tier 1 15% - Non-Jurisdictional	3.3	27	0.22
303	High Performance Building/Int Design - Tier 3 50% - Retail	1.2	29	0.22
403	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Retail	0.2	29	0.25
208	High Performance Building/Int Design - Tier 2 30% - Lodging	1.1	30	0.26
212	High Performance Building/Int Design - Tier 2 30% - Miscellaneous	2.6	32	0.27
308	High Performance Building/Int Design - Tier 3 50% - Lodging	0.4	33	0.28
312	High Performance Building/Int Design - Tier 3 50% - Miscellaneous	1.0	34	0.28
103	High Performance Building/Int Design - Tier 1 15% - Retail	2.0	36	0.30
205	High Performance Building/Int Design - Tier 2 30% - Warehouse	1.0	37	0.30
305	High Performance Building/Int Design - Tier 3 50% - Warehouse	0.4	37	0.31
408	igh Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Lodgin	0.1	37	0.31
412	ı Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Miscellane	0.2	37	0.31
405	gh Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Warehou	0.1	37	0.35
207	High Performance Building/Int Design - Tier 2 30% - Health	0.9	38	0.37
108	High Performance Building/Int Design - Tier 1 15% - Lodging	0.7	39	0.37
112	High Performance Building/Int Design - Tier 1 15% - Miscellaneous	1.6	41	0.37
307	High Performance Building/Int Design - Tier 3 50% - Health	0.3	41	0.38
105	High Performance Building/Int Design - Tier 1 15% - Warehouse	0.6	42	0.41
407	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Health	0.1	42	0.43
206	High Performance Building/Int Design - Tier 2 30% - School	0.5	42	0.44
306	High Performance Building/Int Design - Tier 3 50% - School	0.2	42	0.46
211	High Performance Building/Int Design - Tier 2 30% - Religious Worship	0.6	43	0.47
311	High Performance Building/Int Design - Tier 3 50% - Religious Worship	0.2	43	0.50
107	High Performance Building/Int Design - Tier 1 15% - Health	0.6	44	0.51
406	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Schoo	0.0	44	0.52
411	Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Religious W	0.0	44	0.56
106	High Performance Building/Int Design - Tier 1 15% - School	0.3	44	0.62
111	High Performance Building/Int Design - Tier 1 15% - Religious Worship	0.4	45	0.66

H DETAILED TECHNICAL AND ECONOMIC AVOIDED COST SCENARIO RESULTS

APPENDIX H

Base Avoided Costs

ADDITIVE MEASURE LEVEL RESULTS

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS Year 2020
Vintage Existing

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH
VA	1000	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	Single Family	2014	2053	2,123.48	1,261.52	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1000	1024	Self Install Weatherization (CAC)	Single Family	2014	2053	2,099.82	1,247.47	23.66	23.66	1%	14.06	14.06	1%	0.01	0.01
VA	1000	1022	Programmable Thermostat (CAC)	Single Family	2014	2053	2,087.47	1,240.13	12.34	36.01	2%	7.33	21.39	2%	0.04	0.02
VA	1000	1021	Return Duct Modification (CAC)	Single Family	2014	2053	2,075.37	1,232.94	12.10	48.11	2%	7.19	28.58	2%	0.06	0.03
VA	1000	1019	Duct Insulation (CAC)	Single Family	2014	2053	2,073.16	1,231.63	2.22	50.32	2%	1.32	29.90	2%	0.09	0.03
VA	1000	1004	Proper Refrigerant Charging and Air Flow (CAC)	Single Family	2014	2053	1,924.33	1,143.21	148.83	199.16	9%	88.42	118.32	9%	0.08	0.07
VA	1000	1025	Door Weatherization (CAC)	Single Family	2014	2053	1,893.00	1,124.60	31.33	230.48	11%	18.61	136.93	11%	0.07	0.07
VA	1000	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	1,778.11	1,056.34	114.89	345.38	16%	68.26	205.18	16%	0.13	0.09
VA	1000	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	1,677.46	996.55	100.65	446.02	21%	59.79	264.97	21%	0.16	0.10
VA	1000	1005	Proper Sizing and Quality Install (CAC)	Single Family	2014	2053	1,514.52	899.75	162.94	608.96	29%	96.80	361.78	29%	0.17	0.12
VA	1000	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	1,361.98	809.13	152.54	761.51	36%	90.62	452.40	36%	0.22	0.14
VA	1000	1014	Crawlspace insulation (CAC)	Single Family	2014	2053	1,353.27	803.95	8.70	770.21	36%	5.17	457.57	36%	0.26	0.14
VA	1000	1008	Ceiling R-0 to R-38 Insulation (CAC)	Single Family	2014	2053	1,315.09	781.27	38.18	808.39	38%	22.68	480.25	38%	0.27	0.15
VA	1000	1009	Ceiling R-0 to R-49 Insulation (CAC)	Single Family	2014	2053	1,314.53	780.94	0.55	808.95	38%	0.33	480.58	38%	3.00	0.15
VA	1000	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Single Family	2014	2053	1,254.71	745.40	59.82	868.77	41%	35.54	516.12	41%	0.33	0.16
VA	1000	1029	WINDOWS - Default With Sunscreen (CAC)	Single Family	2014	2053	1,131.76	672.36	122.95	991.72	47%	73.04	589.16	47%	0.36	0.19
VA	1000	1026	Ceiling Fans (CAC)	Single Family	2014	2053	1,119.10	664.84	12.66	1,004.38	47%	7.52	596.68	47%	0.51	0.19
VA	1000	1010	Ceiling R-11 to R-38 Insulaton (CAC)	Single Family	2014	2053	1,095.69	650.93	23.41	1,027.79	48%	13.91	610.59	48%	0.74	0.20
VA	1000	1011	Ceiling R-11 to R-49 Insulation (CAC)	Single Family	2014	2053	1,094.69	650.34	1.00	1,028.79	48%	0.59	611.18	48%	3.60	0.21
VA	1000	1020	Duct Testing and Sealing (CAC)	Single Family	2014	2053	1,090.03	647.57	4.67	1,033.45	49%	2.77	613.96	49%	1.06	0.21
VA	1000	1012	Ceiling R-19 to R-38 Insulation (CAC)	Single Family	2014	2053	1,083.96	643.96	6.07	1,039.52	49%	3.61	617.56	49%	1.26	0.22
VA	1000	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Single Family	2014	2053	1,078.68	640.83	5.27	1,044.80	49%	3.13	620.70	49%	1.30	0.22
VA	1000	1018	Cool Roof (CAC)	Single Family	2014	2053	1,060.37	629.95	18.31	1,063.11	50%	10.88	631.57	50%	1.34	0.24
VA	1000	1013	Ceiling R-19 to R-49 Insulation (CAC)	Single Family	2014	2053	1,059.82	629.62	0.55	1,063.66	50%	0.33	631.90	50%	3.72	0.24
VA	1000	1027	Whole House Fans (CAC)	Single Family	2014	2053	1,032.07	613.13	27.75	1,091.41	51%	16.49	648.39	51%	1.68	0.28
VA	1000	1028	Window Film (CAC)	Single Family	2014	2053	997.22	592.43	34.85	1,126.26	53%	20.70	669.09	53%	1.73	0.33
VA	1000	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	Single Family	2014	2053	995.17	591.21	2.05	1,128.31	53%	1.22	670.31	53%	2.48	0.33
VA	1000	1007	AC Filter Changes (CAC)	Single Family	2014	2053	990.93	588.70	4.24	1,132.55	53%	2.52	672.83	53%	1.83	0.34
VA	1000	1006	AC Maintenance and/or tune-up (CAC)	Single Family	2014	2053	986.52	586.07	4.41	1,136.96	54%	2.62	675.45	54%	2.09	0.34
VA	1000	1015	Basement insulation R-13 (CAC)	Single Family	2014	2053	982.22	583.52	4.30	1,141.26	54%	2.55	678.00	54%	3.64	0.35
VA	1000	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	Single Family	2014	2053	981.99	583.38	0.23	1,141.49	54%	0.14	678.14	54%	4.19	0.36
VA	1100	1100	Base Split-System Air Conditioner - Early Replacement (11 SEI	Single Family	2014	2053	349.12	207.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1100	1117	Duct Insulation (CAC early replacement)	Single Family	2014	2053	346.27	205.72	2.85	2.85	1%	1.69	1.69	1%	0.01	0.01
VA	1100	1122	Self Install Weatherization (CAC early replacement)	Single Family	2014	2053	340.44	202.25	5.84	8.69	2%	3.47	5.16	2%	0.01	0.01
VA	1100	1120	Programmable Thermostat (CAC early replacement)	Single Family	2014	2053	338.44	201.06	2.00	10.69	3%	1.19	6.35	3%	0.04	0.02
VA	1100	1119	Return Duct Modification (CAC early replacement)	Single Family	2014	2053	336.47	199.89	1.96	12.65	4%	1.17	7.51	4%	0.07	0.03
VA	1100	1123	Door Weatherization (CAC early replacement)	Single Family	2014	2053	330.11	196.11	6.37	19.02	5%	3.78	11.30	5%	0.06	0.04
VA	1100	1102	Proper Refrigerant Charging and Air Flow (CAC early replacem	Single Family	2014	2053	302.78	179.88	27.32	46.34	13%	16.23	27.53	13%	0.09	0.07
VA	1100	1116	Cool Roof (CAC early replacement)	Single Family	2014	2053	271.17	161.09	31.62	77.96	22%	18.78	46.31	22%	0.14	0.10
VA	1100	1125	Whole House Fans (CAC early replacement)	Single Family	2014	2053	221.49	131.58	49.68	127.64	37%	29.51	75.83	37%	0.17	0.12
VA	1100	1103	Proper Sizing and Quality Install (CAC early replacement)	Single Family	2014	2053	196.79	116.91	24.70	152.34	44%	14.67	90.50	44%	0.23	0.14
VA	1100	1112	Crawlspace insulation (CAC early replacement)	Single Family	2014	2053	195.53	116.16	1.26	153.59	44%	0.75	91.25	44%	0.32	0.14
VA	1100	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Single Family	2014	2053	190.01	112.88	5.52	159.11	46%	3.28	94.52	46%	0.34	0.15
VA	1100	1113	Basement insulation R-13 (CAC early replacement)	Single Family	2014	2053	182.51	108.43	7.50	166.61	48%	4.46	98.98	48%	0.37	0.16
VA	1100	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	182.43	108.38	0.08	166.69	48%	0.05	99.03	48%	3.82	0.16
VA	1100	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early r	Single Family	2014	2053	179.74	106.78	2.70	169.39	49%	1.60	100.63	49%	0.45	0.16
VA	1100	1118	Duct Testing and Sealing (CAC early replacement)	Single Family	2014	2053	178.06	105.78	1.68	171.06	49%	1.00	101.63	49%	0.52	0.17
VA	1100	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early re	Single Family	2014	2053	169.96	100.97	8.10	179.17	51%	4.81	106.44	51%	0.43	0.18
VA	1100	1124	Ceiling Fans (CAC early replacement)	Single Family	2014	2053	168.37	100.03	1.58	180.75	52%	0.94	107.38	52%	0.72	0.18
VA	1100	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Single Family	2014	2053	164.85	97.94	3.52	184.27	53%	2.09	109.47	53%	0.87	0.20
VA	1100	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	164.70	97.85	0.15	184.42	53%	0.09	109.56	53%	4.23	0.20
VA	1100	1126	Window Film (CAC early replacement)	Single Family	2014	2053	152.35	90.51	12.35	196.77	56%	7.34	116.90	56%	0.86	0.24
VA	1100	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	Single Family	2014	2053	145.08	86.19	7.27	204.04	58%	4.32	121.22	58%	1.09	0.27
VA	1100	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Single Family	2014	2053	144.27	85.71	0.81	204.85	59%	0.48	121.70	59%	1.67	0.28
VA	1100	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	144.20	85.66	0.08	204.93	59%	0.04	121.74	59%	4.83	0.28
VA	1100	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Single Family	2014	2053	143.90	85.49	0.30	205.22	59%	0.18	121.92	59%	3.03	0.28
VA	1100	1105	AC Filter Changes (CAC early replacement)	Single Family	2014	2053	143.29	85.12	0.61	205.84	59%	0.36	122.28	59%	2.23	0.29
VA	1100	1104	AC Maintenance and/or tune-up (CAC early replacement)	Single Family	2014	2053	142.65	84.75	0.64	206.47	59%	0.38	122.66	59%	2.55	0.30
VA	1100	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality I	Single Family	2014	2053	138.99	82.57	3.66	210.13	60%	2.17	124.84	60%	3.37	0.35
VA	1100	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Single Family	2014	2053	138.96	82.55	0.03	210.16	60%	0.02	124.86	60%	5.23	0.35
VA	1200	1200	Base Heat Pump Cooling (13 SEER)	Single Family	2014	2053	1,802.58	1,070.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1200	1219	Duct Insulation (HP cooling)	Single Family	2014	2053	1,787.87	1,062.14	14.71	14.71	1%	8.74	8.74	1%	0.01	0.01
VA	1200	1223	Self Install Weatherization (HP cooling)	Single Family	2014	2053	1,767.94	1,050.30	19.92	34.64	2%	11.84	20.58	2%	0.04	0.03
VA	1200	1221	Programmable Thermostat (HP cooling)	Single Family	2014	2053	1,741.39	1,034.53	26.56	61.19	3%	15.78	36.35	3%	0.06	0.04
VA	1200	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Single Family	2014	2053	1,446.34	859.24	295.05	356.24	20%	175.29	211.64	20%	0.08	0.07
VA	1200	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	Single Family	2014	2053	1,342.50	797.56	103.83	460.08	26%	61.68	273.32	26%	0.10	0.08
VA	1200	1224	Door Weatherization (HP cooling)	Single Family	2014	2053	1,320.65	784.57	21.86	481.93	27%	12.98	286.31	27%	0.09	0.08
VA	1200	1218	Cool Roof (HP cooling)	Single Family	2014	2053	1,182.74	702.64	137.91	619.84	34%	81.93	368.24	34%	0.16	0.10
VA	1200	1226	Whole House Fans (HP cooling)	Single Family	2014	2053	966.05	573.92	216.68	836.53	46%	128.73	496.97	46%	0.19	0.12
VA	1200	1205	Proper Sizing and Quality Install (HP cooling)	Single Family	2014	2053	872.22	518.17	93.84	930.36	52%	55.75	552.71	52%	0.29	0.14
VA	1200	1214	Crawlspace insulation (HP cooling)	Single Family	2014	2053	866.64	514.85	5.58	935.94	52%	3.31	556.03	52%	0.36	0.14
VA	1200	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	Single Family	2014	2053	841.94	500.18	24.70	960.64	53%	14.67	570.70	53%	0.38	0.15
VA	1200	1215	Basement insulation R-13 (HP cooling)	Single Family	2014	2053	808.61	480.38	33.33	993.97	55%	19.80	590.50	55%	0.42	0.16
VA	1200	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	Single Family	2014	2053	807.86	479.93	0.76	994.72	55%	0.45	590.95	55%	1.95	0.16

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH
VA	1200	1220	Duct Testing and Sealing (HP cooling)	Single Family	2014	2053	800.31	475.45	7.54	1,002.27	56%	4.48	595.43	56%	0.58	0.16
VA	1200	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Single Family	2014	2053	763.89	453.82	36.42	1,038.69	58%	21.64	617.07	58%	0.48	0.17
VA	1200	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Single Family	2014	2053	752.60	447.11	11.29	1,049.98	58%	6.71	623.77	58%	0.84	0.18
VA	1200	1225	Ceiling Fans (HP cooling)	Single Family	2014	2053	745.60	442.95	7.01	1,056.98	59%	4.16	627.94	59%	0.82	0.18
VA	1200	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	Single Family	2014	2053	729.61	433.45	15.99	1,072.97	60%	9.50	637.43	60%	0.96	0.19
VA	1200	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	Single Family	2014	2053	728.13	432.57	1.48	1,074.45	60%	0.88	638.31	60%	2.16	0.20
VA	1200	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Single Family	2014	2053	727.50	432.19	0.63	1,075.08	60%	0.38	638.69	60%	1.36	0.20
VA	1200	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	Single Family	2014	2053	723.56	429.85	3.94	1,079.02	60%	2.34	641.03	60%	1.73	0.20
VA	1200	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	Single Family	2014	2053	722.72	429.35	0.84	1,079.86	60%	0.50	641.53	60%	2.18	0.20
VA	1200	1207	Heat Pump Filter Replacement	Single Family	2014	2053	719.64	427.53	3.08	1,082.94	60%	1.83	643.36	60%	2.49	0.21
VA	1200	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Single Family	2014	2053	717.15	426.05	2.49	1,085.43	60%	1.48	644.83	60%	5.83	0.22
VA	1200	1206	Heat pump tune up	Single Family	2014	2053	713.96	424.15	3.19	1,088.62	60%	1.90	646.73	60%	4.04	0.24
VA	1300	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	Single Family	2014	2053	274.13	162.86	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1300	1319	Duct Insulation (HP cooling Early Replacement)	Single Family	2014	2053	271.89	161.53	2.24	2.24	1%	1.33	1.33	1%	0.01	0.01
VA	1300	1323	Self Install Weatherization (HP cooling Early Replacement)	Single Family	2014	2053	268.86	159.73	3.03	5.27	2%	1.80	3.13	2%	0.04	0.03
VA	1300	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Ea	Single Family	2014	2053	223.31	132.66	45.56	50.82	19%	27.06	30.19	19%	0.09	0.09
VA	1300	1321	Programmable Thermostat (HP cooling Early Replacement)	Single Family	2014	2053	219.95	130.67	3.35	54.18	20%	1.99	32.19	20%	0.11	0.09
VA	1300	1324	Door Weatherization (HP cooling Early Replacement)	Single Family	2014	2053	215.79	128.20	4.16	58.34	21%	2.47	34.66	21%	0.09	0.09
VA	1300	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Re	Single Family	2014	2053	200.30	118.99	15.49	73.83	27%	9.20	43.86	27%	0.12	0.09
VA	1300	1318	Cool Roof (HP cooling Early Replacement)	Single Family	2014	2053	179.38	106.57	20.92	94.75	35%	12.43	56.29	35%	0.18	0.11
VA	1300	1326	Whole House Fans (HP cooling early replacement)	Single Family	2014	2053	146.52	87.04	32.86	127.61	47%	19.52	75.81	47%	0.22	0.14
VA	1300	1305	Proper Sizing and Quality Install (HP cooling Early Replacemer	Single Family	2014	2053	132.29	78.59	14.23	141.84	52%	8.46	84.27	52%	0.34	0.16
VA	1300	1314	Crawlspace insulation (HP cooling Early Replacement)	Single Family	2014	2053	131.44	78.09	0.84	142.69	52%	0.50	84.77	52%	0.42	0.16
VA	1300	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Single Family	2014	2053	127.70	75.86	3.75	146.44	53%	2.23	86.99	53%	0.44	0.17
VA	1300	1315	Basement insulation R-13 (HP cooling Early Replacement)	Single Family	2014	2053	122.65	72.86	5.05	151.48	55%	3.00	89.99	55%	0.49	0.18
VA	1300	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Single Family	2014	2053	122.54	72.80	0.11	151.60	55%	0.07	90.06	55%	2.27	0.18
VA	1300	1320	Duct Testing and Sealing (HP cooling Early Replacement)	Single Family	2014	2053	121.39	72.12	1.14	152.74	56%	0.68	90.74	56%	0.68	0.19
VA	1300	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling E	Single Family	2014	2053	115.87	68.84	5.52	158.26	58%	3.28	94.02	58%	0.56	0.20
VA	1300	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling I	Single Family	2014	2053	114.16	67.82	1.71	159.98	58%	1.02	95.04	58%	0.97	0.21
VA	1300	1325	Ceiling Fans (HP cooling early replacement)	Single Family	2014	2053	113.09	67.19	1.06	161.04	59%	0.63	95.67	59%	0.96	0.21
VA	1300	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Single Family	2014	2053	110.67	65.75	2.42	163.46	60%	1.44	97.11	60%	1.12	0.23
VA	1300	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement	Single Family	2014	2053	110.44	65.61	0.22	163.69	60%	0.13	97.24	60%	2.52	0.23
VA	1300	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacem	Single Family	2014	2053	110.35	65.56	0.10	163.78	60%	0.06	97.30	60%	1.58	0.23
VA	1300	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement	Single Family	2014	2053	109.75	65.20	0.60	164.38	60%	0.35	97.66	60%	2.01	0.24
VA	1300	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement	Single Family	2014	2053	109.62	65.12	0.13	164.51	60%	0.08	97.73	60%	2.54	0.24
VA	1300	1307	Heat Pump Filter Replacement	Single Family	2014	2053	109.16	64.85	0.47	164.98	60%	0.28	98.01	60%	2.90	0.25
VA	1300	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacer	Single Family	2014	2053	108.78	64.62	0.38	165.35	60%	0.22	98.23	60%	6.79	0.26
VA	1300	1306	Heat pump tune up	Single Family	2014	2053	108.29	64.34	0.48	165.84	60%	0.29	98.52	60%	4.70	0.27
VA	1400	1400	Base Room Air Conditioner - EER 10.6	Single Family	2014	2053	112.24	66.68	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1400	1413	Self Install Weatherization (RAC)	Single Family	2014	2053	110.99	65.94	1.25	1.25	1%	0.74	0.74	1%	0.03	0.03
VA	1400	1414	Door Weatherization (RAC)	Single Family	2014	2053	109.18	64.86	1.81	3.06	3%	1.07	1.82	3%	0.14	0.10
VA	1400	1411	Cool Roof (RAC)	Single Family	2014	2053	97.78	58.09	11.40	14.46	13%	6.77	8.59	13%	0.24	0.21
VA	1400	1416	Whole House Fans (RAC)	Single Family	2014	2053	79.87	47.45	17.91	32.37	29%	10.64	19.23	29%	0.29	0.26
VA	1400	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Single Family	2014	2053	75.39	44.79	4.48	36.85	33%	2.66	21.89	33%	0.31	0.26
VA	1400	1417	Window Film (RAC)	Single Family	2014	2053	59.56	35.38	15.83	52.68	47%	9.41	31.30	47%	0.43	0.31
VA	1400	1404	Ceiling R-0 to R-38 Insulation (RAC)	Single Family	2014	2053	57.97	34.44	1.59	54.27	48%	0.94	32.24	48%	0.75	0.33
VA	1400	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Single Family	2014	2053	57.12	33.93	0.86	55.13	49%	0.51	32.75	49%	0.90	0.34
VA	1400	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Single Family	2014	2053	54.01	32.09	3.11	58.23	52%	1.85	34.59	52%	0.72	0.36
VA	1400	1405	Ceiling R-0 to R-49 Insulation (RAC)	Single Family	2014	2053	53.97	32.06	0.04	58.27	52%	0.02	34.62	52%	4.53	0.36
VA	1400	1415	Ceiling Fans (RAC)	Single Family	2014	2053	53.47	31.76	0.50	58.77	52%	0.30	34.92	52%	1.46	0.37
VA	1400	1406	Ceiling R-11 to R-38 Insulaton (RAC)	Single Family	2014	2053	52.45	31.16	1.02	59.79	53%	0.60	35.52	53%	1.93	0.39
VA	1400	1407	Ceiling R-11 to R-49 Insulation (RAC)	Single Family	2014	2053	52.36	31.11	0.09	59.88	53%	0.05	35.57	53%	4.67	0.40
VA	1400	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	Single Family	2014	2053	52.14	30.97	0.23	60.10	54%	0.13	35.71	54%	2.58	0.41
VA	1400	1418	WINDOWS - Default With Sunscreen (RAC)	Single Family	2014	2053	49.65	29.50	2.49	62.59	56%	1.48	37.18	56%	2.03	0.47
VA	1400	1408	Ceiling R-19 to R-38 Insulation (RAC)	Single Family	2014	2053	49.40	29.35	0.25	62.84	56%	0.15	37.34	56%	3.42	0.49
VA	1400	1409	Ceiling R-19 to R-49 Insulation (RAC)	Single Family	2014	2053	49.35	29.32	0.05	62.89	56%	0.03	37.36	56%	4.96	0.49
VA	1400	1403	Room AC Filter Replacement	Single Family	2014	2053	49.14	29.19	0.21	63.10	56%	0.12	37.49	56%	4.18	0.50
VA	1500	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	Single Family	2014	2053	23.56	14.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1500	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early	Single Family	2014	2053	20.43	12.14	3.13	3.13	13%	1.86	1.86	13%	0.63	0.63
VA	1600	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	Single Family	2014	2053	25.36	15.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1600	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/da	Single Family	2014	2053	21.52	12.79	3.84	3.84	15%	2.28	2.28	15%	0.18	0.18
VA	1700	1700	Base Furnace Fan - Furnace & CAC	Single Family	2014	2053	1,754.83	900.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1700	1701	ECM Furnace Fan (variable speed motor) - Cooling	Single Family	2014	2053	974.90	500.07	779.92	779.92	44%	400.06	400.06	44%	0.03	0.03
VA	2000	2000	Base Heat Pump Space Heating (7.7 HSPF)	Single Family	2014	2053	2,499.04	296.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	2000	2016	Duct Insulation (HP heating)	Single Family	2014	2053	2,478.64	294.08	20.40	20.40	1%	2.42	2.42	1%	0.01	0.01
VA	2000	2021	Self Install Weatherization (HP heating)	Single Family	2014	2053	2,451.02	290.81	27.62	48.02	2%	3.28	5.70	2%	0.02	0.02
VA	2000	2019	Programmable Thermostat (HP heating)	Single Family	2014	2053	2,414.21	286.44	36.82	84.84	3%	4.37	10.07	3%	0.05	0.03
VA	2000	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Single Family	2014	2053	2,191.76	260.05	222.45	307.28	12%	26.39	36.46	12%	0.08	0.07
VA	2000	2022	Door Weatherization (HP heating)	Single Family	2014	2053	2,170.07	257.47	21.69	328.97	13%	2.57	39.03	13%	0.08	0.07
VA	2000	2012	Crawlspace insulation (HP heating)	Single Family	2014	2053	2,156.21	255.83	13.85	342.83	14%	1.64	40.68	14%	0.12	0.07
VA	2000	2006	Ceiling R-0 to R-38 Insulation (HP heating)	Single Family	2014	2053	2,094.77	248.54	61.45	404.27	16%	7.29	47.97	16%	0.13	0.08
VA	2000	2018	Heat Recovery Ventilators (HP heating)	Single Family	2014	2053	1,640.19	194.60	454.58	858.85	34%	53.93	101.90	34%	0.14	0.11
VA	2000	2013	Basement insulation R-13 (HP heating)	Single Family	2014	2053	1,575.39	186.92	64.80	923.65	37%	7.69	109.59	37%	0.18	0.11
VA	2000	2007	Ceiling R-0 to R-49 Insulation (HP heating)	Single Family	2014	2053	1,573.92	186.74	1.48	925.12	37%	0.18	109.76	37%	0.85	0.12

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH
VA	2000	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Single Family	2014	2053	1,502.29	178.24	71.62	996.75	40%	8.50	118.26	40%	0.21	0.12
VA	2000	2017	Duct Testing and Sealing (HP heating)	Single Family	2014	2053	1,488.27	176.58	14.03	1,010.77	40%	1.66	119.93	40%	0.26	0.12
VA	2000	2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Single Family	2014	2053	1,466.96	174.05	21.31	1,032.08	41%	2.53	122.45	41%	0.38	0.13
VA	2000	2008	Ceiling R-11 to R-38 Insulaton (HP heating)	Single Family	2014	2053	1,435.50	170.32	31.45	1,063.54	43%	3.73	126.19	43%	0.41	0.14
VA	2000	2009	Ceiling R-11 to R-49 Insulation (HP heating)	Single Family	2014	2053	1,432.59	169.97	2.91	1,066.45	43%	0.35	126.53	43%	0.93	0.14
VA	2000	2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	Single Family	2014	2053	1,431.35	169.83	1.24	1,067.69	43%	0.15	126.68	43%	0.58	0.14
VA	2000	2010	Ceiling R-19 to R-38 Insulation (HP heating)	Single Family	2014	2053	1,423.60	168.91	7.75	1,075.44	43%	0.92	127.60	43%	0.74	0.15
VA	2000	2011	Ceiling R-19 to R-49 Insulation (HP heating)	Single Family	2014	2053	1,421.94	168.71	1.65	1,077.10	43%	0.20	127.79	43%	0.94	0.15
VA	2000	2003	Ground Source Heat Pump with Desuperheater (HP heating)	Single Family	2014	2053	1,294.15	153.55	127.79	1,204.89	48%	15.16	142.96	48%	1.75	0.32
VA	2000	2005	Heat Pump Filter Replacement	Single Family	2014	2053	1,288.64	152.89	5.51	1,210.40	48%	0.65	143.61	48%	1.18	0.32
VA	2000	2004	Heat pump tune up	Single Family	2014	2053	1,282.90	152.21	5.74	1,216.14	49%	0.68	144.29	49%	1.90	0.33
VA	2000	2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Single Family	2014	2053	1,278.47	151.69	4.44	1,220.57	49%	0.53	144.82	49%	2.77	0.34
VA	2100	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSP	Single Family	2014	2053	420.83	49.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	2100	2116	Duct Insulation (HP heating early replacement)	Single Family	2014	2053	417.39	49.52	3.43	3.43	1%	0.41	0.41	1%	0.01	0.01
VA	2100	2121	Self Install Weatherization (HP heating early replacement)	Single Family	2014	2053	412.74	48.97	4.65	8.09	2%	0.55	0.96	2%	0.02	0.02
VA	2100	2119	Programmable Thermostat (HP heating early replacement)	Single Family	2014	2053	406.54	48.24	6.20	14.29	3%	0.74	1.69	3%	0.05	0.03
VA	2100	2102	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early	Single Family	2014	2053	369.08	43.79	37.46	51.75	12%	4.44	6.14	12%	0.09	0.07
VA	2100	2122	Door Weatherization (HP heating early replacement)	Single Family	2014	2053	365.25	43.34	3.83	55.57	13%	0.45	6.59	13%	0.08	0.07
VA	2100	2112	Crawlspace insulation (HP heating early replacement)	Single Family	2014	2053	362.93	43.06	2.33	57.90	14%	0.28	6.87	14%	0.13	0.07
VA	2100	2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Single Family	2014	2053	352.58	41.83	10.34	68.25	16%	1.23	8.10	16%	0.13	0.08
VA	2100	2118	Heat Recovery Ventilators (HP heating early replacement)	Single Family	2014	2053	276.07	32.76	76.51	144.76	34%	9.08	17.18	34%	0.14	0.11
VA	2100	2113	Basement insulation R-13 (HP heating early replacement)	Single Family	2014	2053	265.18	31.46	10.90	155.65	37%	1.29	18.47	37%	0.19	0.12
VA	2100	2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	264.93	31.43	0.25	155.90	37%	0.03	18.50	37%	0.89	0.12
VA	2100	2120	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating e	Single Family	2014	2053	252.87	30.00	12.06	167.96	40%	1.43	19.93	40%	0.22	0.13
VA	2100	2117	Duct Testing and Sealing (HP heating early replacement)	Single Family	2014	2053	250.51	29.72	2.36	170.32	40%	0.28	20.21	40%	0.28	0.13
VA	2100	2123	WINDOWS - Double-Glazed Clear to Energy Star (HP heating	Single Family	2014	2053	246.92	29.30	3.59	173.91	41%	0.43	20.63	41%	0.39	0.14
VA	2100	2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Single Family	2014	2053	241.63	28.67	5.29	179.20	43%	0.63	21.26	43%	0.43	0.14
VA	2100	2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	241.14	28.61	0.49	179.69	43%	0.06	21.32	43%	0.98	0.15
VA	2100	2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replaceme	Single Family	2014	2053	240.93	28.59	0.21	179.90	43%	0.02	21.34	43%	0.61	0.15
VA	2100	2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Single Family	2014	2053	239.62	28.43	1.30	181.20	43%	0.15	21.50	43%	0.78	0.15
VA	2100	2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	239.35	28.40	0.28	181.48	43%	0.03	21.53	43%	0.98	0.15
VA	2100	2103	Ground Source Heat Pump with Desuperheater (HP heating eai	Single Family	2014	2053	217.84	25.85	21.51	202.99	48%	2.55	24.08	48%	1.83	0.33
VA	2100	2105	Heat Pump Filter Replacement (heating)	Single Family	2014	2053	216.91	25.74	0.93	203.92	48%	0.11	24.19	48%	1.24	0.33
VA	2100	2104	Heat pump tune up (heating)	Single Family	2014	2053	215.94	25.62	0.97	204.89	49%	0.11	24.31	49%	2.00	0.34
VA	2100	2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacem	Single Family	2014	2053	215.20	25.53	0.75	205.63	49%	0.09	24.40	49%	2.91	0.35
VA	2200	2200	Base Resistance Space Heating (Primary)	Single Family	2014	2053	1,220.36	144.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	2200	2201	Air Source Heat Pump (resistance heating)	Single Family	2014	2053	972.08	115.34	248.28	248.28	20%	29.46	29.46	20%	0.01	0.01
VA	2200	2216	Self Install Weatherization	Single Family	2014	2053	961.25	114.05	10.83	259.11	21%	1.29	30.74	21%	0.02	0.01
VA	2200	2214	Programmable Thermostat (resistance heating)	Single Family	2014	2053	946.81	112.34	14.44	273.55	22%	1.71	32.46	22%	0.04	0.02
VA	2200	2217	Door Weatherization (resistance heating)	Single Family	2014	2053	930.71	110.43	16.10	289.65	24%	1.91	34.37	24%	0.04	0.02
VA	2200	2203	Ceiling R-0 to R-38 Insulation (resistance heating)	Single Family	2014	2053	902.03	107.02	28.68	318.33	26%	3.40	37.77	26%	0.11	0.03
VA	2200	2213	Heat Recovery Ventilators (resistance heating)	Single Family	2014	2053	706.29	83.80	195.75	514.07	42%	23.22	60.99	42%	0.13	0.07
VA	2200	2209	Crawlspace insulation (resistance heating)	Single Family	2014	2053	702.14	83.31	4.14	518.22	42%	0.49	61.49	42%	0.17	0.07
VA	2200	2210	Basement insulation R-13 (resistance heating)	Single Family	2014	2053	659.41	78.24	42.74	560.95	46%	5.07	66.56	46%	0.18	0.08
VA	2200	2204	Ceiling R-0 to R-49 Insulation (resistance heating)	Single Family	2014	2053	658.88	78.17	0.53	561.48	46%	0.06	66.62	46%	0.99	0.08
VA	2200	2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance he	Single Family	2014	2053	628.90	74.62	29.98	591.46	48%	3.56	70.18	48%	0.21	0.08
VA	2200	2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance h	Single Family	2014	2053	618.62	73.40	10.28	601.74	49%	1.22	71.40	49%	0.33	0.09
VA	2200	2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	Single Family	2014	2053	604.24	71.69	14.38	616.13	50%	1.71	73.10	50%	0.38	0.09
VA	2200	2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Single Family	2014	2053	603.50	71.60	0.74	616.86	51%	0.09	73.19	51%	0.41	0.09
VA	2200	2206	Ceiling R-11 to R-49 Insulation (resistance heating)	Single Family	2014	2053	602.45	71.48	1.05	617.91	51%	0.12	73.31	51%	1.08	0.10
VA	2200	2207	Ceiling R-19 to R-38 Insulation (resistance heating)	Single Family	2014	2053	598.72	71.04	3.74	621.65	51%	0.44	73.76	51%	0.64	0.10
VA	2200	2208	Ceiling R-19 to R-49 Insulation (resistance heating)	Single Family	2014	2053	598.12	70.97	0.59	622.24	51%	0.07	73.83	51%	1.09	0.10
VA	2200	2202	Ground Source Heat Pump with Desuperheater (resistance hea	Single Family	2014	2053	593.20	70.38	4.92	627.16	51%	0.58	74.41	51%	21.03	0.26
VA	2200	2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Single Family	2014	2053	590.35	70.04	2.85	630.01	52%	0.34	74.75	52%	1.80	0.27
VA	3030	3030	Base Halogen Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	183.04	20.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	3030	3032	LEDs (base Halogen 0.5 hrs/day) 2020	Single Family	2020	2053	58.50	6.55	124.54	124.54	68%	13.94	13.94	68%	0.04	0.04
VA	3130	3130	Base Halogen Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	751.77	84.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	3130	3132	LEDs (base Halogen 2.5 hrs/day) 2020	Single Family	2020	2053	196.96	22.05	554.81	554.81	74%	62.12	62.12	74%	0.01	0.01
VA	3230	3230	Base Halogen Lighting - 6 hrs/day 2020	Single Family	2020	2053	496.82	55.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	3230	3232	LEDs (base Halogen 6 hrs/day) 2020	Single Family	2020	2053	158.78	17.78	338.04	338.04	68%	37.85	37.85	68%	0.00	0.00
VA	3330	3330	Base CFL Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	35.20	3.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	3330	3331	LEDs (base CFL 0.5 hrs/day) 2020	Single Family	2020	2053	25.69	2.88	9.50	9.50	27%	1.06	1.06	27%	0.21	0.21
VA	3430	3430	Base CFL Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	144.30	16.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	3430	3431	LEDs (base CFL 2.5 hrs/day) 2020	Single Family	2020	2053	105.34	11.79	38.96	38.96	27%	4.36	4.36	27%	0.04	0.04
VA	3530	3530	Base CFL Lighting - 6 hrs/day 2020	Single Family	2020	2053	95.03	10.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	3530	3531	LEDs (base CFL 6 hrs/day) 2020	Single Family	2020	2053	69.37	7.77	25.66	25.66	27%	2.87	2.87	27%	0.02	0.02
VA	3630	3630	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	112.88	12.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	3630	3632	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Single Family	2020	2053	44.61	4.99	68.27	68.27	60%	7.64	7.64	60%	0.01	0.01
VA	3730	3730	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	467.66	52.36	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	3730	3732	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Single Family	2020	2053	184.82	20.69	282.84	282.84	60%	31.67	31.67	60%	0.00	0.00
VA	3830	3830	Base Halogen (Specialty) Lighting - 6 hrs/day 2020	Single Family	2020	2053	309.62	34.66	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	3830	3832	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Single Family	2020	2053	122.36	13.70	187.26	187.26	60%	20.97	20.97	60%	0.00	0.00
VA	3900	3900	Base Fluorescent Fixture 1.8 hrs/day	Single Family	2014	2053	777.81	87.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	3900	3902	ROB 2L4'T8, 1EB	Single Family	2014	2053	567.97	63.59	209.84	209.84	27%	23.49	23.49	27%	0.04	0.04

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS Year 2020
Vintage Existing

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH
VA	4000	4000	Base Refrigerator	Single Family	2014	2053	991.68	160.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	4000	4001	Refrigerator (Energy Star)	Single Family	2014	2053	835.60	135.43	156.08	156.08	16%	25.30	25.30	16%	0.04	0.04
VA	4100	4100	Base Refrigerator--Early Replacement	Single Family	2014	2053	140.69	22.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	4100	4101	Refrigerator - Early Replacement (Energy Star)	Single Family	2014	2053	77.73	12.60	62.96	62.96	45%	10.20	10.20	45%	0.09	0.09
VA	4200	4200	Base 2nd Refrigerator - Recycling	Single Family	2014	2053	618.86	100.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	4200	4201	2nd Refrigerator Recycling	Single Family	2014	2053	159.36	25.83	459.50	459.50	74%	74.48	74.48	74%	0.03	0.03
VA	4500	4500	Base Freezer	Single Family	2014	2053	417.14	67.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	4500	4501	Freezer (Energy Star)	Single Family	2014	2053	380.37	61.65	36.77	36.77	9%	5.96	5.96	9%	0.05	0.05
VA	4600	4600	Base Early Replacement Freezer	Single Family	2014	2053	104.06	16.47	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	4600	4601	Freezer - Early Replacement (Energy Star)	Single Family	2014	2053	47.80	7.57	56.26	56.26	54%	8.91	8.91	54%	0.04	0.04
VA	4700	4700	Base 2nd Freezer Recycling	Single Family	2014	2053	32.02	5.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	4700	4701	2nd Freezer Recycling	Single Family	2014	2053	16.17	2.56	15.85	15.85	50%	2.51	2.51	50%	0.02	0.02
VA	5000	5000	Base Water Heating (40 gal, EF=0.88)	Single Family	2014	2053	2,760.04	339.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	5000	5006	Pipe Wrap	Single Family	2014	2053	2,675.24	329.49	84.80	84.80	3%	10.44	10.44	3%	0.02	0.02
VA	5000	5007	Hot water turndown 5 degrees	Single Family	2014	2053	2,665.88	328.34	9.36	94.16	3%	1.15	11.60	3%	0.02	0.02
VA	5000	5008	Hot water turndown 10 degrees	Single Family	2014	2053	2,653.22	326.78	12.66	106.82	4%	1.56	13.16	4%	0.02	0.02
VA	5000	5010	Hot water turndown 20 degrees	Single Family	2014	2053	2,652.09	326.64	1.13	107.95	4%	0.14	13.29	4%	0.02	0.02
VA	5000	5009	Hot water turndown 15 degrees	Single Family	2014	2053	2,649.11	326.27	2.98	110.93	4%	0.37	13.66	4%	0.02	0.02
VA	5000	5015	Low Flow Showerhead 1.5 Gal/Min	Single Family	2014	2053	2,569.93	316.52	79.18	190.11	7%	9.75	23.41	7%	0.02	0.02
VA	5000	5011	Drain Water Heat Recovery (GFX)	Single Family	2014	2053	2,473.33	304.62	96.60	286.71	10%	11.90	35.31	10%	0.05	0.03
VA	5000	5014	Faucent Aerators	Single Family	2014	2053	2,420.92	298.17	52.41	339.12	12%	6.46	41.77	12%	0.05	0.03
VA	5000	5005	DHW Tank Wrap	Single Family	2014	2053	2,279.91	280.80	141.00	480.13	17%	17.37	59.13	17%	0.05	0.04
VA	5000	5003	Heat Pump Water Heater - Energy Star	Single Family	2014	2053	1,954.44	240.71	325.48	805.60	29%	40.09	99.22	29%	0.06	0.05
VA	5000	5004	Solar Domestic Water Heating	Single Family	2014	2053	1,041.06	128.22	913.38	1,718.98	62%	112.49	211.71	62%	0.16	0.11
VA	5000	5012	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	2014	2053	1,038.30	127.88	2.77	1,721.74	62%	0.34	212.05	62%	3.70	0.11
VA	5000	5013	Energy Star Dishwasher (EF=0.72)	Single Family	2014	2053	1,036.03	127.60	2.27	1,724.01	62%	0.28	212.33	62%	3.64	0.12
VA	5100	5100	Base Water Heating Early Replacement to Heat Pump Water H	Single Family	2014	2053	487.07	59.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	5100	5101	Heat Pump Water Heater - Energy Star - Early Replacement	Single Family	2014	2053	417.53	51.42	69.53	69.53	14%	8.56	8.56	14%	0.07	0.07
VA	5500	5500	Base Clotheswasher (MEF=1.26)	Single Family	2014	2053	74.50	13.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	5500	5501	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	2014	2053	56.55	10.22	17.95	17.95	24%	3.24	3.24	24%	1.18	1.18
VA	5600	5600	Base Clothes Dryer (EF=3.01)	Single Family	2014	2053	1,055.90	178.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	5600	5602	High Efficiency CD (EF=3.01 w/moisture sensor)	Single Family	2014	2053	861.96	145.88	193.94	193.94	18%	32.82	32.82	18%	0.05	0.05
VA	5600	5601	Heat Pump Dryer	Single Family	2014	2053	430.98	72.94	430.98	624.92	59%	72.94	105.76	59%	0.77	0.55
VA	5700	5700	Base Dishwasher (EF=0.65)	Single Family	2014	2053	256.25	42.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	5700	5701	Energy Star Dishwasher (EF=0.72)	Single Family	2014	2053	247.12	40.53	9.13	9.13	4%	1.50	1.50	4%	1.59	1.59
VA	6000	6000	Base Single Speed Pool Pump (RET)	Single Family	2014	2053	278.12	33.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	6000	6002	Variable-Speed Pool Pump (<1 hp)	Single Family	2014	2053	77.04	9.16	201.08	201.08	72%	23.91	23.91	72%	0.03	0.03
VA	6000	6001	PV-Powered Pool Pumps	Single Family	2014	2053	3.08	0.37	73.96	275.04	99%	8.79	32.71	99%	1.02	0.30
VA	7000	7000	Base Plasma TV	Single Family	2014	2053	135.72	19.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	7000	7001	Energy Star Plasma TV	Single Family	2014	2053	123.92	17.88	11.80	11.80	9%	1.70	1.70	9%	0.01	0.01
VA	7000	7002	Plug Load Controls - Smart Power Strip (base plasma TV)	Single Family	2014	2053	122.98	17.74	0.94	12.74	9%	0.14	1.84	9%	4.08	0.31
VA	7100	7100	Base LCD TV	Single Family	2014	2053	317.27	45.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	7100	7101	Energy Star LCD TV	Single Family	2014	2053	207.82	29.98	109.45	109.45	34%	15.79	15.79	34%	0.00	0.00
VA	7100	7102	Plug Load Controls - Smart Power Strip (base LCD TV)	Single Family	2014	2053	203.47	29.36	4.35	113.80	36%	0.63	16.42	36%	4.38	0.17
VA	7200	7200	Base CRT TV	Single Family	2014	2053	103.11	14.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	7200	7202	Plug Load Controls - Smart Power Strip (base CRT TV)	Single Family	2014	2053	97.12	14.01	5.99	5.99	6%	0.86	0.86	6%	1.20	1.20
VA	7300	7300	Base Set-Top Box	Single Family	2014	2053	389.53	56.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	7400	7400	Base DVD Player	Single Family	2014	2053	47.21	6.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	7400	7401	Energy Star DVD Player	Single Family	2014	2053	22.25	3.21	24.96	24.96	53%	3.60	3.60	53%	0.01	0.01
VA	7400	7402	Plug Load Controls - Smart Power Strip (base DVD player)	Single Family	2014	2053	2.42	0.35	19.83	44.78	95%	2.86	6.46	95%	0.74	0.34
VA	7500	7500	Base Desktop PC	Single Family	2014	2053	423.38	55.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	7500	7501	Energy Star Desktop PC	Single Family	2014	2053	373.57	49.21	49.81	49.81	12%	6.56	6.56	12%	0.00	0.00
VA	7500	7502	Plug Load Controls - Smart Power Strip (base Desktop PC)	Single Family	2014	2053	268.77	35.41	104.80	154.61	37%	13.81	20.37	37%	0.08	0.06
VA	7600	7600	Base Laptop PC	Single Family	2014	2053	75.86	9.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	7600	7601	Energy Star Laptop PC	Single Family	2014	2053	63.79	8.40	12.07	12.07	16%	1.59	1.59	16%	0.03	0.03
VA	8000	8000	Base Cooking	Single Family	2014	2053	929.00	296.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	9000	9000	Base Miscellaneous	Single Family	2014	2053	565.76	74.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	9900	9900	Base House Use	Single Family	2014	2053	25,081.46	6,210.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	9900	9901	Indirect Feedback	Single Family	2014	2053	24,708.94	6,118.50	372.52	372.52	1%	92.24	92.24	1%	0.02	0.02
VA	9900	9902	Direct Feedback	Single Family	2014	2053	23,544.13	5,830.07	1,164.81	1,537.33	6%	288.44	380.68	6%	0.06	0.05
VA	1000	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	Multi-Family	2014	2053	157.52	93.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1000	1024	Self Install Weatherization (CAC)	Multi-Family	2014	2053	155.02	92.09	2.51	2.51	2%	1.49	1.49	2%	0.02	0.02
VA	1000	1025	Door Weatherization (CAC)	Multi-Family	2014	2053	147.51	87.63	7.51	10.02	6%	4.46	5.95	6%	0.07	0.06
VA	1000	1022	Programmable Thermostat (CAC)	Multi-Family	2014	2053	146.36	86.95	1.15	11.16	7%	0.68	6.63	7%	0.12	0.07
VA	1000	1004	Proper Refrigerant Charging and Air Flow (CAC)	Multi-Family	2014	2053	135.85	80.71	10.51	21.67	14%	6.24	12.87	14%	0.12	0.09
VA	1000	1019	Duct Insulation (CAC)	Multi-Family	2014	2053	135.58	80.54	0.28	21.95	14%	0.16	13.04	14%	0.18	0.09
VA	1000	1021	Return Duct Modification (CAC)	Multi-Family	2014	2053	134.79	80.08	0.79	22.73	14%	0.47	13.51	14%	0.19	0.10
VA	1000	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	126.15	74.95	8.64	31.37	20%	5.13	18.64	20%	0.20	0.13
VA	1000	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	118.61	70.47	7.54	38.91	25%	4.48	23.12	25%	0.24	0.15
VA	1000	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	106.03	62.99	12.58	51.49	33%	7.48	30.59	33%	0.31	0.19
VA	1000	1014	Crawlspace insulation (CAC)	Multi-Family	2014	2053	105.66	62.77	0.37	51.87	33%	0.22	30.81	33%	0.35	0.19
VA	1000	1026	Ceiling Fans (CAC)	Multi-Family	2014	2053	100.02	59.42	5.64	57.50	37%	3.35	34.16	37%	0.40	0.21
VA	1000	1005	Proper Sizing and Quality Install (CAC)	Multi-Family	2014	2053	90.31	53.65	9.72	67.22	43%	5.77	39.93	43%	0.57	0.26
VA	1000	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Multi-Family	2014	2053	86.20	51.21	4.11	71.33	45%	2.44	42.37	45%	0.53	0.28

Residential Electric Existing Construction
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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH
VA	1000	1008	Ceiling R-0 to R-38 Insulation (CAC)	Multi-Family	2014	2053	79.00	46.93	7.20	78.53	50%	4.28	46.65	50%	0.74	0.32
VA	1000	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Multi-Family	2014	2053	77.23	45.88	1.76	80.29	51%	1.05	47.70	51%	0.83	0.33
VA	1000	1020	Duct Testing and Sealing (CAC)	Multi-Family	2014	2053	75.24	44.70	1.99	82.28	52%	1.18	48.88	52%	0.88	0.34
VA	1000	1009	Ceiling R-0 to R-49 Insulation (CAC)	Multi-Family	2014	2053	75.15	44.64	0.09	82.38	52%	0.06	48.94	52%	9.01	0.35
VA	1000	1029	WINDOWS - Default With Sunscreen (CAC)	Multi-Family	2014	2053	69.95	41.55	5.20	87.58	56%	3.09	52.03	56%	1.08	0.40
VA	1000	1010	Ceiling R-11 to R-38 Insulaton (CAC)	Multi-Family	2014	2053	68.90	40.93	1.04	88.62	56%	0.62	52.65	56%	2.03	0.42
VA	1000	1018	Cool Roof (CAC)	Multi-Family	2014	2053	66.71	39.63	2.19	90.82	58%	1.30	53.95	58%	1.93	0.45
VA	1000	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	Multi-Family	2014	2053	66.09	39.26	0.62	91.43	58%	0.37	54.32	58%	2.47	0.47
VA	1000	1028	Window Film (CAC)	Multi-Family	2014	2053	62.19	36.95	3.90	95.33	61%	2.32	56.64	61%	1.93	0.53
VA	1000	1027	Whole House Fans (CAC)	Multi-Family	2014	2053	58.54	34.78	3.65	98.98	63%	2.17	58.80	63%	2.43	0.60
VA	1000	1011	Ceiling R-11 to R-49 Insulation (CAC)	Multi-Family	2014	2053	58.51	34.76	0.04	99.02	63%	0.02	58.82	63%	11.58	0.60
VA	1000	1012	Ceiling R-19 to R-38 Insulation (CAC)	Multi-Family	2014	2053	58.40	34.70	0.11	99.12	63%	0.06	58.89	63%	4.03	0.60
VA	1000	1013	Ceiling R-19 to R-49 Insulation (CAC)	Multi-Family	2014	2053	58.39	34.69	0.01	99.13	63%	0.01	58.89	63%	11.61	0.61
VA	1000	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	Multi-Family	2014	2053	58.08	34.51	0.31	99.44	63%	0.18	59.08	63%	6.44	0.62
VA	1000	1015	Basement insulation R-13 (CAC)	Multi-Family	2014	2053	57.95	34.43	0.13	99.57	63%	0.08	59.16	63%	6.52	0.63
VA	1000	1007	AC Filter Changes (CAC)	Multi-Family	2014	2053	57.78	34.32	0.17	99.75	63%	0.10	59.26	63%	6.33	0.64
VA	1000	1006	AC Maintenance and/or tune-up (CAC)	Multi-Family	2014	2053	57.60	34.22	0.18	99.93	63%	0.11	59.37	63%	7.24	0.65
VA	1100	1100	Base Split-System Air Conditioner - Early Replacement (11 SEI	Multi-Family	2014	2053	47.64	28.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1100	1122	Self Install Weatherization (CAC early replacement)	Multi-Family	2014	2053	46.84	27.83	0.80	0.80	2%	0.48	0.48	2%	0.01	0.01
VA	1100	1117	Duct Insulation (CAC early replacement)	Multi-Family	2014	2053	46.46	27.60	0.38	1.19	2%	0.23	0.70	2%	0.02	0.02
VA	1100	1123	Door Weatherization (CAC early replacement)	Multi-Family	2014	2053	44.26	26.29	2.20	3.39	7%	1.31	2.01	7%	0.04	0.03
VA	1100	1120	Programmable Thermostat (CAC early replacement)	Multi-Family	2014	2053	43.91	26.09	0.34	3.73	8%	0.20	2.22	8%	0.07	0.04
VA	1100	1102	Proper Refrigerant Charging and Air Flow (CAC early replacem	Multi-Family	2014	2053	40.08	23.81	3.83	7.56	16%	2.28	4.49	16%	0.07	0.05
VA	1100	1119	Return Duct Modification (CAC early replacement)	Multi-Family	2014	2053	39.85	23.67	0.23	7.79	16%	0.14	4.63	16%	0.11	0.06
VA	1100	1112	Crawlspace insulation (CAC early replacement)	Multi-Family	2014	2053	39.71	23.59	0.14	7.94	17%	0.08	4.71	17%	0.17	0.06
VA	1100	1116	Cool Roof (CAC early replacement)	Multi-Family	2014	2053	35.27	20.95	4.44	12.37	26%	2.64	7.35	26%	0.17	0.10
VA	1100	1125	Whole House Fans (CAC early replacement)	Multi-Family	2014	2053	28.39	16.87	6.88	19.25	40%	4.09	11.44	40%	0.23	0.14
VA	1100	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early re	Multi-Family	2014	2053	27.68	16.45	0.71	19.96	42%	0.42	11.86	42%	0.37	0.15
VA	1100	1103	Proper Sizing and Quality Install (CAC early replacement)	Multi-Family	2014	2053	24.43	14.52	3.25	23.21	49%	1.93	13.79	49%	0.37	0.18
VA	1100	1118	Duct Testing and Sealing (CAC early replacement)	Multi-Family	2014	2053	23.71	14.08	0.73	23.93	50%	0.43	14.22	50%	0.43	0.19
VA	1100	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early re	Multi-Family	2014	2053	22.63	13.44	1.08	25.01	53%	0.64	14.86	53%	0.35	0.20
VA	1100	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Multi-Family	2014	2053	20.74	12.32	1.89	26.90	56%	1.12	15.98	56%	0.50	0.22
VA	1100	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	20.71	12.31	0.03	26.93	57%	0.02	16.00	57%	5.77	0.22
VA	1100	1113	Basement insulation R-13 (CAC early replacement)	Multi-Family	2014	2053	20.48	12.17	0.23	27.16	57%	0.14	16.14	57%	0.67	0.23
VA	1100	1124	Ceiling Fans (CAC early replacement)	Multi-Family	2014	2053	19.95	11.85	0.53	27.69	58%	0.32	16.45	58%	0.74	0.24
VA	1100	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Multi-Family	2014	2053	19.65	11.67	0.30	27.99	59%	0.18	16.63	59%	1.26	0.25
VA	1100	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	Multi-Family	2014	2053	18.71	11.12	0.94	28.93	61%	0.56	17.19	61%	1.06	0.27
VA	1100	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Multi-Family	2014	2053	18.54	11.01	0.17	29.10	61%	0.10	17.29	61%	1.55	0.28
VA	1100	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	18.53	11.01	0.01	29.11	61%	0.01	17.30	61%	6.45	0.28
VA	1100	1126	Window Film (CAC early replacement)	Multi-Family	2014	2053	17.68	10.50	0.85	29.97	63%	0.51	17.80	63%	1.56	0.32
VA	1100	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Multi-Family	2014	2053	17.64	10.48	0.03	30.00	63%	0.02	17.82	63%	2.36	0.32
VA	1100	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	17.64	10.48	0.00	30.00	63%	0.00	17.82	63%	6.78	0.32
VA	1100	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality I	Multi-Family	2014	2053	16.74	9.95	0.90	30.90	65%	0.53	18.36	65%	2.57	0.39
VA	1100	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Multi-Family	2014	2053	16.65	9.89	0.09	30.99	65%	0.05	18.41	65%	3.97	0.40
VA	1100	1105	AC Filter Changes (CAC early replacement)	Multi-Family	2014	2053	16.60	9.86	0.05	31.04	65%	0.03	18.44	65%	3.89	0.40
VA	1100	1104	AC Maintenance and/or tune-up (CAC early replacement)	Multi-Family	2014	2053	16.55	9.83	0.05	31.09	65%	0.03	18.47	65%	4.44	0.41
VA	1200	1200	Base Heat Pump Cooling (13 SEER)	Multi-Family	2014	2053	245.48	145.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1200	1219	Duct Insulation (HP cooling)	Multi-Family	2014	2053	243.47	144.64	2.00	2.00	1%	1.19	1.19	1%	0.03	0.03
VA	1200	1223	Self Install Weatherization (HP cooling)	Multi-Family	2014	2053	239.60	142.34	3.88	5.88	2%	2.30	3.49	2%	0.04	0.03
VA	1200	1224	Door Weatherization (HP cooling)	Multi-Family	2014	2053	227.99	135.45	11.61	17.49	7%	6.90	10.39	7%	0.05	0.05
VA	1200	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Multi-Family	2014	2053	189.36	112.50	38.63	56.12	23%	22.95	33.34	23%	0.08	0.07
VA	1200	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	Multi-Family	2014	2053	175.77	104.42	13.59	69.71	28%	8.08	41.41	28%	0.10	0.08
VA	1200	1221	Programmable Thermostat (HP cooling)	Multi-Family	2014	2053	172.29	102.35	3.48	73.19	30%	2.07	43.48	30%	0.16	0.08
VA	1200	1214	Crawlspace insulation (HP cooling)	Multi-Family	2014	2053	171.68	101.99	0.60	73.79	30%	0.36	43.84	30%	0.24	0.08
VA	1200	1218	Cool Roof (HP cooling)	Multi-Family	2014	2053	152.50	90.60	19.19	92.98	38%	11.40	55.24	38%	0.24	0.12
VA	1200	1226	Whole House Fans (HP cooling)	Multi-Family	2014	2053	122.76	72.93	29.74	122.72	50%	17.67	72.91	50%	0.33	0.17
VA	1200	1220	Duct Testing and Sealing (HP cooling)	Multi-Family	2014	2053	119.11	70.76	3.65	126.37	51%	2.17	75.07	51%	0.53	0.18
VA	1200	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Multi-Family	2014	2053	113.69	67.54	5.42	131.79	54%	3.22	78.29	54%	0.44	0.19
VA	1200	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	Multi-Family	2014	2053	104.09	61.84	9.59	141.38	58%	5.70	83.99	58%	0.61	0.22
VA	1200	1205	Proper Sizing and Quality Install (HP cooling)	Multi-Family	2014	2053	93.98	55.83	10.11	151.49	62%	6.01	90.00	62%	0.75	0.25
VA	1200	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	93.72	55.68	0.26	151.76	62%	0.15	90.16	62%	3.57	0.26
VA	1200	1215	Basement insulation R-13 (HP cooling)	Multi-Family	2014	2053	92.69	55.07	1.03	152.79	62%	0.61	90.77	62%	0.92	0.26
VA	1200	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Multi-Family	2014	2053	90.38	53.69	2.31	155.10	63%	1.37	92.14	63%	1.08	0.28
VA	1200	1225	Ceiling Fans (HP cooling)	Multi-Family	2014	2053	88.02	52.29	2.36	157.46	64%	1.40	93.54	64%	1.05	0.29
VA	1200	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	Multi-Family	2014	2053	86.67	51.49	1.35	158.80	65%	0.80	94.34	65%	1.73	0.30
VA	1200	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	86.55	51.42	0.13	158.93	65%	0.07	94.42	65%	3.87	0.30
VA	1200	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Multi-Family	2014	2053	85.65	50.88	0.90	159.83	65%	0.53	94.95	65%	2.42	0.31
VA	1200	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	Multi-Family	2014	2053	85.50	50.79	0.15	159.98	65%	0.09	95.04	65%	3.12	0.32
VA	1200	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	85.47	50.77	0.03	160.01	65%	0.02	95.06	65%	3.93	0.32
VA	1200	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Multi-Family	2014	2053	84.77	50.36	0.70	160.71	65%	0.42	95.48	65%	7.69	0.35
VA	1200	1207	Heat Pump Filter Replacement	Multi-Family	2014	2053	84.51	50.21	0.26	160.97	66%	0.15	95.63	66%	5.86	0.36
VA	1200	1206	Heat pump tune up	Multi-Family	2014	2053	84.25	50.05	0.27	161.23	66%	0.16	95.79	66%	9.46	0.37
VA	1300	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	Multi-Family	2014	2053	44.29	26.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1300	1319	Duct Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	43.93	26.10	0.36	0.36	1%	0.21	0.21	1%	0.03	0.03

APPENDIX H Base Avoided Costs ADDITIVE MEASURE LEVEL RESULTS

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS Year 2020
Vintage Existing

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH
VA	1300	1323	Self Install Weatherization (HP cooling Early Replacement)	Multi-Family	2014	2053	43.23	25.68	0.70	1.06	2%	0.42	0.63	2%	0.04	0.03
VA	1300	1324	Door Weatherization (HP cooling Early Replacement)	Multi-Family	2014	2053	41.18	24.47	2.05	3.11	7%	1.22	1.85	7%	0.05	0.05
VA	1300	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Ea	Multi-Family	2014	2053	34.20	20.32	6.98	10.09	23%	4.15	5.99	23%	0.08	0.07
VA	1300	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Re	Multi-Family	2014	2053	31.75	18.86	2.46	12.54	28%	1.46	7.45	28%	0.10	0.08
VA	1300	1314	Crawlspace insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	31.64	18.80	0.11	12.65	29%	0.07	7.52	29%	0.23	0.08
VA	1300	1321	Programmable Thermostat (HP cooling Early Replacement)	Multi-Family	2014	2053	31.01	18.42	0.63	13.28	30%	0.37	7.89	30%	0.21	0.08
VA	1300	1318	Cool Roof (HP cooling Early Replacement)	Multi-Family	2014	2053	27.55	16.36	3.47	16.74	38%	2.06	9.95	38%	0.24	0.12
VA	1300	1326	Whole House Fans (HP cooling early replacement)	Multi-Family	2014	2053	22.17	13.17	5.37	22.12	50%	3.19	13.14	50%	0.32	0.17
VA	1300	1320	Duct Testing and Sealing (HP cooling Early Replacement)	Multi-Family	2014	2053	21.51	12.78	0.66	22.78	51%	0.39	13.53	51%	0.52	0.18
VA	1300	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling E	Multi-Family	2014	2053	20.54	12.20	0.98	23.75	54%	0.58	14.11	54%	0.43	0.19
VA	1300	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	18.80	11.17	1.73	25.49	58%	1.03	15.14	58%	0.60	0.21
VA	1300	1305	Proper Sizing and Quality Install (HP cooling Early Replacemer	Multi-Family	2014	2053	16.98	10.09	1.83	27.31	62%	1.09	16.23	62%	0.73	0.25
VA	1300	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	16.93	10.06	0.05	27.36	62%	0.03	16.25	62%	3.49	0.25
VA	1300	1315	Basement insulation R-13 (HP cooling Early Replacement)	Multi-Family	2014	2053	16.74	9.95	0.19	27.55	62%	0.11	16.37	62%	0.90	0.26
VA	1300	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling I	Multi-Family	2014	2053	16.33	9.70	0.42	27.96	63%	0.25	16.61	63%	1.06	0.27
VA	1300	1325	Ceiling Fans (HP cooling early replacement)	Multi-Family	2014	2053	15.90	9.45	0.43	28.39	64%	0.25	16.87	64%	1.02	0.28
VA	1300	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Multi-Family	2014	2053	15.66	9.30	0.24	28.63	65%	0.14	17.01	65%	1.69	0.29
VA	1300	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement	Multi-Family	2014	2053	15.63	9.29	0.02	28.66	65%	0.01	17.02	65%	3.78	0.30
VA	1300	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacem	Multi-Family	2014	2053	15.47	9.19	0.16	28.82	65%	0.10	17.12	65%	2.37	0.31
VA	1300	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement	Multi-Family	2014	2053	15.44	9.18	0.03	28.85	65%	0.02	17.14	65%	3.05	0.31
VA	1300	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement	Multi-Family	2014	2053	15.44	9.17	0.01	28.85	65%	0.00	17.14	65%	3.83	0.31
VA	1300	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacer	Multi-Family	2014	2053	15.31	9.10	0.13	28.98	65%	0.08	17.22	65%	7.51	0.34
VA	1300	1307	Heat Pump Filter Replacement	Multi-Family	2014	2053	15.27	9.07	0.05	29.02	66%	0.03	17.24	66%	5.73	0.35
VA	1300	1306	Heat pump tune up	Multi-Family	2014	2053	15.22	9.04	0.05	29.07	66%	0.03	17.27	66%	9.24	0.37
VA	1400	1400	Base Room Air Conditioner - EER 10.6	Multi-Family	2014	2053	13.91	8.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1400	1413	Self Install Weatherization (RAC)	Multi-Family	2014	2053	13.69	8.13	0.22	0.22	2%	0.13	0.13	2%	0.01	0.01
VA	1400	1414	Door Weatherization (RAC)	Multi-Family	2014	2053	13.02	7.74	0.66	0.88	6%	0.39	0.53	6%	0.04	0.03
VA	1400	1411	Cool Roof (RAC)	Multi-Family	2014	2053	11.57	6.87	1.46	2.34	17%	0.86	1.39	17%	0.13	0.09
VA	1400	1416	Whole House Fans (RAC)	Multi-Family	2014	2053	9.31	5.53	2.26	4.60	33%	1.34	2.73	33%	0.17	0.13
VA	1400	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Multi-Family	2014	2053	8.81	5.23	0.51	5.10	37%	0.30	3.03	37%	0.19	0.14
VA	1400	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Multi-Family	2014	2053	8.59	5.10	0.22	5.32	38%	0.13	3.16	38%	0.29	0.14
VA	1400	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Multi-Family	2014	2053	8.08	4.80	0.51	5.83	42%	0.30	3.46	42%	0.23	0.15
VA	1400	1404	Ceiling R-0 to R-38 Insulation (RAC)	Multi-Family	2014	2053	7.44	4.42	0.64	6.47	46%	0.38	3.84	46%	0.36	0.17
VA	1400	1405	Ceiling R-0 to R-49 Insulation (RAC)	Multi-Family	2014	2053	7.43	4.41	0.02	6.48	47%	0.01	3.85	47%	2.17	0.18
VA	1400	1415	Ceiling Fans (RAC)	Multi-Family	2014	2053	7.23	4.30	0.19	6.68	48%	0.12	3.97	48%	0.50	0.18
VA	1400	1417	Window Film (RAC)	Multi-Family	2014	2053	6.58	3.91	0.65	7.33	53%	0.39	4.35	53%	0.50	0.21
VA	1400	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	Multi-Family	2014	2053	6.52	3.87	0.07	7.39	53%	0.04	4.39	53%	1.00	0.22
VA	1400	1418	WINDOWS - Default With Sunscreen (RAC)	Multi-Family	2014	2053	6.20	3.69	0.31	7.70	55%	0.18	4.58	55%	0.79	0.24
VA	1400	1406	Ceiling R-11 to R-38 Insulaton (RAC)	Multi-Family	2014	2053	6.12	3.64	0.08	7.79	56%	0.05	4.63	56%	1.10	0.25
VA	1400	1407	Ceiling R-11 to R-49 Insulation (RAC)	Multi-Family	2014	2053	6.11	3.63	0.01	7.80	56%	0.00	4.63	56%	2.64	0.25
VA	1400	1408	Ceiling R-19 to R-38 Insulation (RAC)	Multi-Family	2014	2053	6.10	3.63	0.01	7.81	56%	0.01	4.64	56%	1.84	0.26
VA	1400	1409	Ceiling R-19 to R-49 Insulation (RAC)	Multi-Family	2014	2053	6.10	3.62	0.00	7.81	56%	0.00	4.64	56%	2.65	0.26
VA	1400	1403	Room AC Filter Replacement	Multi-Family	2014	2053	6.08	3.61	0.02	7.83	56%	0.01	4.65	56%	2.61	0.26
VA	1500	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	Multi-Family	2014	2053	1.09	0.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1500	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early	Multi-Family	2014	2053	0.95	0.56	0.15	0.15	13%	0.09	0.09	13%	1.05	1.05
VA	1600	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	Multi-Family	2014	2053	3.17	1.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1600	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/da	Multi-Family	2014	2053	2.68	1.59	0.49	0.49	15%	0.29	0.29	15%	0.19	0.19
VA	1700	1700	Base Furnace Fan - Furnace & CAC	Multi-Family	2014	2053	232.33	119.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	1700	1701	ECM Furnace Fan (variable speed motor) - Cooling	Multi-Family	2014	2053	129.07	66.21	103.26	103.26	44%	52.97	52.97	44%	0.03	0.03
VA	2000	2000	Base Heat Pump Space Heating (7.7 HSPF)	Multi-Family	2014	2053	362.58	43.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
VA	2000	2016	Duct Insulation (HP heating)	Multi-Family	2014	2053	359.63	42.67	2.96	2.96	1%	0.35	0.35	1%	0.02	0.02
VA	2000	2021	Self Install Weatherization (HP heating)	Multi-Family	2014	2053	353.90	41.99	5.72	8.68	2%	0.68	1.03	2%	0.03	0.03
VA	2000	2022	Door Weatherization (HP heating)	Multi-Family	2014	2053	340.51	40.40	13.39	22.07	6%	1.59	2.62	6%	0.05	0.04
VA	2000	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Multi-Family	2014	2053	309.14	36.68	31.38	53.45	15%	3.72	6.34	15%	0.11	0.08
VA	2000	2012	Crawlspace insulation (HP heating)	Multi-Family	2014	2053	308.05	36.55	1.08	54.53	15%	0.13	6.47	15%	0.15	0.08
VA	2000	2019	Programmable Thermostat (HP heating)	Multi-Family	2014	2053	301.95	35.83	6.10	60.63	17%	0.72	7.19	17%	0.14	0.09
VA	2000	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Multi-Family	2014	2053	288.21	34.20	13.74	74.37	21%	1.63	8.82	21%	0.20	0.11
VA	2000	2017	Duct Testing and Sealing (HP heating)	Multi-Family	2014	2053	279.65	33.18	8.57	82.94	23%	1.02	9.84	23%	0.26	0.13
VA	2000	2006	Ceiling R-0 to R-38 Insulation (HP heating)	Multi-Family	2014	2053	256.05	30.38	23.59	106.53	29%	2.80	12.64	29%	0.29	0.16
VA	2000	2007	Ceiling R-0 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	255.34	30.30	0.71	107.24	30%	0.08	12.72	30%	1.52	0.17
VA	2000	2013	Basement insulation R-13 (HP heating)	Multi-Family	2014	2053	252.53	29.96	2.82	110.06	30%	0.33	13.06	30%	0.39	0.18

APPENDIX H

Base Avoided Costs

ADDITIVE MEASURE LEVEL RESULTS

Residential Electric New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage New Construction

Year 2014

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	100	100	Base Code Home - IECC 2006	Single Family	2013	2054	242.08	59.94	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	100	101	Energy Star Home	Single Family	2013	2054	188.72	55.15	53.35	53.35	22%	4.80	4.80	8%	0.06

APPENDIX H

Base Avoided Costs

ADDITIVE MEASURE LEVEL RESULTS

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Year 2020

Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EE	Office	2020	2054	1,085.70	202.10	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8)	Office	2020	2054	1,077.27	201.32	8.43	8.43	1%	0.78	0.78	0%	0.01
VA	1030	1038	High Performance Lighting R/R - 25%	Office	2020	2054	996.47	189.29	80.81	89.24	8%	12.03	12.82	6%	0.01
VA	1030	1031	ROB 4L4' High Performance T8 (86 W	Office	2020	2054	894.97	170.39	101.49	190.73	18%	18.89	31.71	16%	0.02
VA	1030	1032	ROB 4L4' Low Watt High Performance	Office	2020	2054	781.10	149.20	113.87	304.60	28%	21.20	52.91	26%	0.04
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent F	Office	2020	2054	723.19	146.50	57.91	362.51	33%	2.70	55.60	28%	0.05
VA	1030	1034	ROB 4L4' LED Tube, 2020	Office	2020	2054	606.67	124.81	116.53	479.03	44%	21.69	77.29	38%	0.24
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Office	2020	2054	554.88	115.17	51.79	530.82	49%	9.64	86.93	43%	0.20
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EE	Office	2020	2054	18.36	3.42	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8)	Office	2020	2054	18.21	3.40	0.15	0.15	1%	0.01	0.01	0%	0.01
VA	1130	1138	High Performance Lighting R/R - 25%	Office	2020	2054	16.84	3.20	1.37	1.51	8%	0.20	0.22	6%	0.02
VA	1130	1131	ROB 2L4' High Performance T8 (86 W	Office	2020	2054	15.09	2.87	1.75	3.26	18%	0.33	0.54	16%	0.02
VA	1130	1132	ROB 2L4' Low Watt High Performance	Office	2020	2054	13.17	2.52	1.92	5.18	28%	0.36	0.90	26%	0.05
VA	1130	1134	ROB 2L4' LED Tube, 2020	Office	2020	2054	12.54	2.40	0.64	5.82	32%	0.12	1.02	30%	0.18
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent F	Office	2020	2054	11.61	2.35	0.93	6.75	37%	0.04	1.06	31%	0.10
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Office	2020	2054	10.62	2.17	0.99	7.74	42%	0.18	1.25	36%	0.25
VA	1200	1200	Base Other Fluorescent Fixture	Office	2014	2054	39.84	7.42	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1200	1203	Lighting Control Tuneup (base other fl	Office	2014	2054	37.93	7.24	1.90	1.90	5%	0.18	0.18	2%	0.00
VA	1200	1205	High Performance Lighting R/R - 25%	Office	2014	2054	35.09	6.81	2.85	4.75	12%	0.42	0.60	8%	0.03
VA	1200	1201	ROB High Performance T8 (base othe	Office	2014	2054	31.44	6.14	3.65	8.40	21%	0.68	1.28	17%	0.08
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent F	Office	2014	2054	27.24	5.94	4.19	12.59	32%	0.20	1.48	20%	0.09
VA	1200	1202	ROB Low Watt High Performance T8 (	Office	2014	2054	23.78	5.30	3.47	16.06	40%	0.65	2.12	29%	0.19
VA	1330	1330	Base Incandescent Flood, 100W to Sc	Office	2020	2054	368.56	68.61	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1330	1332	LEDs (base incandescent flood) 2020	Office	2020	2054	88.80	16.53	279.76	279.76	76%	52.08	52.08	76%	0.00
VA	1430	1430	Base Incandescent A-Line Lamp, 72W	Office	2020	2054	132.68	24.70	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1430	1432	LEDs (base incandescent A-line 72W)	Office	2020	2054	34.53	6.43	98.15	98.15	74%	18.27	18.27	74%	0.00
VA	1530	1530	Base Incandescent A-Line Lamp, 53W	Office	2020	2054	97.67	18.18	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1530	1532	LEDs (base incandescent A-line 53W)	Office	2020	2054	33.85	6.30	63.82	63.82	65%	11.88	11.88	65%	0.01
VA	1630	1630	Base CFL 18W to screw-in replaceme	Office	2020	2054	24.08	4.48	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1630	1631	LED screw-in replacement (base CFL	Office	2020	2054	17.41	3.24	6.67	6.67	28%	1.24	1.24	28%	0.05
VA	1730	1730	Base CFL 23W to screw-in replaceme	Office	2020	2054	30.77	5.73	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1730	1731	LED screw-in replacement (base CFL	Office	2020	2054	22.77	4.24	8.00	8.00	26%	1.49	1.49	26%	0.04
VA	1800	1800	BaseMetal Halide, 465W	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1850	Base CFL Exit Sign	Office	2014	2054	12.87	2.40	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1851	LED Exit Sign	Office	2014	2054	7.23	1.35	5.64	5.64	44%	1.05	1.05	44%	0.02
VA	1900	1900	Base Outdoor High Pressure Sodium 2	Office	2014	2054	88.06	1.21	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1900	1901	Outdoor Lighting Controls (Photocell/T	Office	2014	2054	77.56	0.73	10.50	10.50	12%	0.48	0.48	39%	0.04
VA	1900	1902	LED Outdoor Area Lighting	Office	2014	2054	37.32	0.18	40.24	50.74	58%	0.55	1.03	85%	0.08
VA	1900	1903	Bi-Level LED Outdoor Lighting	Office	2014	2054	26.35	0.04	10.97	61.71	70%	0.14	1.17	96%	0.54
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton,	Office	2014	2054	136.14	95.24	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2000	2010	Ceiling/roof Insulation - Chiller	Office	2014	2054	135.53	94.82	0.61	0.61	0%	0.42	0.42	0%	0.01
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 t	Office	2014	2054	123.96	86.72	11.57	12.18	9%	8.09	8.52	9%	0.03
VA	2000	2005	Chiller Tune Up/Diagnostics	Office	2014	2054	123.59	86.60	0.37	12.55	9%	0.13	8.65	9%	0.02
VA	2000	2013	High Efficiency Chiller Motors	Office	2014	2054	123.37	86.44	0.22	12.77	9%	0.16	8.80	9%	0.04
VA	2000	2006	VSD for Chiller Pumps and Towers	Office	2014	2054	122.56	86.16	0.81	13.58	10%	0.28	9.09	10%	0.03
VA	2000	2003	EMS - Chiller	Office	2014	2054	113.99	84.66	8.56	22.14	16%	1.50	10.58	11%	0.05
VA	2000	2008	New Economizer - Chiller	Office	2014	2054	106.64	83.37	7.36	29.50	22%	1.29	11.87	12%	0.05
VA	2000	2002	Window Film (Standard) - Chiller	Office	2014	2054	106.60	83.35	0.03	29.53	22%	0.02	11.89	12%	0.09
VA	2000	2012	Duct Testing/Sealing - Chiller	Office	2014	2054	86.35	69.18	20.25	49.79	37%	14.17	26.06	27%	0.15
VA	2000	2004	Cool Roof - Chiller	Office	2014	2054	86.08	68.99	0.27	50.05	37%	0.19	26.25	28%	0.22
VA	2000	2011	Duct/Pipe Insulation - Chiller	Office	2014	2054	85.82	68.81	0.27	50.32	37%	0.19	26.44	28%	1.87
VA	2100	2100	Base DX Packaged System, EER=10.:	Office	2014	2054	617.70	432.16	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2100	2102	DX Packaged System, EER=13.4, 10 t	Office	2014	2054	475.63	332.76	142.07	142.07	23%	99.40	99.40	23%	0.02
VA	2100	2111	Economizer Repair - DX	Office	2014	2054	454.22	310.29	21.40	163.48	26%	22.47	121.87	28%	0.05
VA	2100	2108	Optimize Controls - DX	Office	2014	2054	446.47	308.93	7.76	171.23	28%	1.36	123.23	29%	0.06
VA	2100	2115	Window Film (Standard) - DX	Office	2014	2054	437.24	302.47	9.23	180.46	29%	6.46	129.68	30%	0.10
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Office	2014	2054	436.45	302.20	0.79	181.25	29%	0.28	129.96	30%	0.09
VA	2100	2109	Economizer - DX	Office	2014	2054	388.46	293.81	47.98	229.24	37%	8.39	138.35	32%	0.07
VA	2100	2112	Duct Testing/Sealing - DX	Office	2014	2054	364.84	277.28	23.62	252.86	41%	16.52	154.87	36%	0.19
VA	2100	2106	Prog. Thermostat - DX	Office	2014	2054	357.09	275.93	7.76	260.61	42%	1.36	156.23	36%	0.10
VA	2100	2107	Cool Roof - DX	Office	2014	2054	354.04	273.80	3.05	263.66	43%	2.13	158.36	37%	0.25
VA	2100	2110	Dual Enthalpy Economizer Replaces D	Office	2014	2054	353.96	273.78	0.08	263.74	43%	0.01	158.38	37%	0.20
VA	2100	2114	Duct/Pipe Insulation - DX	Office	2014	2054	351.66	272.18	2.29	266.04	43%	1.60	159.98	37%	2.07
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF	Office	2014	2054	421.72	295.04	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 H:	Office	2014	2054	369.56	258.55	52.16	52.16	12%	36.49	36.49	12%	0.02
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Office	2014	2054	67.57	47.28	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Office	2014	2054	334.29	100.92	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3002	Variable Speed Drive Control, 5 HP	Office	2014	2054	268.04	95.92	66.25	66.25	20%	5.00	5.00	5%	0.01
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Office	2014	2054	263.67	94.60	4.36	70.62	21%	1.32	6.32	6%	0.02
VA	3000	3003	Demand Controlled Ventilation	Office	2014	2054	249.34	86.38	14.34	84.95	25%	8.22	14.54	14%	0.60
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0	Office	2014	2054	57.92	17.49	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3100	3102	Variable Speed Drive Control, 15 HP	Office	2014	2054	46.44	16.62	11.48	11.48	20%	0.87	0.87	5%	0.00

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS Year 2020

Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Office	2014	2054	46.16	16.53	0.28	11.76	20%	0.08	0.95	5%	0.01
VA	3100	3104	Electronically Commutated Motors (EC	Office	2014	2054	43.11	15.70	3.06	14.81	26%	0.83	1.78	10%	0.02
VA	3100	3103	Air Handler Optimization, 15 HP	Office	2014	2054	38.98	15.39	4.12	18.94	33%	0.31	2.09	12%	0.02
VA	3100	3105	Energy Recovery Ventilation (ERV)	Office	2014	2054	38.07	14.87	0.91	19.85	34%	0.52	2.61	15%	0.23
VA	3100	3107	Demand Controlled Ventilation	Office	2014	2054	36.00	13.69	2.07	21.92	38%	1.19	3.80	22%	0.72
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0	Office	2014	2054	36.51	11.02	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3203	Air Handler Optimization, 40 HP	Office	2014	2054	33.02	10.76	3.49	3.49	10%	0.26	0.26	2%	0.01
VA	3200	3202	Variable Speed Drive Control, 40 HP	Office	2014	2054	26.48	10.27	6.54	10.04	27%	0.49	0.76	7%	0.02
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Office	2014	2054	26.36	10.23	0.12	10.15	28%	0.04	0.79	7%	0.10
VA	3200	3204	Demand Controlled Ventilation	Office	2014	2054	24.93	9.41	1.43	11.59	32%	0.82	1.61	15%	0.65
VA	4000	4000	Base Built-Up Refrigeration System	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4100	Base Self-Contained Refrigeration	Office	2014	2054	98.08	13.75	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4103	Night covers for display cases (self-co	Office	2014	2054	97.41	13.66	0.66	0.66	1%	0.09	0.09	1%	0.00
VA	4100	4109	Energy-Star Freezer, glass door	Office	2014	2054	97.25	13.64	0.16	0.82	1%	0.02	0.12	1%	0.00
VA	4100	4104	Freezer-Cooler Replacement Gaskets	Office	2014	2054	95.47	13.39	1.78	2.61	3%	0.25	0.37	3%	0.00
VA	4100	4107	Energy-Star Freezer, solid door	Office	2014	2054	95.40	13.38	0.07	2.67	3%	0.01	0.37	3%	0.01
VA	4100	4108	Energy-Star Refrigerator, glass door	Office	2014	2054	94.86	13.30	0.55	3.22	3%	0.08	0.45	3%	0.01
VA	4100	4106	Energy-Star Refrigerator, solid door	Office	2014	2054	94.61	13.27	0.24	3.46	4%	0.03	0.49	4%	0.01
VA	4100	4110	Energy Star Ice Machines	Office	2014	2054	94.28	13.22	0.34	3.80	4%	0.05	0.53	4%	0.02
VA	4100	4112	Reach-in unit occupancy sensors	Office	2014	2054	94.27	13.22	0.01	3.81	4%	0.00	0.53	4%	0.27
VA	4100	4105	Bi-level LED Case Lighting (self-conta	Office	2014	2054	94.25	13.22	0.02	3.83	4%	0.00	0.54	4%	0.31
VA	4100	4101	Strip curtains for walk-ins (self-contain	Office	2014	2054	94.19	13.21	0.06	3.89	4%	0.01	0.55	4%	6.64
VA	5000	5000	Base Desktop PC	Office	2014	2054	40.10	5.56	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5000	5001	PC Network Power Management Enab	Office	2014	2054	21.62	4.28	18.48	18.48	46%	1.28	1.28	23%	0.01
VA	5000	5002	Energy Star or Better PC	Office	2014	2054	16.81	3.61	4.81	23.29	58%	0.67	1.95	35%	0.02
VA	5100	5100	Base Laptop PC	Office	2014	2054	3.65	0.51	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5100	5102	Energy Star or Better Laptop	Office	2014	2054	2.96	0.41	0.69	0.69	19%	0.10	0.10	19%	0.01
VA	5100	5101	Laptop Network Power Management E	Office	2014	2054	2.90	0.40	0.06	0.75	21%	0.01	0.10	21%	0.99
VA	5200	5200	Base Monitor, CRT	Office	2014	2054	8.50	1.18	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5200	5201	Energy Star or Better Monitor - CRT	Office	2014	2054	4.89	0.68	3.62	3.62	43%	0.50	0.50	43%	0.00
VA	5200	5202	Monitor Power Management Enabling	Office	2014	2054	4.23	0.63	0.65	4.27	50%	0.05	0.55	46%	0.01
VA	5200	5203	Plug-load controls - Commercial Smar	Office	2014	2054	3.90	0.59	0.33	4.60	54%	0.05	0.59	50%	0.11
VA	5300	5300	Base Monitor, LCD	Office	2014	2054	7.61	1.06	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5300	5301	Energy Star or Better Monitor - LCD	Office	2014	2054	6.61	0.92	0.99	0.99	13%	0.14	0.14	13%	0.01
VA	5300	5302	Monitor Power Management Enabling	Office	2014	2054	6.12	0.88	0.49	1.49	20%	0.03	0.17	16%	0.06
VA	5300	5303	Plug-load controls - Commercial Smar	Office	2014	2054	5.64	0.87	0.48	1.97	26%	0.02	0.19	18%	0.18
VA	5400	5400	Base Copier	Office	2014	2054	13.93	1.93	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5400	5401	Energy Star or Better Copier	Office	2014	2054	12.54	1.74	1.38	1.38	10%	0.19	0.19	10%	0.00
VA	5400	5402	Copier Power Management Enabling	Office	2014	2054	12.00	1.70	0.54	1.93	14%	0.04	0.23	12%	0.07
VA	5500	5500	Base Multifunction	Office	2014	2054	2.37	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5500	5502	ENERGY STAR Multi-Function Printer	Office	2014	2054	1.77	0.25	0.59	0.59	25%	0.08	0.08	25%	0.01
VA	5500	5501	Multifunction Power Management Ena	Office	2014	2054	1.45	0.22	0.32	0.92	39%	0.02	0.10	32%	0.21
VA	5600	5600	Base Printer	Office	2014	2054	13.79	1.91	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5600	5602	ENERGY STAR Printer	Office	2014	2054	9.00	1.25	4.80	4.80	35%	0.67	0.67	35%	0.00
VA	5600	5601	Printer Power Management Enabling	Office	2014	2054	7.36	1.13	1.64	6.44	47%	0.11	0.78	41%	0.04
VA	5700	5700	Base Data Center/Server Room	Office	2014	2054	72.12	10.01	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5700	5701	Data Center Improved Operations	Office	2014	2054	64.91	9.01	7.21	7.21	10%	1.00	1.00	10%	0.00
VA	5700	5702	Data Center Best Practices	Office	2014	2054	56.65	7.86	8.26	15.47	21%	1.15	2.15	21%	0.00
VA	5700	5703	Data Center State of the Art practices	Office	2014	2054	53.48	7.42	3.17	18.64	26%	0.44	2.59	26%	0.00
VA	6000	6000	Base Water Heating	Office	2014	2054	82.67	11.17	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	6000	6007	Heat Trap	Office	2014	2054	78.39	10.59	4.28	4.28	5%	0.58	0.58	5%	0.01
VA	6000	6002	High Efficiency Water Heater (electric)	Office	2014	2054	76.82	10.38	1.57	5.85	7%	0.21	0.79	7%	0.03
VA	6000	6004	Tankless Water Heater	Office	2014	2054	71.06	9.60	5.76	11.61	14%	0.78	1.57	14%	0.04
VA	6000	6008	Solar Water Heater	Office	2014	2054	33.25	4.49	37.80	49.41	60%	5.11	6.67	60%	0.05
VA	6000	6003	Hot Water Pipe Insulation	Office	2014	2054	32.90	4.44	0.35	49.77	60%	0.05	6.72	60%	0.11
VA	6000	6006	Heat Recovery Unit	Office	2014	2054	30.76	4.16	2.14	51.90	63%	0.29	7.01	63%	0.11
VA	6000	6001	Demand controlled circulating systems	Office	2014	2054	29.84	4.03	0.92	52.83	64%	0.12	7.14	64%	0.33
VA	7000	7000	Base Refrigerated Vending Machines	Office	2014	2054	15.06	2.19	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7000	7001	Vending Misers (Refrigerated units)	Office	2014	2054	12.80	2.03	2.26	2.26	15%	0.16	0.16	8%	0.02
VA	7000	7002	Vending Misers (Refrigerated glass-fro	Office	2014	2054	11.57	1.94	1.23	3.49	23%	0.09	0.25	12%	0.05
VA	7100	7100	Base Non-Refrigerated Vending Machi	Office	2014	2054	0.39	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7100	7101	Vending Misers (Non-Refrigerated)	Office	2014	2054	0.22	0.04	0.17	0.17	43%	0.01	0.01	21%	0.41
VA	7200	7200	Base Oven	Office	2014	2054	4.43	0.66	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7300	7300	Base Fryer	Office	2014	2054	2.80	0.42	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7400	7400	Base Steamer	Office	2014	2054	5.82	0.87	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Office	2014	2054	61.27	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HS	Office	2014	2054	57.82	0.00	3.46	3.46	6%	0.00	0.00	0%	0.02
VA	8100	8100	Base Heating, Other Electric	Office	2014	2054	61.90	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9500	Base Miscellaneous	Office	2014	2054	531.51	77.37	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9501	Xmisc	Office	2014	2054	531.51	77.37	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EE	Restauran	2020	2054	14.87	2.94	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8,	Restauran	2020	2054	14.85	2.93	0.02	0.02	0%	0.00	0.00	0%	0.01

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Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	1030	1038	High Performance Lighting R/R - 25%	Restauran	2020	2054	13.73	2.76	1.12	1.15	8%	0.18	0.18	6%	0.01
VA	1030	1031	ROB 4L4' High Performance T8 (86 W	Restauran	2020	2054	12.30	2.48	1.43	2.57	17%	0.28	0.46	16%	0.03
VA	1030	1032	ROB 4L4' Low Watt High Performance	Restauran	2020	2054	10.73	2.17	1.56	4.14	28%	0.31	0.77	26%	0.07
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent	Restauran	2020	2054	10.58	2.16	0.15	4.29	29%	0.01	0.78	26%	0.13
VA	1030	1034	ROB 4L4' LED Tube, 2020	Restauran	2020	2054	8.88	1.82	1.71	5.99	40%	0.34	1.11	38%	0.40
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Restauran	2020	2054	8.12	1.67	0.76	6.75	45%	0.15	1.26	43%	0.33
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1E	Restauran	2020	2054	88.32	17.43	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8)	Restauran	2020	2054	88.18	17.42	0.14	0.14	0%	0.01	0.01	0%	0.02
VA	1130	1138	High Performance Lighting R/R - 25%	Restauran	2020	2054	81.51	16.38	6.67	6.81	8%	1.04	1.06	6%	0.02
VA	1130	1131	ROB 2L4' High Performance T8 (86 W	Restauran	2020	2054	73.03	14.70	8.48	15.29	17%	1.67	2.73	16%	0.04
VA	1130	1132	ROB 2L4' Low Watt High Performance	Restauran	2020	2054	63.74	12.87	9.29	24.58	28%	1.83	4.57	26%	0.09
VA	1130	1134	ROB 2L4' LED Tube, 2020	Restauran	2020	2054	60.66	12.26	3.08	27.66	31%	0.61	5.17	30%	0.32
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Restauran	2020	2054	55.48	11.24	5.18	32.84	37%	1.02	6.20	36%	0.40
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent	Restauran	2020	2054	54.70	11.20	0.78	33.62	38%	0.04	6.23	36%	0.26
VA	1200	1200	Base Other Fluorescent Fixture	Restauran	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1330	1330	Base Incandescent Flood, 100W to Sc	Restauran	2020	2054	73.49	14.51	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1330	1332	LEDs (base incandescent flood) 2020	Restauran	2020	2054	15.60	3.08	57.89	57.89	79%	11.43	11.43	79%	0.01
VA	1430	1430	Base Incandescent A-Line Lamp, 72W	Restauran	2020	2054	26.46	5.22	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1430	1432	LEDs (base incandescent A-line 72W)	Restauran	2020	2054	6.09	1.20	20.37	20.37	77%	4.02	4.02	77%	0.01
VA	1530	1530	Base Incandescent A-Line Lamp, 53W	Restauran	2020	2054	19.48	3.84	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1530	1532	LEDs (base incandescent A-line 53W)	Restauran	2020	2054	6.05	1.19	13.43	13.43	69%	2.65	2.65	69%	0.01
VA	1630	1630	Base CFL 18W to screw-in replaceme	Restauran	2020	2054	12.55	2.48	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1630	1631	LED screw-in replacement (base CFL	Restauran	2020	2054	9.07	1.79	3.48	3.48	28%	0.69	0.69	28%	0.08
VA	1730	1730	Base CFL 23W to screw-in replaceme	Restauran	2020	2054	16.04	3.17	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1730	1731	LED screw-in replacement (base CFL	Restauran	2020	2054	11.87	2.34	4.17	4.17	26%	0.82	0.82	26%	0.06
VA	1800	1800	BaseMetal Halide, 465W	Restauran	2014	2054	0.34	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1800	1801	T5 (240W) (base metal halide)	Restauran	2014	2054	0.22	0.04	0.11	0.11	34%	0.02	0.02	34%	0.02
VA	1800	1806	Occupancy Sensor, High Bay T5	Restauran	2014	2054	0.21	0.04	0.01	0.12	36%	0.00	0.02	34%	0.04
VA	1800	1805	High Performance Lighting R/R - 25%	Restauran	2014	2054	0.20	0.04	0.02	0.14	41%	0.00	0.03	38%	1.06
VA	1850	1850	Base CFL Exit Sign	Restauran	2014	2054	4.21	0.83	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1851	LED Exit Sign	Restauran	2014	2054	1.75	0.35	2.46	2.46	58%	0.49	0.49	58%	0.06
VA	1900	1900	Base Outdoor High Pressure Sodium	Restauran	2014	2054	102.87	6.81	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1900	1901	Outdoor Lighting Controls (Photocell/T	Restauran	2014	2054	85.98	3.48	16.89	16.89	16%	3.34	3.34	49%	0.07
VA	1900	1902	LED Outdoor Area Lighting	Restauran	2014	2054	41.37	0.52	44.61	61.50	60%	2.96	6.29	92%	0.16
VA	1900	1903	Bi-Level LED Outdoor Lighting	Restauran	2014	2054	29.27	-0.20	12.11	73.60	72%	0.73	7.02	103%	1.02
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton,	Restauran	2014	2054	84.79	53.08	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2000	2010	Ceiling/roof Insulation - Chiller	Restauran	2014	2054	78.62	49.22	6.17	6.17	7%	3.86	3.86	7%	0.02
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 t	Restauran	2014	2054	71.91	45.02	6.71	12.88	15%	4.20	8.07	15%	0.02
VA	2000	2005	Chiller Tune Up/Diagnostics	Restauran	2014	2054	71.78	44.98	0.13	13.02	15%	0.04	8.11	15%	0.02
VA	2000	2003	EMS - Chiller	Restauran	2014	2054	65.68	44.04	6.09	19.11	23%	0.93	9.04	17%	0.04
VA	2000	2012	Duct Testing/Sealing - Chiller	Restauran	2014	2054	54.07	36.77	11.62	30.73	36%	7.27	16.31	31%	0.11
VA	2100	2100	Base DX Packaged System, EER=10.	Restauran	2014	2054	449.34	281.30	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2100	2113	Ceiling/roof Insulation - DX	Restauran	2014	2054	449.20	281.22	0.13	0.13	0%	0.08	0.08	0%	0.01
VA	2100	2102	DX Packaged System, EER=13.4, 10	Restauran	2014	2054	345.89	216.54	103.32	103.45	23%	64.68	64.76	23%	0.02
VA	2100	2115	Window Film (Standard) - DX	Restauran	2014	2054	320.80	200.83	25.09	128.53	29%	15.70	80.47	29%	0.02
VA	2100	2108	Optimize Controls - DX	Restauran	2014	2054	315.20	199.98	5.60	134.14	30%	0.86	81.33	29%	0.04
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Restauran	2014	2054	314.84	199.87	0.36	134.49	30%	0.11	81.44	29%	0.07
VA	2100	2106	Prog. Thermostat - DX	Restauran	2014	2054	307.83	198.79	7.01	141.50	31%	1.07	82.51	29%	0.06
VA	2100	2112	Duct Testing/Sealing - DX	Restauran	2014	2054	290.41	187.88	17.42	158.93	35%	10.91	93.42	33%	0.13
VA	2100	2111	Economizer Repair - DX	Restauran	2014	2054	276.94	175.36	13.46	172.39	38%	12.52	105.94	38%	0.12
VA	2100	2107	Cool Roof - DX	Restauran	2014	2054	268.19	169.88	8.76	181.15	40%	5.48	111.42	40%	0.14
VA	2100	2109	Economizer - DX	Restauran	2014	2054	262.70	169.04	5.48	186.63	42%	0.84	112.26	40%	0.15
VA	2100	2110	Dual Enthalpy Economizer Replaces D	Restauran	2014	2054	262.55	169.01	0.15	186.78	42%	0.02	112.29	40%	0.16
VA	2100	2114	Duct/Pipe Insulation - DX	Restauran	2014	2054	259.35	167.01	3.20	189.99	42%	2.00	114.29	41%	1.57
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF	Restauran	2014	2054	140.83	88.17	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 H	Restauran	2014	2054	123.41	77.26	17.42	17.42	12%	10.90	10.90	12%	0.01
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Restauran	2014	2054	16.99	10.64	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Restauran	2014	2054	150.38	38.78	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Restauran	2014	2054	147.78	38.11	2.59	2.59	2%	0.67	0.67	2%	0.11
VA	3000	3002	Variable Speed Drive Control, 5 HP	Restauran	2014	2054	103.43	35.29	44.35	46.94	31%	2.82	3.49	9%	0.08
VA	3000	3003	Demand Controlled Ventilation	Restauran	2014	2054	89.51	28.28	13.92	60.86	40%	7.01	10.50	27%	0.85
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0	Restauran	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0	Restauran	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4000	4000	Base Built-Up Refrigeration System	Restauran	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4100	Base Self-Contained Refrigeration	Restauran	2014	2054	637.81	95.50	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4103	Night covers for display cases (self-co	Restauran	2014	2054	609.06	91.20	28.75	28.75	5%	4.31	4.31	5%	0.00
VA	4100	4104	Freezer-Cooler Replacement Gaskets	Restauran	2014	2054	600.41	89.90	8.65	37.40	6%	1.29	5.60	6%	0.01
VA	4100	4109	Energy-Star Freezer, glass door	Restauran	2014	2054	590.83	88.47	9.58	46.98	7%	1.43	7.03	7%	0.01
VA	4100	4107	Energy-Star Freezer, solid door	Restauran	2014	2054	586.86	87.87	3.97	50.95	8%	0.60	7.63	8%	0.02
VA	4100	4108	Energy-Star Refrigerator, glass door	Restauran	2014	2054	582.47	87.22	4.39	55.34	9%	0.66	8.29	9%	0.03
VA	4100	4106	Energy-Star Refrigerator, solid door	Restauran	2014	2054	573.01	85.80	9.46	64.80	10%	1.42	9.70	10%	0.03
VA	4100	4110	Energy Star Ice Machines	Restauran	2014	2054	564.41	84.51	8.60	73.40	12%	1.29	10.99	12%	0.07

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Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	4100	4112	Reach-in unit occupancy sensors	Restauran	2014	2054	564.16	84.48	0.25	73.65	12%	0.04	11.03	12%	0.29
VA	4100	4105	Bi-level LED Case Lighting (self-conta	Restauran	2014	2054	563.06	84.31	1.10	74.74	12%	0.16	11.19	12%	0.34
VA	4100	4101	Strip curtains for walk-ins (self-contain	Restauran	2014	2054	560.87	83.98	2.19	76.93	12%	0.33	11.52	12%	0.38
VA	5000	5000	Base Desktop PC	Restauran	2014	2054	5.69	1.11	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5000	5001	PC Network Power Management Enab	Restauran	2014	2054	3.14	0.86	2.55	2.55	45%	0.25	0.25	23%	0.02
VA	5000	5002	Energy Star or Better PC	Restauran	2014	2054	2.11	0.65	1.03	3.58	63%	0.20	0.46	41%	0.04
VA	5100	5100	Base Laptop PC	Restauran	2014	2054	0.23	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5100	5102	Energy Star or Better Laptop	Restauran	2014	2054	0.19	0.04	0.04	0.04	19%	0.01	0.01	19%	0.01
VA	5100	5101	Laptop Network Power Management E	Restauran	2014	2054	0.19	0.04	0.00	0.05	21%	0.00	0.01	21%	1.77
VA	5200	5200	Base Monitor, CRT	Restauran	2014	2054	3.04	0.59	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5200	5201	Energy Star or Better Monitor - CRT	Restauran	2014	2054	1.33	0.26	1.71	1.71	56%	0.33	0.33	56%	0.00
VA	5200	5202	Monitor Power Management Enabling	Restauran	2014	2054	1.01	0.23	0.33	2.03	67%	0.03	0.37	62%	0.03
VA	5200	5203	Plug-load controls - Commercial Sma	Restauran	2014	2054	0.93	0.21	0.08	2.11	69%	0.02	0.38	64%	0.30
VA	5300	5300	Base Monitor, LCD	Restauran	2014	2054	1.27	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5300	5301	Energy Star or Better Monitor - LCD	Restauran	2014	2054	1.02	0.20	0.25	0.25	20%	0.05	0.05	20%	0.01
VA	5300	5302	Monitor Power Management Enabling	Restauran	2014	2054	0.93	0.19	0.09	0.34	27%	0.01	0.06	24%	0.13
VA	5300	5303	Plug-load controls - Commercial Sma	Restauran	2014	2054	0.86	0.19	0.07	0.41	32%	0.00	0.06	25%	0.36
VA	5400	5400	Base Copier	Restauran	2014	2054	2.37	0.46	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5400	5401	Energy Star or Better Copier	Restauran	2014	2054	2.02	0.39	0.35	0.35	15%	0.07	0.07	15%	0.00
VA	5400	5402	Copier Power Management Enabling	Restauran	2014	2054	1.83	0.38	0.19	0.54	23%	0.02	0.09	19%	0.15
VA	5500	5500	Base Multifunction	Restauran	2014	2054	0.90	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5500	5502	ENERGY STAR Multi-Function Printer	Restauran	2014	2054	0.68	0.13	0.23	0.23	25%	0.04	0.04	25%	0.01
VA	5500	5501	Multifunction Power Management Ena	Restauran	2014	2054	0.43	0.11	0.24	0.47	52%	0.02	0.07	39%	0.56
VA	5600	5600	Base Printer	Restauran	2014	2054	1.03	0.20	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5600	5602	ENERGY STAR Printer	Restauran	2014	2054	0.67	0.13	0.36	0.36	35%	0.07	0.07	35%	0.00
VA	5600	5601	Printer Power Management Enabling	Restauran	2014	2054	0.43	0.11	0.24	0.60	58%	0.02	0.09	47%	0.12
VA	5700	5700	Base Data Center/Server Room	Restauran	2014	2054	5.67	1.11	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5700	5701	Data Center Improved Operations	Restauran	2014	2054	5.10	0.99	0.57	0.57	10%	0.11	0.11	10%	0.00
VA	5700	5702	Data Center Best Practices	Restauran	2014	2054	4.45	0.87	0.65	1.22	21%	0.13	0.24	21%	0.00
VA	5700	5703	Data Center State of the Art practices	Restauran	2014	2054	4.20	0.82	0.25	1.46	26%	0.05	0.29	26%	0.00
VA	6000	6000	Base Water Heating	Restauran	2014	2054	61.77	10.42	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	6000	6007	Heat Trap	Restauran	2014	2054	58.57	9.88	3.20	3.20	5%	0.54	0.54	5%	0.01
VA	6000	6002	High Efficiency Water Heater (electric)	Restauran	2014	2054	57.40	9.69	1.17	4.37	7%	0.20	0.74	7%	0.01
VA	6000	6006	Heat Recovery Unit	Restauran	2014	2054	27.55	4.65	29.85	34.22	55%	5.04	5.77	55%	0.01
VA	6000	6004	Tankless Water Heater	Restauran	2014	2054	25.48	4.30	2.07	36.28	59%	0.35	6.12	59%	0.04
VA	6000	6008	Solar Water Heater	Restauran	2014	2054	21.92	3.70	3.57	39.85	65%	0.60	6.72	65%	0.05
VA	6000	6003	Hot Water Pipe Insulation	Restauran	2014	2054	21.58	3.64	0.33	40.18	65%	0.06	6.78	65%	0.06
VA	6000	6001	Demand controlled circulating system	Restauran	2014	2054	20.77	3.51	0.81	40.99	66%	0.14	6.92	66%	0.18
VA	7000	7000	Base Refrigerated Vending Machines	Restauran	2014	2054	4.13	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7000	7001	Vending Misers (Refrigerated units)	Restauran	2014	2054	3.46	0.74	0.66	0.66	16%	0.07	0.07	8%	0.03
VA	7000	7002	Vending Misers (Refrigerated glass-fro	Restauran	2014	2054	3.10	0.71	0.36	1.03	25%	0.04	0.10	12%	0.05
VA	7100	7100	Base Non-Refrigerated Vending Machi	Restauran	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7100	7101	Vending Misers (Non-Refrigerated)	Restauran	2014	2054	0.03	0.01	0.03	0.03	46%	0.00	0.00	23%	0.43
VA	7200	7200	Base Oven	Restauran	2014	2054	28.48	5.84	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7200	7201	Convection Oven	Restauran	2014	2054	21.93	4.50	6.55	6.55	23%	1.34	1.34	23%	0.13
VA	7300	7300	Base Fryer	Restauran	2014	2054	35.82	7.34	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7300	7301	Efficient Fryer	Restauran	2014	2054	33.52	6.87	2.29	2.29	6%	0.47	0.47	6%	0.43
VA	7400	7400	Base Steamer	Restauran	2014	2054	45.52	9.33	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7400	7401	Efficient Steamer	Restauran	2014	2054	13.91	2.85	31.61	31.61	69%	6.48	6.48	69%	0.06
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Restauran	2014	2054	1.84	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 H	Restauran	2014	2054	1.74	0.00	0.10	0.10	6%	0.00	0.00	0%	0.05
VA	8100	8100	Base Heating, Other Electric	Restauran	2014	2054	5.09	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9500	Base Miscellaneous	Restauran	2014	2054	263.18	51.65	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9501	Xmisc	Restauran	2014	2054	263.18	51.65	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EE	Retail	2020	2054	894.58	161.88	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8)	Retail	2020	2054	892.49	161.69	2.09	2.09	0%	0.18	0.18	0%	0.01
VA	1030	1038	High Performance Lighting R/R - 25%	Retail	2020	2054	824.86	152.00	67.63	69.72	8%	9.69	9.87	6%	0.02
VA	1030	1031	ROB 4L4' High Performance T8 (86 W	Retail	2020	2054	739.07	136.48	85.79	155.51	17%	15.52	25.40	16%	0.03
VA	1030	1032	ROB 4L4' Low Watt High Performance	Retail	2020	2054	645.04	119.46	94.03	249.54	28%	17.02	42.41	26%	0.05
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent F	Retail	2020	2054	636.01	119.07	9.03	258.58	29%	0.39	42.81	26%	0.10
VA	1030	1034	ROB 4L4' LED Tube, 2020	Retail	2020	2054	533.53	100.53	102.48	361.05	40%	18.54	61.35	38%	0.31
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Retail	2020	2054	487.98	92.28	45.55	406.60	45%	8.24	69.59	43%	0.26
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EE	Retail	2020	2054	178.68	32.33	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8)	Retail	2020	2054	178.26	32.30	0.42	0.42	0%	0.04	0.04	0%	0.02
VA	1130	1138	High Performance Lighting R/R - 25%	Retail	2020	2054	164.75	30.36	13.51	13.93	8%	1.94	1.97	6%	0.03
VA	1130	1131	ROB 2L4' High Performance T8 (86 W	Retail	2020	2054	147.62	27.26	17.13	31.06	17%	3.10	5.07	16%	0.03
VA	1130	1132	ROB 2L4' Low Watt High Performance	Retail	2020	2054	128.84	23.86	18.78	49.84	28%	3.40	8.47	26%	0.07
VA	1130	1134	ROB 2L4' LED Tube, 2020	Retail	2020	2054	122.61	22.73	6.23	56.07	31%	1.13	9.60	30%	0.25
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Retail	2020	2054	112.14	20.84	10.47	66.54	37%	1.89	11.49	36%	0.31
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent F	Retail	2020	2054	110.57	20.77	1.57	68.11	38%	0.07	11.56	36%	0.20
VA	1200	1200	Base Other Fluorescent Fixture	Retail	2014	2054	1.40	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1200	1203	Lighting Control Tuneup (base other fl	Retail	2014	2054	1.38	0.25	0.02	0.02	1%	0.00	0.00	1%	0.01

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Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	1200	1205	High Performance Lighting R/R - 25%	Retail	2014	2054	1.27	0.24	0.10	0.12	9%	0.01	0.02	7%	0.06
VA	1200	1201	ROB High Performance T8 (base othe	Retail	2014	2054	1.14	0.21	0.13	0.26	18%	0.02	0.04	16%	0.10
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent F	Retail	2014	2054	1.10	0.21	0.04	0.30	21%	0.00	0.04	17%	0.11
VA	1200	1202	ROB Low Watt High Performance T8 (	Retail	2014	2054	0.96	0.18	0.14	0.44	31%	0.03	0.07	27%	0.22
VA	1330	1330	Base Incandescent Flood, 100W to Sc	Retail	2020	2054	338.74	61.29	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1330	1332	LEDs (base incandescent flood) 2020	Retail	2020	2054	59.32	10.73	279.42	279.42	82%	50.56	50.56	82%	0.01
VA	1430	1430	Base Incandescent A-Line Lamp, 72W	Retail	2020	2054	121.95	22.07	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1430	1432	LEDs (base incandescent A-line 72W)	Retail	2020	2054	23.23	4.20	98.72	98.72	81%	17.86	17.86	81%	0.01
VA	1530	1530	Base Incandescent A-Line Lamp, 53W	Retail	2020	2054	89.77	16.24	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1530	1532	LEDs (base incandescent A-line 53W)	Retail	2020	2054	23.51	4.25	66.26	66.26	74%	11.99	11.99	74%	0.01
VA	1630	1630	Base CFL 18W to screw-in replaceme	Retail	2020	2054	99.18	17.95	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1630	1631	LED screw-in replacement (base CFL	Retail	2020	2054	71.71	12.98	27.47	27.47	28%	4.97	4.97	28%	0.06
VA	1730	1730	Base CFL 23W to screw-in replaceme	Retail	2020	2054	126.73	22.93	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1730	1731	LED screw-in replacement (base CFL	Retail	2020	2054	93.78	16.97	32.95	32.95	26%	5.96	5.96	26%	0.05
VA	1800	1800	BaseMetal Halide, 465W	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1850	Base CFL Exit Sign	Retail	2014	2054	11.37	2.06	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1851	LED Exit Sign	Retail	2014	2054	4.99	0.90	6.37	6.37	56%	1.15	1.15	56%	0.04
VA	1900	1900	Base Outdoor High Pressure Sodium 7	Retail	2014	2054	182.10	11.91	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1900	1901	Outdoor Lighting Controls (Photocell/T	Retail	2014	2054	164.09	8.46	18.02	18.02	10%	3.45	3.45	29%	0.05
VA	1900	1902	LED Outdoor Area Lighting	Retail	2014	2054	78.96	2.89	85.13	103.14	57%	5.57	9.02	76%	0.11
VA	1900	1903	Bi-Level LED Outdoor Lighting	Retail	2014	2054	55.87	1.52	23.09	126.23	69%	1.37	10.39	87%	0.74
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton,	Retail	2014	2054	24.24	20.03	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2000	2010	Ceiling/roof Insulation - Chiller	Retail	2014	2054	24.03	19.86	0.21	0.21	1%	0.17	0.17	1%	0.03
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 t	Retail	2014	2054	21.98	18.16	2.05	2.26	9%	1.70	1.87	9%	0.04
VA	2000	2005	Chiller Tune Up/Diagnostics	Retail	2014	2054	21.83	18.10	0.15	2.41	10%	0.06	1.93	10%	0.03
VA	2000	2003	EMS - Chiller	Retail	2014	2054	20.01	17.71	1.82	4.23	17%	0.39	2.32	12%	0.08
VA	2000	2012	Duct Testing/Sealing - Chiller	Retail	2014	2054	16.21	14.57	3.80	8.03	33%	3.14	5.46	27%	0.23
VA	2100	2100	Base DX Packaged System, EER=10.:	Retail	2014	2054	854.18	705.93	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2100	2102	DX Packaged System, EER=13.4, 10 t	Retail	2014	2054	657.71	543.56	196.46	196.46	23%	162.36	162.36	23%	0.04
VA	2100	2111	Economizer Repair - DX	Retail	2014	2054	611.76	489.86	45.95	242.41	28%	53.70	216.06	31%	0.08
VA	2100	2107	Cool Roof - DX	Retail	2014	2054	584.59	467.41	27.18	269.59	32%	22.46	238.52	34%	0.12
VA	2100	2108	Optimize Controls - DX	Retail	2014	2054	574.97	465.35	9.61	279.20	33%	2.06	240.58	34%	0.10
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Retail	2014	2054	572.65	464.36	2.33	281.53	33%	0.99	241.57	34%	0.15
VA	2100	2109	Economizer - DX	Retail	2014	2054	523.89	453.91	48.76	330.29	39%	10.45	252.01	36%	0.13
VA	2100	2112	Duct Testing/Sealing - DX	Retail	2014	2054	492.03	427.59	31.85	362.14	42%	26.32	278.34	39%	0.31
VA	2100	2106	Prog. Thermostat - DX	Retail	2014	2054	478.43	424.67	13.60	375.74	44%	2.91	281.25	40%	0.18
VA	2100	2115	Window Film (Standard) - DX	Retail	2014	2054	476.68	423.23	1.75	377.50	44%	1.45	282.70	40%	0.38
VA	2100	2110	Dual Enthalpy Economizer Replaces D	Retail	2014	2054	476.48	423.18	0.20	377.70	44%	0.04	282.74	40%	0.29
VA	2100	2114	Duct/Pipe Insulation - DX	Retail	2014	2054	472.98	420.29	3.50	381.20	45%	2.89	285.64	40%	3.45
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF	Retail	2014	2054	317.23	262.17	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HS	Retail	2014	2054	278.00	229.75	39.23	39.23	12%	32.42	32.42	12%	0.03
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Retail	2014	2054	55.95	46.24	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Retail	2014	2054	578.78	162.16	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Retail	2014	2054	569.62	159.59	9.16	9.16	2%	2.57	2.57	2%	0.02
VA	3000	3002	Variable Speed Drive Control, 5 HP	Retail	2014	2054	403.89	147.97	165.73	174.89	30%	11.62	14.18	9%	0.02
VA	3000	3003	Demand Controlled Ventilation	Retail	2014	2054	361.48	125.40	42.41	217.30	38%	22.57	36.76	23%	1.14
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0	Retail	2014	2054	20.17	5.65	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3100	3104	Electronically Commutated Motors (EC	Retail	2014	2054	17.26	4.92	2.91	2.91	14%	0.73	0.73	13%	0.03
VA	3100	3103	Air Handler Optimization, 15 HP	Retail	2014	2054	15.54	4.80	1.73	4.63	23%	0.12	0.85	15%	0.03
VA	3100	3102	Variable Speed Drive Control, 15 HP	Retail	2014	2054	11.02	4.48	4.52	9.15	45%	0.32	1.17	21%	0.07
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Retail	2014	2054	10.99	4.47	0.03	9.18	46%	0.01	1.18	21%	0.20
VA	3100	3105	Energy Recovery Ventilation (ERV)	Retail	2014	2054	10.23	4.07	0.75	9.94	49%	0.40	1.58	28%	0.45
VA	3100	3107	Demand Controlled Ventilation	Retail	2014	2054	9.16	3.50	1.07	11.01	55%	0.57	2.15	38%	1.57
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0	Retail	2014	2054	20.17	5.65	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3203	Air Handler Optimization, 40 HP	Retail	2014	2054	18.15	5.51	2.02	2.02	10%	0.14	0.14	3%	0.02
VA	3200	3202	Variable Speed Drive Control, 40 HP	Retail	2014	2054	12.87	5.14	5.28	7.30	36%	0.37	0.51	9%	0.06
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Retail	2014	2054	12.85	5.13	0.03	7.32	36%	0.01	0.52	9%	0.27
VA	3200	3204	Demand Controlled Ventilation	Retail	2014	2054	11.50	4.41	1.35	8.67	43%	0.72	1.24	22%	1.25
VA	4000	4000	Base Built-Up Refrigeration System	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4100	Base Self-Contained Refrigeration	Retail	2014	2054	466.01	70.84	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4103	Night covers for display cases (self-co	Retail	2014	2054	457.33	69.52	8.69	8.69	2%	1.32	1.32	2%	0.01
VA	4100	4109	Energy-Star Freezer, glass door	Retail	2014	2054	455.44	69.23	1.88	10.57	2%	0.29	1.61	2%	0.04
VA	4100	4104	Freezer-Cooler Replacement Gaskets	Retail	2014	2054	445.67	67.75	9.77	20.34	4%	1.49	3.09	4%	0.04
VA	4100	4107	Energy-Star Freezer, solid door	Retail	2014	2054	444.90	67.63	0.77	21.11	5%	0.12	3.21	5%	0.09
VA	4100	4108	Energy-Star Refrigerator, glass door	Retail	2014	2054	437.40	66.49	7.50	28.61	6%	1.14	4.35	6%	0.11
VA	4100	4106	Energy-Star Refrigerator, solid door	Retail	2014	2054	436.20	66.30	1.21	29.82	6%	0.18	4.53	6%	0.12
VA	4100	4112	Reach-in unit occupancy sensors	Retail	2014	2054	435.01	66.12	1.19	31.00	7%	0.18	4.71	7%	0.28
VA	4100	4110	Energy Star Ice Machines	Retail	2014	2054	434.20	66.00	0.81	31.81	7%	0.12	4.84	7%	0.32
VA	4100	4105	Bi-level LED Case Lighting (self-conta	Retail	2014	2054	432.07	65.68	2.14	33.94	7%	0.32	5.16	7%	0.31
VA	4100	4101	Strip curtains for walk-ins (self-contain	Retail	2014	2054	431.63	65.61	0.44	34.38	7%	0.07	5.23	7%	1.93
VA	5000	5000	Base Desktop PC	Retail	2014	2054	21.51	3.84	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5000	5002	Energy Star or Better PC	Retail	2014	2054	18.25	3.26	3.26	3.26	15%	0.58	0.58	15%	0.01

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Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	5000	5001	PC Network Power Management Enab	Retail	2014	2054	10.03	2.51	8.22	11.48	53%	0.75	1.33	35%	0.02
VA	5100	5100	Base Laptop PC	Retail	2014	2054	0.89	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5100	5102	Energy Star or Better Laptop	Retail	2014	2054	0.72	0.13	0.17	0.17	19%	0.03	0.03	19%	0.01
VA	5100	5101	Laptop Network Power Management E	Retail	2014	2054	0.71	0.13	0.01	0.18	21%	0.00	0.03	21%	1.38
VA	5200	5200	Base Monitor, CRT	Retail	2014	2054	4.90	0.87	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5200	5201	Energy Star or Better Monitor - CRT	Retail	2014	2054	2.15	0.38	2.75	2.75	56%	0.49	0.49	56%	0.00
VA	5200	5202	Monitor Power Management Enabling	Retail	2014	2054	1.80	0.35	0.35	3.10	63%	0.03	0.52	60%	0.02
VA	5200	5203	Plug-load controls - Commercial Smar	Retail	2014	2054	1.66	0.33	0.14	3.24	66%	0.03	0.55	63%	0.21
VA	5300	5300	Base Monitor, LCD	Retail	2014	2054	3.06	0.55	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5300	5301	Energy Star or Better Monitor - LCD	Retail	2014	2054	2.64	0.47	0.42	0.42	14%	0.08	0.08	14%	0.01
VA	5300	5302	Monitor Power Management Enabling	Retail	2014	2054	2.54	0.46	0.10	0.53	17%	0.01	0.09	16%	0.09
VA	5300	5303	Plug-load controls - Commercial Smar	Retail	2014	2054	2.34	0.45	0.19	0.72	24%	0.01	0.09	17%	0.25
VA	5400	5400	Base Copier	Retail	2014	2054	10.62	1.90	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5400	5401	Energy Star or Better Copier	Retail	2014	2054	9.10	1.62	1.52	1.52	14%	0.27	0.27	14%	0.00
VA	5400	5402	Copier Power Management Enabling	Retail	2014	2054	8.67	1.58	0.43	1.95	18%	0.04	0.31	16%	0.11
VA	5500	5500	Base Multifunction	Retail	2014	2054	1.62	0.29	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5500	5502	ENERGY STAR Multi-Function Printer	Retail	2014	2054	1.22	0.22	0.41	0.41	25%	0.07	0.07	25%	0.01
VA	5500	5501	Multifunction Power Management Ena	Retail	2014	2054	1.05	0.20	0.17	0.58	36%	0.02	0.09	30%	0.28
VA	5600	5600	Base Printer	Retail	2014	2054	4.65	0.83	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5600	5602	ENERGY STAR Printer	Retail	2014	2054	3.03	0.54	1.62	1.62	35%	0.29	0.29	35%	0.00
VA	5600	5601	Printer Power Management Enabling	Retail	2014	2054	2.60	0.50	0.43	2.04	44%	0.04	0.33	39%	0.06
VA	5700	5700	Base Data Center/Server Room	Retail	2014	2054	16.72	2.98	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5700	5701	Data Center Improved Operations	Retail	2014	2054	15.05	2.69	1.67	1.67	10%	0.30	0.30	10%	0.00
VA	5700	5702	Data Center Best Practices	Retail	2014	2054	13.13	2.34	1.91	3.59	21%	0.34	0.64	21%	0.00
VA	5700	5703	Data Center State of the Art practices	Retail	2014	2054	12.40	2.21	0.74	4.32	26%	0.13	0.77	26%	0.00
VA	6000	6000	Base Water Heating	Retail	2014	2054	88.87	14.28	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	6000	6007	Heat Trap	Retail	2014	2054	84.27	13.54	4.60	4.60	5%	0.74	0.74	5%	0.02
VA	6000	6002	High Efficiency Water Heater (electric)	Retail	2014	2054	82.61	13.27	1.66	6.26	7%	0.27	1.01	7%	0.04
VA	6000	6004	Tankless Water Heater	Retail	2014	2054	76.41	12.28	6.20	12.46	14%	1.00	2.00	14%	0.07
VA	6000	6008	Solar Water Heater	Retail	2014	2054	74.27	11.93	2.14	14.60	16%	0.34	2.35	16%	0.08
VA	6000	6003	Hot Water Pipe Insulation	Retail	2014	2054	73.05	11.74	1.22	15.82	18%	0.20	2.54	18%	0.08
VA	6000	6006	Heat Recovery Unit	Retail	2014	2054	70.68	11.35	2.37	18.19	20%	0.38	2.92	20%	0.09
VA	6000	6001	Demand controlled circulating systems	Retail	2014	2054	69.59	11.18	1.09	19.28	22%	0.17	3.10	22%	0.13
VA	7000	7000	Base Refrigerated Vending Machines	Retail	2014	2054	22.16	3.96	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7000	7001	Vending Misers (Refrigerated units)	Retail	2014	2054	19.04	3.68	3.13	3.13	14%	0.28	0.28	7%	0.02
VA	7000	7002	Vending Misers (Refrigerated glass-fro	Retail	2014	2054	17.35	3.53	1.69	4.82	22%	0.15	0.43	11%	0.04
VA	7100	7100	Base Non-Refrigerated Vending Machi	Retail	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7100	7101	Vending Misers (Non-Refrigerated)	Retail	2014	2054	0.06	0.02	0.04	0.04	40%	0.00	0.00	20%	0.40
VA	7200	7200	Base Oven	Retail	2014	2054	14.10	2.55	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7200	7201	Convection Oven	Retail	2014	2054	10.86	1.96	3.24	3.24	23%	0.59	0.59	23%	0.13
VA	7300	7300	Base Fryer	Retail	2014	2054	2.58	0.47	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7300	7301	Efficient Fryer	Retail	2014	2054	2.41	0.44	0.16	0.16	6%	0.03	0.03	6%	0.43
VA	7400	7400	Base Steamer	Retail	2014	2054	10.12	1.83	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7400	7401	Efficient Steamer	Retail	2014	2054	3.61	0.65	6.51	6.51	64%	1.18	1.18	64%	0.05
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Retail	2014	2054	13.99	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HS	Retail	2014	2054	13.20	0.00	0.79	0.79	6%	0.00	0.00	0%	0.04
VA	8100	8100	Base Heating, Other Electric	Retail	2014	2054	51.10	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9500	Base Miscellaneous	Retail	2014	2054	1,389.43	248.50	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9501	Xmisc	Retail	2014	2054	1,389.43	248.50	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB	Grocery	2020	2054	144.92	22.11	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8)	Grocery	2020	2054	144.77	22.10	0.15	0.15	0%	0.01	0.01	0%	0.01
VA	1030	1038	High Performance Lighting R/R - 25%	Grocery	2020	2054	133.68	20.77	11.09	11.24	8%	1.33	1.34	6%	0.01
VA	1030	1031	ROB 4L4' High Performance T8 (86 W	Grocery	2020	2054	119.99	18.69	13.69	24.93	17%	2.09	3.42	15%	0.03
VA	1030	1032	ROB 4L4' Low Watt High Performance	Grocery	2020	2054	104.72	16.36	15.27	40.20	28%	2.33	5.75	26%	0.07
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent F	Grocery	2020	2054	103.17	16.30	1.56	41.76	29%	0.06	5.81	26%	0.10
VA	1030	1034	ROB 4L4' LED Tube, 2020	Grocery	2020	2054	86.54	13.77	16.62	58.38	40%	2.54	8.34	38%	0.42
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Grocery	2020	2054	79.16	12.64	7.39	65.77	45%	1.13	9.47	43%	0.35
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB	Grocery	2020	2054	0.51	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8)	Grocery	2020	2054	0.51	0.08	0.00	0.00	0%	0.00	0.00	0%	0.01
VA	1130	1138	High Performance Lighting R/R - 25%	Grocery	2020	2054	0.47	0.07	0.04	0.04	8%	0.00	0.00	6%	0.02
VA	1130	1131	ROB 2L4' High Performance T8 (86 W	Grocery	2020	2054	0.42	0.07	0.05	0.09	17%	0.01	0.01	15%	0.04
VA	1130	1132	ROB 2L4' Low Watt High Performance	Grocery	2020	2054	0.37	0.06	0.05	0.14	27%	0.01	0.02	26%	0.09
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent F	Grocery	2020	2054	0.36	0.06	0.01	0.15	29%	0.00	0.02	26%	0.17
VA	1130	1134	ROB 2L4' LED Tube, 2020	Grocery	2020	2054	0.35	0.05	0.02	0.16	32%	0.00	0.02	29%	0.34
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Grocery	2020	2054	0.32	0.05	0.03	0.19	38%	0.00	0.03	35%	0.43
VA	1200	1200	Base Other Fluorescent Fixture	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1330	1330	Base Incandescent Flood, 100W to Sc	Grocery	2020	2054	44.35	6.77	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1330	1332	LEDs (base incandescent flood) 2020	Grocery	2020	2054	16.64	2.54	27.71	27.71	62%	4.23	4.23	62%	0.00
VA	1430	1430	Base Incandescent A-Line Lamp, 72W	Grocery	2020	2054	15.97	2.44	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1430	1432	LEDs (base incandescent A-line 72W)	Grocery	2020	2054	6.38	0.97	9.59	9.59	60%	1.46	1.46	60%	0.01
VA	1530	1530	Base Incandescent A-Line Lamp, 53W	Grocery	2020	2054	11.75	1.79	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1530	1532	LEDs (base incandescent A-line 53W)	Grocery	2020	2054	5.89	0.90	5.87	5.87	50%	0.90	0.90	50%	0.01

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Existing

Year 2020

Sgmt	Base Number	Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	1630	1630	Base CFL 18W to screw-in replaceme	Grocery	2020	2054	3.18	0.48	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1630	1631	LED screw-in replacement (base CFL	Grocery	2020	2054	2.30	0.35	0.88	0.88	28%	0.13	0.13	28%	0.10
VA	1730	1730	Base CFL 23W to screw-in replaceme	Grocery	2020	2054	4.06	0.62	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1730	1731	LED screw-in replacement (base CFL	Grocery	2020	2054	3.01	0.46	1.06	1.06	26%	0.16	0.16	26%	0.07
VA	1800	1800	BaseMetal Halide, 465W	Grocery	2014	2054	7.60	1.16	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1800	1805	High Performance Lighting R/R - 25%	Grocery	2014	2054	7.02	1.09	0.58	0.58	8%	0.07	0.07	6%	0.01
VA	1800	1801	T5 (240W) (base metal halide)	Grocery	2014	2054	4.64	0.73	2.37	2.95	39%	0.36	0.43	37%	0.01
VA	1800	1806	Occupancy Sensor, High Bay T5	Grocery	2014	2054	4.49	0.72	0.16	3.11	41%	0.01	0.44	38%	0.03
VA	1850	1850	Base CFL Exit Sign	Grocery	2014	2054	0.30	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1851	LED Exit Sign	Grocery	2014	2054	0.29	0.04	0.01	0.01	2%	0.00	0.00	2%	0.03
VA	1900	1900	Base Outdoor High Pressure Sodium 2	Grocery	2014	2054	2.31	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1900	1901	Outdoor Lighting Controls (Photocell/T	Grocery	2014	2054	2.05	0.04	0.26	0.26	11%	0.02	0.02	36%	0.08
VA	1900	1902	LED Outdoor Area Lighting	Grocery	2014	2054	0.99	0.01	1.07	1.33	57%	0.03	0.05	82%	0.17
VA	1900	1903	Bi-Level LED Outdoor Lighting	Grocery	2014	2054	0.70	0.00	0.29	1.62	70%	0.01	0.05	94%	1.12
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton,	Grocery	2014	2054	4.02	2.62	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 t	Grocery	2014	2054	3.67	2.40	0.34	0.34	9%	0.22	0.22	9%	0.04
VA	2000	2005	Chiller Tune Up/Diagnostics	Grocery	2014	2054	3.67	2.40	0.01	0.35	9%	0.00	0.23	9%	0.03
VA	2000	2013	High Efficiency Chiller Motors	Grocery	2014	2054	3.55	2.32	0.12	0.47	12%	0.08	0.30	12%	0.06
VA	2000	2006	VSD for Chiller Pumps and Towers	Grocery	2014	2054	3.19	2.20	0.36	0.83	21%	0.12	0.42	16%	0.05
VA	2000	2002	Window Film (Standard) - Chiller	Grocery	2014	2054	2.97	2.06	0.22	1.05	26%	0.14	0.56	21%	0.08
VA	2000	2003	EMS - Chiller	Grocery	2014	2054	2.67	2.01	0.29	1.34	33%	0.05	0.61	23%	0.08
VA	2000	2004	Cool Roof - Chiller	Grocery	2014	2054	2.47	1.88	0.21	1.55	39%	0.13	0.74	28%	0.12
VA	2000	2012	Duct Testing/Sealing - Chiller	Grocery	2014	2054	2.00	1.57	0.47	2.02	50%	0.31	1.05	40%	0.25
VA	2000	2011	Duct/Pipe Insulation - Chiller	Grocery	2014	2054	1.97	1.55	0.03	2.05	51%	0.02	1.07	41%	3.91
VA	2000	2008	New Economizer - Chiller	Grocery	2014	2054	1.97	1.55	0.00	2.05	51%	0.00	1.07	41%	#######
VA	2100	2100	Base DX Packaged System, EER=10.:	Grocery	2014	2054	124.62	81.40	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2100	2113	Ceiling/roof Insulation - DX	Grocery	2014	2054	124.46	81.29	0.16	0.16	0%	0.11	0.11	0%	0.03
VA	2100	2102	DX Packaged System, EER=13.4, 10	Grocery	2014	2054	95.83	62.59	28.63	28.79	23%	18.70	18.80	23%	0.03
VA	2100	2115	Window Film (Standard) - DX	Grocery	2014	2054	89.16	58.24	6.67	35.45	28%	4.36	23.16	28%	0.08
VA	2100	2107	Cool Roof - DX	Grocery	2014	2054	82.27	53.74	6.89	42.34	34%	4.50	27.66	34%	0.11
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Grocery	2014	2054	82.18	53.71	0.09	42.44	34%	0.03	27.69	34%	0.12
VA	2100	2108	Optimize Controls - DX	Grocery	2014	2054	80.74	53.48	1.44	43.88	35%	0.23	27.92	34%	0.10
VA	2100	2106	Prog. Thermostat - DX	Grocery	2014	2054	79.54	53.29	1.20	45.08	36%	0.19	28.11	35%	0.12
VA	2100	2112	Duct Testing/Sealing - DX	Grocery	2014	2054	74.70	50.13	4.84	49.92	40%	3.16	31.27	38%	0.24
VA	2100	2110	Dual Enthalpy Economizer Replaces D	Grocery	2014	2054	74.68	50.12	0.02	49.94	40%	0.00	31.27	38%	0.70
VA	2100	2111	Economizer Repair - DX	Grocery	2014	2054	73.87	49.35	0.81	50.75	41%	0.77	32.04	39%	1.36
VA	2100	2109	Economizer - DX	Grocery	2014	2054	73.86	49.35	0.01	50.76	41%	0.00	32.04	39%	1.70
VA	2100	2114	Duct/Pipe Insulation - DX	Grocery	2014	2054	72.75	48.63	1.11	51.87	42%	0.72	32.77	40%	3.28
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF	Grocery	2014	2054	11.12	7.26	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 H	Grocery	2014	2054	9.75	6.37	1.38	1.38	12%	0.90	0.90	12%	0.03
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Grocery	2014	2054	5.16	3.37	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Grocery	2014	2054	121.17	25.96	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3002	Variable Speed Drive Control, 5 HP	Grocery	2014	2054	83.66	24.01	37.51	37.51	31%	1.95	1.95	7%	0.03
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Grocery	2014	2054	82.22	23.70	1.44	38.95	32%	0.31	2.25	9%	0.06
VA	3000	3003	Demand Controlled Ventilation	Grocery	2014	2054	70.52	18.68	11.70	50.65	42%	5.02	7.27	28%	1.14
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0	Grocery	2014	2054	119.80	25.66	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3203	Air Handler Optimization, 40 HP	Grocery	2014	2054	107.44	25.02	12.37	12.37	10%	0.64	0.64	3%	0.02
VA	3200	3204	Demand Controlled Ventilation	Grocery	2014	2054	92.15	18.46	15.28	27.65	23%	6.56	7.20	28%	0.86
VA	4000	4000	Base Built-Up Refrigeration System	Grocery	2014	2054	504.16	81.17	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4000	4007	Efficient compressor motor	Grocery	2014	2054	503.18	81.01	0.98	0.98	0%	0.16	0.16	0%	0.02
VA	4000	4011	Demand Hot Gas Defrost	Grocery	2014	2054	490.60	78.98	12.58	13.56	3%	2.03	2.18	3%	0.02
VA	4000	4006	Electronically commutated evaporator	Grocery	2014	2054	455.70	73.36	34.90	48.46	10%	5.62	7.80	10%	0.02
VA	4000	4009	Floating head pressure controls	Grocery	2014	2054	454.58	73.27	1.12	49.58	10%	0.09	7.89	10%	0.02
VA	4000	4002	Strip curtains for walk-ins (built-up)	Grocery	2014	2054	450.63	72.64	3.94	53.52	11%	0.63	8.53	11%	0.04
VA	4000	4013	Anti-sweat (humidistat) controls	Grocery	2014	2054	444.35	72.13	6.29	59.81	12%	0.51	9.03	11%	0.04
VA	4000	4014	Freezer-Cooler Replacement Gaskets	Grocery	2014	2054	429.18	69.69	15.16	74.98	15%	2.44	11.47	14%	0.05
VA	4000	4018	Oversized Air Cooled Condenser	Grocery	2014	2054	411.11	66.78	18.07	93.05	18%	2.91	14.38	18%	0.08
VA	4000	4004	Night covers for display cases	Grocery	2014	2054	389.44	65.04	21.67	114.72	23%	1.74	16.13	20%	0.07
VA	4000	4001	High-efficiency fan motors	Grocery	2014	2054	375.71	62.83	13.73	128.45	25%	2.21	18.34	23%	0.11
VA	4000	4008	Compressor VSD retrofit	Grocery	2014	2054	352.42	60.95	23.29	151.74	30%	1.88	20.21	25%	0.10
VA	4000	4010	Refrigeration Commissioning	Grocery	2014	2054	350.61	60.66	1.81	153.55	30%	0.29	20.50	25%	0.18
VA	4000	4005	Evaporator fan controller for MT walk-i	Grocery	2014	2054	350.36	60.64	0.25	153.80	31%	0.02	20.52	25%	0.24
VA	4000	4017	Multiplex Compressor System	Grocery	2014	2054	344.19	59.65	6.17	159.97	32%	0.99	21.52	27%	0.26
VA	4000	4016	LED Display Lighting	Grocery	2014	2054	317.93	55.42	26.26	186.23	37%	4.23	25.74	32%	0.43
VA	4000	4015	High R-Value Glass Doors	Grocery	2014	2054	313.01	54.63	4.92	191.15	38%	0.79	26.54	33%	1.94
VA	4100	4100	Base Self-Contained Refrigeration	Grocery	2014	2054	57.45	9.25	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4103	Night covers for display cases (self-co	Grocery	2014	2054	56.06	9.03	1.39	1.39	2%	0.22	0.22	2%	0.00
VA	4100	4104	Freezer-Cooler Replacement Gaskets	Grocery	2014	2054	55.32	8.91	0.74	2.13	4%	0.12	0.34	4%	0.01
VA	4100	4109	Energy-Star Freezer, glass door	Grocery	2014	2054	52.33	8.43	2.99	5.12	9%	0.48	0.82	9%	0.03
VA	4100	4107	Energy-Star Freezer, solid door	Grocery	2014	2054	51.16	8.24	1.18	6.29	11%	0.19	1.01	11%	0.07
VA	4100	4108	Energy-Star Refrigerator, glass door	Grocery	2014	2054	51.09	8.23	0.06	6.36	11%	0.01	1.02	11%	0.09

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Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	4100	4106	Energy-Star Refrigerator, solid door	Grocery	2014	2054	51.07	8.22	0.03	6.38	11%	0.00	1.03	11%	0.09
VA	4100	4110	Energy Star Ice Machines	Grocery	2014	2054	51.05	8.22	0.02	6.40	11%	0.00	1.03	11%	0.24
VA	4100	4112	Reach-in unit occupancy sensors	Grocery	2014	2054	51.04	8.22	0.01	6.41	11%	0.00	1.03	11%	0.29
VA	4100	4105	Bi-level LED Case Lighting (self-conta	Grocery	2014	2054	50.70	8.16	0.35	6.75	12%	0.06	1.09	12%	0.33
VA	4100	4101	Strip curtains for walk-ins (self-contain	Grocery	2014	2054	50.52	8.13	0.17	6.93	12%	0.03	1.12	12%	0.64
VA	5000	5000	Base Desktop PC	Grocery	2014	2054	2.29	0.41	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5000	5001	PC Network Power Management Enab	Grocery	2014	2054	1.25	0.32	1.03	1.03	45%	0.09	0.09	23%	0.02
VA	5000	5002	Energy Star or Better PC	Grocery	2014	2054	0.85	0.24	0.41	1.44	63%	0.07	0.17	41%	0.05
VA	5100	5100	Base Laptop PC	Grocery	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5100	5102	Energy Star or Better Laptop	Grocery	2014	2054	0.06	0.01	0.01	0.01	19%	0.00	0.00	19%	0.02
VA	5100	5101	Laptop Network Power Management E	Grocery	2014	2054	0.06	0.01	0.00	0.01	21%	0.00	0.00	21%	2.07
VA	5200	5200	Base Monitor, CRT	Grocery	2014	2054	0.43	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5200	5201	Energy Star or Better Monitor - CRT	Grocery	2014	2054	0.19	0.03	0.24	0.24	56%	0.04	0.04	56%	0.00
VA	5200	5202	Monitor Power Management Enabling	Grocery	2014	2054	0.12	0.03	0.07	0.32	73%	0.01	0.05	65%	0.04
VA	5200	5203	Plug-load controls - Commercial Smar	Grocery	2014	2054	0.11	0.03	0.01	0.33	76%	0.00	0.05	67%	0.44
VA	5300	5300	Base Monitor, LCD	Grocery	2014	2054	0.68	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5300	5301	Energy Star or Better Monitor - LCD	Grocery	2014	2054	0.54	0.10	0.14	0.14	20%	0.02	0.02	20%	0.02
VA	5300	5302	Monitor Power Management Enabling	Grocery	2014	2054	0.47	0.09	0.07	0.21	31%	0.01	0.03	26%	0.16
VA	5300	5303	Plug-load controls - Commercial Smar	Grocery	2014	2054	0.43	0.09	0.04	0.25	36%	0.00	0.03	27%	0.45
VA	5400	5400	Base Copier	Grocery	2014	2054	0.55	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5400	5401	Energy Star or Better Copier	Grocery	2014	2054	0.44	0.08	0.11	0.11	20%	0.02	0.02	20%	0.00
VA	5400	5402	Copier Power Management Enabling	Grocery	2014	2054	0.38	0.07	0.06	0.17	31%	0.01	0.03	26%	0.20
VA	5500	5500	Base Multifunction	Grocery	2014	2054	0.22	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5500	5502	ENERGY STAR Multi-Function Printer	Grocery	2014	2054	0.16	0.03	0.05	0.05	25%	0.01	0.01	25%	0.01
VA	5500	5501	Multifunction Power Management Ena	Grocery	2014	2054	0.12	0.03	0.05	0.10	46%	0.00	0.01	36%	0.53
VA	5600	5600	Base Printer	Grocery	2014	2054	0.18	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5600	5602	ENERGY STAR Printer	Grocery	2014	2054	0.12	0.02	0.06	0.06	35%	0.01	0.01	35%	0.00
VA	5600	5601	Printer Power Management Enabling	Grocery	2014	2054	0.09	0.02	0.03	0.10	53%	0.00	0.01	44%	0.12
VA	5700	5700	Base Data Center/Server Room	Grocery	2014	2054	0.45	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5700	5701	Data Center Improved Operations	Grocery	2014	2054	0.40	0.07	0.04	0.04	10%	0.01	0.01	10%	0.00
VA	5700	5702	Data Center Best Practices	Grocery	2014	2054	0.35	0.06	0.05	0.10	21%	0.01	0.02	21%	0.00
VA	5700	5703	Data Center State of the Art practices	Grocery	2014	2054	0.33	0.06	0.02	0.12	26%	0.00	0.02	26%	0.00
VA	6000	6000	Base Water Heating	Grocery	2014	2054	13.04	2.10	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	6000	6007	Heat Trap	Grocery	2014	2054	12.36	1.99	0.68	0.68	5%	0.11	0.11	5%	0.02
VA	6000	6002	High Efficiency Water Heater (electric)	Grocery	2014	2054	12.11	1.95	0.25	0.92	7%	0.04	0.15	7%	0.05
VA	6000	6006	Heat Recovery Unit	Grocery	2014	2054	5.82	0.94	6.30	7.22	55%	1.01	1.16	55%	0.06
VA	6000	6004	Tankless Water Heater	Grocery	2014	2054	5.38	0.87	0.44	7.66	59%	0.07	1.23	59%	0.16
VA	6000	6008	Solar Water Heater	Grocery	2014	2054	4.63	0.74	0.75	8.41	65%	0.12	1.35	65%	0.19
VA	6000	6001	Demand controlled circulating system	Grocery	2014	2054	4.46	0.72	0.17	8.58	66%	0.03	1.38	66%	0.22
VA	6000	6003	Hot Water Pipe Insulation	Grocery	2014	2054	4.37	0.70	0.09	8.67	66%	0.01	1.39	66%	0.23
VA	7000	7000	Base Refrigerated Vending Machines	Grocery	2014	2054	11.46	1.82	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7000	7001	Vending Misers (Refrigerated units)	Grocery	2014	2054	9.75	1.69	1.71	1.71	15%	0.13	0.13	7%	0.02
VA	7000	7002	Vending Misers (Refrigerated glass-fro	Grocery	2014	2054	8.82	1.61	0.92	2.63	23%	0.07	0.21	11%	0.04
VA	7100	7100	Base Non-Refrigerated Vending Machi	Grocery	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7100	7101	Vending Misers (Non-Refrigerated)	Grocery	2014	2054	0.01	0.00	0.01	0.01	43%	0.00	0.00	21%	0.40
VA	7200	7200	Base Oven	Grocery	2014	2054	12.90	1.79	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7300	7300	Base Fryer	Grocery	2014	2054	16.78	2.33	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7400	7400	Base Steamer	Grocery	2014	2054	23.43	3.26	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7400	7401	Efficient Steamer	Grocery	2014	2054	7.16	1.00	16.27	16.27	69%	2.26	2.26	69%	0.06
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Grocery	2014	2054	0.56	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 H	Grocery	2014	2054	0.53	0.00	0.03	0.03	6%	0.00	0.00	0%	0.04
VA	8100	8100	Base Heating, Other Electric	Grocery	2014	2054	13.76	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9500	Base Miscellaneous	Grocery	2014	2054	131.26	20.87	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9501	Xmisc	Grocery	2014	2054	131.26	20.87	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB	Warehous	2020	2054	448.71	79.75	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1031	ROB 4L4' High Performance T8 (86 W	Warehous	2020	2054	411.35	73.11	37.36	37.36	8%	6.64	6.64	8%	0.02
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8)	Warehous	2020	2054	404.59	72.51	6.77	44.12	10%	0.60	7.24	9%	0.03
VA	1030	1032	ROB 4L4' Low Watt High Performance	Warehous	2020	2054	353.11	63.36	51.48	95.60	21%	9.15	16.38	21%	0.04
VA	1030	1038	High Performance Lighting R/R - 25%	Warehous	2020	2054	326.55	59.60	26.56	122.16	27%	3.77	20.15	25%	0.05
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent	Warehous	2020	2054	319.89	59.30	6.66	128.82	29%	0.29	20.44	26%	0.09
VA	1030	1034	ROB 4L4' LED Tube, 2020	Warehous	2020	2054	268.34	50.14	51.54	180.36	40%	9.16	29.60	37%	0.28
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Warehous	2020	2054	245.44	46.07	22.91	203.27	45%	4.07	33.67	42%	0.24
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB	Warehous	2020	2054	3.06	0.54	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1130	1131	ROB 2L4' High Performance T8 (86 W	Warehous	2020	2054	2.74	0.49	0.32	0.32	10%	0.06	0.06	10%	0.03
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8)	Warehous	2020	2054	2.70	0.48	0.05	0.36	12%	0.00	0.06	11%	0.03
VA	1130	1138	High Performance Lighting R/R - 25%	Warehous	2020	2054	2.49	0.45	0.20	0.56	18%	0.03	0.09	16%	0.05
VA	1130	1132	ROB 2L4' Low Watt High Performance	Warehous	2020	2054	2.18	0.40	0.32	0.88	29%	0.06	0.15	27%	0.06
VA	1130	1134	ROB 2L4' LED Tube, 2020	Warehous	2020	2054	2.07	0.38	0.11	0.99	32%	0.02	0.16	30%	0.23
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Warehous	2020	2054	1.90	0.35	0.18	1.16	38%	0.03	0.20	36%	0.29
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent	Warehous	2020	2054	1.86	0.35	0.04	1.20	39%	0.00	0.20	36%	0.18
VA	1200	1200	Base Other Fluorescent Fixture	Warehous	2014	2054	0.46	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1200	1203	Lighting Control Tuneup (base other fl	Warehous	2014	2054	0.42	0.08	0.05	0.05	10%	0.00	0.00	5%	0.00

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Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	1200	1205	High Performance Lighting R/R - 25%	Warehous	2014	2054	0.39	0.07	0.03	0.08	17%	0.00	0.01	10%	0.03
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent R	Warehous	2014	2054	0.36	0.07	0.02	0.10	22%	0.00	0.01	12%	0.09
VA	1200	1201	ROB High Performance T8 (base othe	Warehous	2014	2054	0.33	0.07	0.04	0.14	30%	0.01	0.02	20%	0.11
VA	1200	1202	ROB Low Watt High Performance T8	Warehous	2014	2054	0.28	0.06	0.04	0.18	39%	0.01	0.02	29%	0.23
VA	1330	1330	Base Incandescent Flood, 100W to Sc	Warehous	2020	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1430	1430	Base Incandescent A-Line Lamp, 72W	Warehous	2020	2054	13.47	2.39	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1530	1530	Base Incandescent A-Line Lamp, 53W	Warehous	2020	2054	9.92	1.76	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1630	1630	Base CFL 18W to screw-in replaceme	Warehous	2020	2054	18.72	3.33	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1630	1631	LED screw-in replacement (base CFL	Warehous	2020	2054	13.54	2.41	5.19	5.19	28%	0.92	0.92	28%	0.06
VA	1730	1730	Base CFL 23W to screw-in replaceme	Warehous	2020	2054	23.92	4.25	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1730	1731	LED screw-in replacement (base CFL	Warehous	2020	2054	17.70	3.15	6.22	6.22	26%	1.11	1.11	26%	0.05
VA	1800	1800	BaseMetal Halide, 465W	Warehous	2014	2054	270.51	48.08	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1800	1801	T5 (240W) (base metal halide)	Warehous	2014	2054	179.05	31.82	91.46	91.46	34%	16.25	16.25	34%	0.01
VA	1800	1806	Occupancy Sensor, High Bay T5	Warehous	2014	2054	173.36	31.57	5.70	97.16	36%	0.25	16.50	34%	0.03
VA	1800	1805	High Performance Lighting R/R - 25%	Warehous	2014	2054	160.31	29.72	13.04	110.20	41%	1.85	18.35	38%	0.05
VA	1850	1850	Base CFL Exit Sign	Warehous	2014	2054	1.60	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1851	LED Exit Sign	Warehous	2014	2054	0.50	0.09	1.10	1.10	69%	0.20	0.20	69%	0.05
VA	1900	1900	Base Outdoor High Pressure Sodium	Warehous	2014	2054	100.54	1.36	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1900	1901	Outdoor Lighting Controls (Photocell/T	Warehous	2014	2054	96.70	1.19	3.84	3.84	4%	0.17	0.17	13%	0.05
VA	1900	1902	LED Outdoor Area Lighting	Warehous	2014	2054	46.53	0.51	50.17	54.01	54%	0.68	0.85	63%	0.10
VA	1900	1903	Bi-Level LED Outdoor Lighting	Warehous	2014	2054	32.84	0.34	13.69	67.70	67%	0.17	1.02	75%	0.62
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton,	Warehous	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2100	2100	Base DX Packaged System, EER=10.	Warehous	2014	2054	227.17	216.04	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2100	2113	Ceiling/roof Insulation - DX	Warehous	2014	2054	216.72	206.10	10.45	10.45	5%	9.94	9.94	5%	0.05
VA	2100	2107	Cool Roof - DX	Warehous	2014	2054	200.59	190.77	16.12	26.58	12%	15.33	25.28	12%	0.12
VA	2100	2108	Optimize Controls - DX	Warehous	2014	2054	197.61	189.96	2.98	29.56	13%	0.81	26.09	12%	0.15
VA	2100	2102	DX Packaged System, EER=13.4, 10	Warehous	2014	2054	152.16	146.73	45.45	75.01	33%	43.22	69.31	32%	0.48
VA	2100	2112	Duct Testing/Sealing - DX	Warehous	2014	2054	143.11	138.12	9.05	84.06	37%	8.61	77.92	36%	3.07
VA	2100	2115	Window Film (Standard) - DX	Warehous	2014	2054	136.95	132.27	6.16	90.22	40%	5.86	83.78	39%	2.74
VA	2100	2106	Prog. Thermostat - DX	Warehous	2014	2054	132.85	131.15	4.10	94.33	42%	1.12	84.89	39%	2.02
VA	2100	2114	Duct/Pipe Insulation - DX	Warehous	2014	2054	132.58	130.90	0.26	94.59	42%	0.25	85.14	39%	5.62
VA	2100	2110	Dual Enthalpy Economizer Replaces D	Warehous	2014	2054	132.51	130.88	0.07	94.66	42%	0.02	85.16	39%	3.71
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF	Warehous	2014	2054	122.99	116.97	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HS	Warehous	2014	2054	107.78	102.50	15.21	15.21	12%	14.47	14.47	12%	0.05
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Warehous	2014	2054	5.83	5.54	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Warehous	2014	2054	128.07	39.55	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Warehous	2014	2054	125.86	38.87	2.21	2.21	2%	0.68	0.68	2%	0.05
VA	3000	3002	Variable Speed Drive Control, 5 HP	Warehous	2014	2054	88.87	35.95	36.99	39.20	31%	2.92	3.60	9%	0.04
VA	3000	3003	Demand Controlled Ventilation	Warehous	2014	2054	87.73	35.31	1.14	40.34	31%	0.65	4.25	11%	1.85
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0	Warehous	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0	Warehous	2014	2054	42.48	13.12	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3202	Variable Speed Drive Control, 40 HP	Warehous	2014	2054	29.99	12.13	12.48	12.48	29%	0.98	0.98	8%	0.02
VA	3200	3203	Air Handler Optimization, 40 HP	Warehous	2014	2054	27.06	11.90	2.94	15.42	36%	0.23	1.22	9%	0.06
VA	3200	3204	Demand Controlled Ventilation	Warehous	2014	2054	26.71	11.71	0.35	15.77	37%	0.20	1.41	11%	2.02
VA	4000	4000	Base Built-Up Refrigeration System	Warehous	2014	2054	306.50	58.07	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4000	4018	Oversized Air Cooled Condenser	Warehous	2014	2054	293.60	55.62	12.90	12.90	4%	2.44	2.44	4%	0.03
VA	4000	4010	Refrigeration Commissioning	Warehous	2014	2054	292.09	55.34	1.51	14.41	5%	0.29	2.73	5%	0.06
VA	4000	4006	Electronically commutated evaporator	Warehous	2014	2054	274.39	51.98	17.70	32.11	10%	3.35	6.08	10%	0.11
VA	4000	4005	Evaporator fan controller for MT walk-	Warehous	2014	2054	274.34	51.98	0.05	32.16	10%	0.01	6.09	10%	0.19
VA	4000	4002	Strip curtains for walk-ins (built-up)	Warehous	2014	2054	273.17	51.76	1.17	33.33	11%	0.22	6.31	11%	0.18
VA	4000	4001	High-efficiency fan motors	Warehous	2014	2054	264.80	50.17	8.37	41.70	14%	1.59	7.90	14%	0.45
VA	4100	4100	Base Self-Contained Refrigeration	Warehous	2014	2054	81.91	15.52	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4101	Strip curtains for walk-ins (self-contain	Warehous	2014	2054	81.78	15.49	0.13	0.13	0%	0.03	0.03	0%	0.15
VA	5000	5000	Base Desktop PC	Warehous	2014	2054	19.15	3.19	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5000	5001	PC Network Power Management Enab	Warehous	2014	2054	10.66	2.46	8.49	8.49	44%	0.73	0.73	23%	0.01
VA	5000	5002	Energy Star or Better PC	Warehous	2014	2054	7.16	1.88	3.49	11.98	63%	0.58	1.31	41%	0.03
VA	5100	5100	Base Laptop PC	Warehous	2014	2054	1.36	0.23	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5100	5102	Energy Star or Better Laptop	Warehous	2014	2054	1.10	0.18	0.26	0.26	19%	0.04	0.04	19%	0.01
VA	5100	5101	Laptop Network Power Management E	Warehous	2014	2054	1.08	0.18	0.02	0.28	21%	0.00	0.05	21%	1.24
VA	5200	5200	Base Monitor, CRT	Warehous	2014	2054	3.95	0.66	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5200	5201	Energy Star or Better Monitor - CRT	Warehous	2014	2054	1.73	0.29	2.22	2.22	56%	0.37	0.37	56%	0.00
VA	5200	5202	Monitor Power Management Enabling	Warehous	2014	2054	1.18	0.24	0.55	2.77	70%	0.05	0.42	63%	0.02
VA	5200	5203	Plug-load controls - Commercial Sma	Warehous	2014	2054	1.08	0.23	0.09	2.86	73%	0.02	0.43	66%	0.23
VA	5300	5300	Base Monitor, LCD	Warehous	2014	2054	3.15	0.53	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5300	5301	Energy Star or Better Monitor - LCD	Warehous	2014	2054	2.51	0.42	0.64	0.64	20%	0.11	0.11	20%	0.01
VA	5300	5302	Monitor Power Management Enabling	Warehous	2014	2054	2.48	0.42	0.03	0.67	21%	0.00	0.11	21%	0.08
VA	5300	5303	Plug-load controls - Commercial Sma	Warehous	2014	2054	2.30	0.41	0.18	0.85	27%	0.01	0.12	22%	0.24
VA	5400	5400	Base Copier	Warehous	2014	2054	4.86	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5400	5401	Energy Star or Better Copier	Warehous	2014	2054	4.28	0.71	0.58	0.58	12%	0.10	0.10	12%	0.00
VA	5400	5402	Copier Power Management Enabling	Warehous	2014	2054	4.13	0.70	0.15	0.73	15%	0.01	0.11	14%	0.09
VA	5500	5500	Base Multifunction	Warehous	2014	2054	1.09	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5500	5502	ENERGY STAR Multi-Function Printer	Warehous	2014	2054	0.82	0.14	0.27	0.27	25%	0.05	0.05	25%	0.01

APPENDIX H

Base Avoided Costs

ADDITIVE MEASURE LEVEL RESULTS

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Year 2020

Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	5500	5501	Multifunction Power Management Ena	Warehous	2014	2054	0.74	0.13	0.08	0.35	32%	0.01	0.05	29%	0.24
VA	5600	5600	Base Printer	Warehous	2014	2054	4.88	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5600	5602	ENERGY STAR Printer	Warehous	2014	2054	3.18	0.53	1.70	1.70	35%	0.28	0.28	35%	0.00
VA	5600	5601	Printer Power Management Enabling	Warehous	2014	2054	2.87	0.50	0.31	2.01	41%	0.03	0.31	38%	0.05
VA	5700	5700	Base Data Center/Server Room	Warehous	2014	2054	57.03	9.51	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5700	5701	Data Center Improved Operations	Warehous	2014	2054	51.32	8.56	5.70	5.70	10%	0.95	0.95	10%	0.00
VA	5700	5702	Data Center Best Practices	Warehous	2014	2054	44.79	7.47	6.53	12.23	21%	1.09	2.04	21%	0.00
VA	5700	5703	Data Center State of the Art practices	Warehous	2014	2054	42.29	7.05	2.51	14.74	26%	0.42	2.46	26%	0.00
VA	6000	6000	Base Water Heating	Warehous	2014	2054	21.67	3.40	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	6000	6006	Heat Recovery Unit	Warehous	2014	2054	20.26	3.18	1.41	1.41	7%	0.22	0.22	7%	0.25
VA	6000	6007	Heat Trap	Warehous	2014	2054	19.21	3.01	1.05	2.46	11%	0.16	0.39	11%	0.45
VA	6000	6002	High Efficiency Water Heater (electric)	Warehous	2014	2054	18.83	2.95	0.38	2.84	13%	0.06	0.45	13%	0.93
VA	6000	6004	Tankless Water Heater	Warehous	2014	2054	17.42	2.73	1.41	4.25	20%	0.22	0.67	20%	1.42
VA	6000	6008	Solar Water Heater	Warehous	2014	2054	11.44	1.80	5.97	10.23	47%	0.94	1.60	47%	1.66
VA	6000	6003	Hot Water Pipe Insulation	Warehous	2014	2054	11.40	1.79	0.05	10.27	47%	0.01	1.61	47%	2.54
VA	6000	6001	Demand controlled circulating system	Warehous	2014	2054	11.18	1.75	0.22	10.50	48%	0.03	1.65	48%	2.84
VA	7000	7000	Base Refrigerated Vending Machines	Warehous	2014	2054	14.96	2.82	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7000	7001	Vending Misers (Refrigerated units)	Warehous	2014	2054	13.29	2.66	1.67	1.67	11%	0.16	0.16	6%	0.02
VA	7000	7002	Vending Misers (Refrigerated glass-fro	Warehous	2014	2054	12.40	2.57	0.89	2.57	17%	0.09	0.25	9%	0.04
VA	7100	7100	Base Non-Refrigerated Vending Machi	Warehous	2014	2054	0.62	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7100	7101	Vending Misers (Non-Refrigerated)	Warehous	2014	2054	0.43	0.10	0.20	0.20	32%	0.02	0.02	16%	0.36
VA	7200	7200	Base Oven	Warehous	2014	2054	4.94	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7300	7300	Base Fryer	Warehous	2014	2054	10.26	1.69	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7400	7400	Base Steamer	Warehous	2014	2054	4.31	0.71	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Warehous	2014	2054	2.14	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 H	Warehous	2014	2054	2.02	0.00	0.12	0.12	6%	0.00	0.00	0%	0.03
VA	8100	8100	Base Heating, Other Electric	Warehous	2014	2054	16.88	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9500	Base Miscellaneous	Warehous	2014	2054	349.99	65.97	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9501	Xmisc	Warehous	2014	2054	349.99	65.97	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB	School	2020	2054	286.28	38.69	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8)	School	2020	2054	283.96	38.53	2.33	2.33	1%	0.16	0.16	0%	0.02
VA	1030	1031	ROB 4L4' High Performance T8 (86 W	School	2020	2054	254.79	34.59	29.17	31.50	11%	3.94	4.10	11%	0.02
VA	1030	1038	High Performance Lighting R/R - 25%	School	2020	2054	235.71	32.52	19.08	50.57	18%	2.07	6.17	16%	0.03
VA	1030	1032	ROB 4L4' Low Watt High Performance	School	2020	2054	205.72	28.47	29.99	80.56	28%	4.05	10.22	26%	0.05
VA	1030	1034	ROB 4L4' LED Tube, 2020	School	2020	2054	172.57	23.99	33.15	113.71	40%	4.48	14.70	38%	0.35
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent F	School	2020	2054	162.46	23.65	10.12	123.83	43%	0.34	15.04	39%	0.18
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	School	2020	2054	148.59	21.77	13.87	137.70	48%	1.87	16.92	44%	0.31
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB	School	2020	2054	17.97	2.43	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1130	1131	ROB 2L4' High Performance T8 (86 W	School	2020	2054	16.14	2.18	1.84	1.84	10%	0.25	0.25	10%	0.03
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8)	School	2020	2054	15.98	2.17	0.15	1.99	11%	0.01	0.26	11%	0.03
VA	1130	1138	High Performance Lighting R/R - 25%	School	2020	2054	14.79	2.04	1.20	3.19	18%	0.13	0.39	16%	0.04
VA	1130	1132	ROB 2L4' Low Watt High Performance	School	2020	2054	12.91	1.79	1.88	5.07	28%	0.25	0.64	26%	0.07
VA	1130	1134	ROB 2L4' LED Tube, 2020	School	2020	2054	12.28	1.70	0.62	5.69	32%	0.08	0.73	30%	0.28
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	School	2020	2054	11.23	1.56	1.05	6.74	37%	0.14	0.87	36%	0.36
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent F	School	2020	2054	10.58	1.54	0.66	7.40	41%	0.02	0.89	37%	0.30
VA	1200	1200	Base Other Fluorescent Fixture	School	2014	2054	1.39	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1200	1203	Lighting Control Tuneup (base other fl	School	2014	2054	1.33	0.18	0.06	0.06	5%	0.00	0.00	2%	0.02
VA	1200	1201	ROB High Performance T8 (base othe	School	2014	2054	1.21	0.17	0.11	0.18	13%	0.02	0.02	10%	0.10
VA	1200	1202	ROB Low Watt High Performance T8 (	School	2014	2054	1.06	0.15	0.15	0.33	24%	0.02	0.04	22%	0.21
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent F	School	2014	2054	0.89	0.14	0.17	0.50	36%	0.01	0.05	25%	0.18
VA	1200	1205	High Performance Lighting R/R - 25%	School	2014	2054	0.82	0.13	0.07	0.57	41%	0.01	0.05	29%	0.33
VA	1330	1330	Base Incandescent Flood, 100W to Sc	School	2020	2054	1.04	0.14	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1330	1332	LEDs (base incandescent flood) 2020	School	2020	2054	0.21	0.03	0.84	0.84	80%	0.11	0.11	80%	0.01
VA	1430	1430	Base Incandescent A-Line Lamp, 72W	School	2020	2054	0.38	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1430	1432	LEDs (base incandescent A-line 72W)	School	2020	2054	0.08	0.01	0.29	0.29	78%	0.04	0.04	78%	0.01
VA	1530	1530	Base Incandescent A-Line Lamp, 53W	School	2020	2054	0.28	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1530	1532	LEDs (base incandescent A-line 53W)	School	2020	2054	0.08	0.01	0.20	0.20	71%	0.03	0.03	71%	0.01
VA	1630	1630	Base CFL 18W to screw-in replaceme	School	2020	2054	20.83	2.82	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1630	1631	LED screw-in replacement (base CFL	School	2020	2054	15.06	2.04	5.77	5.77	28%	0.78	0.78	28%	0.07
VA	1730	1730	Base CFL 23W to screw-in replaceme	School	2020	2054	26.62	3.60	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1730	1731	LED screw-in replacement (base CFL	School	2020	2054	19.70	2.66	6.92	6.92	26%	0.94	0.94	26%	0.05
VA	1800	1800	BaseMetal Halide, 465W	School	2014	2054	41.12	5.56	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1800	1801	T5 (240W) (base metal halide)	School	2014	2054	27.22	3.68	13.90	13.90	34%	1.88	1.88	34%	0.02
VA	1800	1805	High Performance Lighting R/R - 25%	School	2014	2054	25.18	3.46	2.04	15.94	39%	0.22	2.10	38%	0.03
VA	1800	1806	Occupancy Sensor, High Bay T5	School	2014	2054	24.39	3.43	0.79	16.73	41%	0.03	2.13	38%	0.05
VA	1850	1850	Base CFL Exit Sign	School	2014	2054	2.22	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1851	LED Exit Sign	School	2014	2054	1.00	0.14	1.22	1.22	55%	0.17	0.17	55%	0.04
VA	1900	1900	Base Outdoor High Pressure Sodium 2	School	2014	2054	67.16	2.68	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1900	1901	Outdoor Lighting Controls (Photocell/T	School	2014	2054	60.40	1.82	6.75	6.75	10%	0.86	0.86	32%	0.05
VA	1900	1902	LED Outdoor Area Lighting	School	2014	2054	29.07	0.57	31.34	38.09	57%	1.25	2.10	79%	0.10
VA	1900	1903	Bi-Level LED Outdoor Lighting	School	2014	2054	20.53	0.27	8.53	46.62	69%	0.31	2.41	90%	0.66
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton,	School	2014	2054	93.36	47.93	0.00	0.00	0%	0.00	0.00	0%	N/A

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Year 2020

Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 t	School	2014	2054	85.39	43.84	7.97	7.97	9%	4.09	4.09	9%	0.07
VA	2000	2005	Chiller Tune Up/Diagnostics	School	2014	2054	85.17	43.78	0.22	8.19	9%	0.06	4.15	9%	0.05
VA	2000	2013	High Efficiency Chiller Motors	School	2014	2054	85.09	43.74	0.09	8.27	9%	0.04	4.20	9%	0.10
VA	2000	2006	VSD for Chiller Pumps and Towers	School	2014	2054	84.94	43.70	0.15	8.42	9%	0.04	4.24	9%	0.08
VA	2000	2003	EMS - Chiller	School	2014	2054	80.35	43.04	4.59	13.01	14%	0.66	4.89	10%	0.13
VA	2000	2004	Cool Roof - Chiller	School	2014	2054	78.80	42.25	1.55	14.56	16%	0.79	5.69	12%	0.21
VA	2000	2002	Window Film (Standard) - Chiller	School	2014	2054	78.40	42.04	0.40	14.96	16%	0.20	5.89	12%	0.24
VA	2000	2012	Duct Testing/Sealing - Chiller	School	2014	2054	65.41	35.37	12.99	27.95	30%	6.67	12.56	26%	0.34
VA	2000	2008	New Economizer - Chiller	School	2014	2054	58.45	34.38	6.96	34.91	37%	0.99	13.56	28%	0.39
VA	2000	2011	Duct/Pipe Insulation - Chiller	School	2014	2054	58.10	34.20	0.35	35.26	38%	0.18	13.74	29%	5.57
VA	2100	2100	Base DX Packaged System, EER=10.:	School	2014	2054	223.92	114.97	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2100	2113	Ceiling/roof Insulation - DX	School	2014	2054	223.78	114.90	0.14	0.14	0%	0.07	0.07	0%	0.03
VA	2100	2102	DX Packaged System, EER=13.4, 10 t	School	2014	2054	172.31	88.47	51.47	51.61	23%	26.43	26.50	23%	0.06
VA	2100	2110	Dual Enthalpy Economizer Replaces D	School	2014	2054	172.07	88.43	0.24	51.85	23%	0.03	26.53	23%	0.17
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	School	2014	2054	171.80	88.36	0.27	52.11	23%	0.07	26.60	23%	0.21
VA	2100	2115	Window Film (Standard) - DX	School	2014	2054	170.22	87.55	1.58	53.69	24%	0.81	27.41	24%	0.26
VA	2100	2108	Optimize Controls - DX	School	2014	2054	167.62	87.18	2.60	56.30	25%	0.37	27.79	24%	0.18
VA	2100	2112	Duct Testing/Sealing - DX	School	2014	2054	158.73	82.61	8.89	65.19	29%	4.56	32.35	28%	0.38
VA	2100	2106	Prog. Thermostat - DX	School	2014	2054	157.35	82.42	1.38	66.57	30%	0.20	32.55	28%	0.23
VA	2100	2107	Cool Roof - DX	School	2014	2054	154.57	80.99	2.78	69.35	31%	1.43	33.97	30%	0.43
VA	2100	2111	Economizer Repair - DX	School	2014	2054	151.53	78.79	3.04	72.39	32%	2.20	36.18	31%	0.94
VA	2100	2109	Economizer - DX	School	2014	2054	150.79	78.68	0.74	73.13	33%	0.11	36.28	32%	1.40
VA	2100	2114	Duct/Pipe Insulation - DX	School	2014	2054	148.99	77.76	1.80	74.93	33%	0.92	37.20	32%	5.22
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF	School	2014	2054	176.18	90.46	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 H!	School	2014	2054	154.39	79.27	21.79	21.79	12%	11.19	11.19	12%	0.05
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	School	2014	2054	160.46	82.38	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2300	2301	HE PTAC, EER=9.6, 1 ton	School	2014	2054	138.73	71.23	21.73	21.73	14%	11.16	11.16	14%	0.12
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	School	2014	2054	52.81	10.30	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3002	Variable Speed Drive Control, 5 HP	School	2014	2054	39.02	9.61	13.79	13.79	26%	0.69	0.69	7%	0.04
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	School	2014	2054	38.34	9.48	0.67	14.47	27%	0.13	0.82	8%	0.08
VA	3000	3003	Demand Controlled Ventilation	School	2014	2054	32.61	7.48	5.73	20.20	38%	2.00	2.82	27%	2.13
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0	School	2014	2054	141.36	27.58	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3100	3104	Electronically Commutated Motors (E(	School	2014	2054	121.57	24.08	19.79	19.79	14%	3.51	3.51	13%	0.05
VA	3100	3102	Variable Speed Drive Control, 15 HP	School	2014	2054	89.82	22.48	31.75	51.55	36%	1.59	5.10	18%	0.06
VA	3100	3103	Air Handler Optimization, 15 HP	School	2014	2054	81.08	22.05	8.74	60.28	43%	0.44	5.54	20%	0.08
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	School	2014	2054	80.29	21.89	0.78	61.07	43%	0.15	5.69	21%	0.20
VA	3100	3105	Energy Recovery Ventilation (ERV)	School	2014	2054	76.08	20.43	4.21	65.28	46%	1.47	7.16	26%	0.71
VA	3100	3107	Demand Controlled Ventilation	School	2014	2054	64.71	16.46	11.38	76.65	54%	3.96	11.12	40%	2.88
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0	School	2014	2054	58.92	11.50	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3202	Variable Speed Drive Control, 40 HP	School	2014	2054	43.53	10.73	15.39	15.39	26%	0.77	0.77	7%	0.01
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	School	2014	2054	43.44	10.71	0.09	15.48	26%	0.02	0.79	7%	0.03
VA	3200	3203	Air Handler Optimization, 40 HP	School	2014	2054	39.21	10.50	4.23	19.71	33%	0.21	1.00	9%	0.07
VA	3200	3204	Demand Controlled Ventilation	School	2014	2054	33.35	8.45	5.86	25.58	43%	2.04	3.04	26%	2.33
VA	4000	4000	Base Built-Up Refrigeration System	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4100	Base Self-Contained Refrigeration	School	2014	2054	66.40	9.18	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4103	Night covers for display cases (self-c(	School	2014	2054	64.09	8.87	2.30	2.30	3%	0.32	0.32	3%	0.00
VA	4100	4104	Freezer-Cooler Replacement Gaskets	School	2014	2054	63.22	8.74	0.88	3.18	5%	0.12	0.44	5%	0.00
VA	4100	4109	Energy-Star Freezer, glass door	School	2014	2054	62.88	8.70	0.34	3.52	5%	0.05	0.49	5%	0.01
VA	4100	4106	Energy-Star Refrigerator, solid door	School	2014	2054	62.07	8.58	0.81	4.33	7%	0.11	0.60	7%	0.01
VA	4100	4107	Energy-Star Freezer, solid door	School	2014	2054	61.93	8.57	0.14	4.47	7%	0.02	0.62	7%	0.02
VA	4100	4108	Energy-Star Refrigerator, glass door	School	2014	2054	61.68	8.53	0.25	4.72	7%	0.03	0.65	7%	0.02
VA	4100	4110	Energy Star Ice Machines	School	2014	2054	60.41	8.36	1.27	5.99	9%	0.18	0.83	9%	0.03
VA	4100	4112	Reach-in unit occupancy sensors	School	2014	2054	60.40	8.35	0.01	6.00	9%	0.00	0.83	9%	0.29
VA	4100	4105	Bi-level LED Case Lighting (self-conta:	School	2014	2054	60.34	8.35	0.05	6.06	9%	0.01	0.84	9%	0.33
VA	4100	4101	Strip curtains for walk-ins (self-contain	School	2014	2054	60.29	8.34	0.05	6.11	9%	0.01	0.84	9%	1.05
VA	5000	5000	Base Desktop PC	School	2014	2054	10.42	0.90	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5000	5001	PC Network Power Management Enab:	School	2014	2054	5.73	0.69	4.69	4.69	45%	0.21	0.21	23%	0.01
VA	5000	5002	Energy Star or Better PC	School	2014	2054	4.06	0.55	1.66	6.36	61%	0.14	0.35	39%	0.03
VA	5100	5100	Base Laptop PC	School	2014	2054	1.16	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5100	5102	Energy Star or Better Laptop	School	2014	2054	0.94	0.08	0.22	0.22	19%	0.02	0.02	19%	0.01
VA	5100	5101	Laptop Network Power Management E	School	2014	2054	0.92	0.08	0.02	0.24	21%	0.00	0.02	21%	1.24
VA	5200	5200	Base Monitor, CRT	School	2014	2054	4.23	0.36	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5200	5201	Energy Star or Better Monitor - CRT	School	2014	2054	1.85	0.16	2.37	2.37	56%	0.20	0.20	56%	0.00
VA	5200	5202	Monitor Power Management Enabling	School	2014	2054	1.34	0.14	0.51	2.89	68%	0.02	0.23	62%	0.02
VA	5200	5203	Plug-load controls - Commercial Sma	School	2014	2054	1.23	0.13	0.11	2.99	71%	0.01	0.24	65%	0.22
VA	5300	5300	Base Monitor, LCD	School	2014	2054	2.18	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5300	5301	Energy Star or Better Monitor - LCD	School	2014	2054	1.80	0.15	0.39	0.39	18%	0.03	0.03	18%	0.01
VA	5300	5302	Monitor Power Management Enabling	School	2014	2054	1.75	0.15	0.04	0.43	20%	0.00	0.04	19%	0.08
VA	5300	5303	Plug-load controls - Commercial Sma	School	2014	2054	1.62	0.15	0.13	0.56	26%	0.00	0.04	20%	0.23
VA	5400	5400	Base Copier	School	2014	2054	2.78	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5400	5401	Energy Star or Better Copier	School	2014	2054	2.62	0.23	0.16	0.16	6%	0.01	0.01	6%	0.00
VA	5400	5402	Copier Power Management Enabling	School	2014	2054	2.52	0.22	0.11	0.27	10%	0.00	0.02	8%	0.09

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Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	5500	5500	Base Multifunction	School	2014	2054	0.34	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5500	5502	ENERGY STAR Multi-Function Printer	School	2014	2054	0.26	0.02	0.09	0.09	25%	0.01	0.01	25%	0.01
VA	5500	5501	Multifunction Power Management Ena	School	2014	2054	0.21	0.02	0.05	0.13	39%	0.00	0.01	32%	0.27
VA	5600	5600	Base Printer	School	2014	2054	2.91	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5600	5602	ENERGY STAR Printer	School	2014	2054	1.90	0.16	1.01	1.01	35%	0.09	0.09	35%	0.00
VA	5600	5601	Printer Power Management Enabling	School	2014	2054	1.55	0.15	0.35	1.36	47%	0.02	0.10	41%	0.06
VA	5700	5700	Base Data Center/Server Room	School	2014	2054	67.83	5.83	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5700	5701	Data Center Improved Operations	School	2014	2054	61.05	5.24	6.78	6.78	10%	0.58	0.58	10%	0.00
VA	5700	5702	Data Center Best Practices	School	2014	2054	53.28	4.58	7.77	14.55	21%	0.67	1.25	21%	0.00
VA	5700	5703	Data Center State of the Art practices	School	2014	2054	50.30	4.32	2.98	17.53	26%	0.26	1.51	26%	0.00
VA	6000	6000	Base Water Heating	School	2014	2054	23.82	1.85	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	6000	6007	Heat Trap	School	2014	2054	22.58	1.76	1.23	1.23	5%	0.10	0.10	5%	0.04
VA	6000	6002	High Efficiency Water Heater (electric)	School	2014	2054	22.14	1.72	0.44	1.67	7%	0.03	0.13	7%	0.09
VA	6000	6006	Heat Recovery Unit	School	2014	2054	19.99	1.55	2.16	3.83	16%	0.17	0.30	16%	0.09
VA	6000	6001	Demand controlled circulating system:	School	2014	2054	19.24	1.50	0.75	4.58	19%	0.06	0.36	19%	0.12
VA	6000	6004	Tankless Water Heater	School	2014	2054	17.79	1.38	1.44	6.02	25%	0.11	0.47	25%	0.16
VA	6000	6008	Solar Water Heater	School	2014	2054	16.55	1.29	1.25	7.27	31%	0.10	0.57	31%	0.18
VA	6000	6003	Hot Water Pipe Insulation	School	2014	2054	16.38	1.27	0.17	7.43	31%	0.01	0.58	31%	0.20
VA	7000	7000	Base Refrigerated Vending Machines	School	2014	2054	6.12	0.53	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7000	7001	Vending Misers (Refrigerated units)	School	2014	2054	5.19	0.49	0.93	0.93	15%	0.04	0.04	8%	0.03
VA	7000	7002	Vending Misers (Refrigerated glass-fro	School	2014	2054	4.69	0.47	0.51	1.43	23%	0.02	0.06	12%	0.05
VA	7100	7100	Base Non-Refrigerated Vending Machi	School	2014	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7100	7101	Vending Misers (Non-Refrigerated)	School	2014	2054	0.05	0.01	0.04	0.04	43%	0.00	0.00	22%	0.43
VA	7200	7200	Base Oven	School	2014	2054	6.68	0.49	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7200	7201	Convection Oven	School	2014	2054	5.15	0.38	1.54	1.54	23%	0.11	0.11	23%	0.13
VA	7300	7300	Base Fryer	School	2014	2054	1.19	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7400	7400	Base Steamer	School	2014	2054	0.32	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7400	7401	Efficient Steamer	School	2014	2054	0.12	0.01	0.21	0.21	63%	0.02	0.02	63%	0.05
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	School	2014	2054	4.30	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 H:	School	2014	2054	4.06	0.00	0.24	0.24	6%	0.00	0.00	0%	0.08
VA	8100	8100	Base Heating, Other Electric	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9500	Base Miscellaneous	School	2014	2054	93.87	8.18	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9501	Xmisc	School	2014	2054	93.87	8.18	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EE	Health	2020	2054	152.78	23.25	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8)	Health	2020	2054	152.55	23.23	0.23	0.23	0%	0.02	0.02	0%	0.02
VA	1030	1038	High Performance Lighting R/R - 25%	Health	2020	2054	140.86	21.84	11.70	11.92	8%	1.39	1.41	6%	0.03
VA	1030	1031	ROB 4L4' High Performance T8 (86 W	Health	2020	2054	126.21	19.61	14.65	26.57	17%	2.23	3.64	16%	0.03
VA	1030	1032	ROB 4L4' Low Watt High Performance	Health	2020	2054	110.15	17.17	16.06	42.63	28%	2.44	6.08	26%	0.07
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent F	Health	2020	2054	101.99	16.88	8.16	50.79	33%	0.29	6.37	27%	0.12
VA	1030	1034	ROB 4L4' LED Tube, 2020	Health	2020	2054	85.56	14.38	16.43	67.22	44%	2.50	8.87	38%	0.43
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Health	2020	2054	78.25	13.27	7.30	74.52	49%	1.11	9.98	43%	0.36
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EE	Health	2020	2054	18.41	2.80	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1130	1131	ROB 2L4' High Performance T8 (86 W	Health	2020	2054	16.50	2.51	1.92	1.92	10%	0.29	0.29	10%	0.04
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8)	Health	2020	2054	16.48	2.51	0.02	1.94	11%	0.00	0.29	10%	0.05
VA	1130	1138	High Performance Lighting R/R - 25%	Health	2020	2054	15.21	2.36	1.26	3.20	17%	0.15	0.44	16%	0.07
VA	1130	1132	ROB 2L4' Low Watt High Performance	Health	2020	2054	13.28	2.06	1.94	5.14	28%	0.29	0.74	26%	0.09
VA	1130	1134	ROB 2L4' LED Tube, 2020	Health	2020	2054	12.63	1.97	0.64	5.78	31%	0.10	0.84	30%	0.33
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Health	2020	2054	11.56	1.80	1.08	6.86	37%	0.16	1.00	36%	0.41
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent F	Health	2020	2054	10.70	1.77	0.86	7.71	42%	0.03	1.03	37%	0.25
VA	1200	1200	Base Other Fluorescent Fixture	Health	2014	2054	4.95	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1200	1203	Lighting Control Tuneup (base other fl	Health	2014	2054	4.92	0.75	0.03	0.03	1%	0.00	0.00	0%	0.01
VA	1200	1205	High Performance Lighting R/R - 25%	Health	2014	2054	4.54	0.71	0.38	0.40	8%	0.04	0.05	6%	0.08
VA	1200	1201	ROB High Performance T8 (base othe	Health	2014	2054	4.07	0.63	0.47	0.88	18%	0.07	0.12	16%	0.14
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent F	Health	2014	2054	3.28	0.61	0.79	1.67	34%	0.03	0.15	19%	0.15
VA	1200	1202	ROB Low Watt High Performance T8 (	Health	2014	2054	2.86	0.54	0.42	2.08	42%	0.06	0.21	28%	0.35
VA	1330	1330	Base Incandescent Flood, 100W to Sc	Health	2020	2054	8.93	1.36	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1330	1332	LEDs (base incandescent flood) 2020	Health	2020	2054	1.60	0.24	7.33	7.33	82%	1.12	1.12	82%	0.01
VA	1430	1430	Base Incandescent A-Line Lamp, 72W	Health	2020	2054	3.22	0.49	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1430	1432	LEDs (base incandescent A-line 72W)	Health	2020	2054	0.63	0.10	2.59	2.59	81%	0.39	0.39	81%	0.01
VA	1530	1530	Base Incandescent A-Line Lamp, 53W	Health	2020	2054	2.37	0.36	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1530	1532	LEDs (base incandescent A-line 53W)	Health	2020	2054	0.63	0.10	1.74	1.74	73%	0.26	0.26	73%	0.01
VA	1630	1630	Base CFL 18W to screw-in replaceme	Health	2020	2054	3.00	0.46	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1630	1631	LED screw-in replacement (base CFL	Health	2020	2054	2.17	0.33	0.83	0.83	28%	0.13	0.13	28%	0.09
VA	1730	1730	Base CFL 23W to screw-in replaceme	Health	2020	2054	3.83	0.58	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1730	1731	LED screw-in replacement (base CFL	Health	2020	2054	2.83	0.43	1.00	1.00	26%	0.15	0.15	26%	0.07
VA	1800	1800	BaseMetal Halide, 465W	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1850	Base CFL Exit Sign	Health	2014	2054	4.72	0.72	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1851	LED Exit Sign	Health	2014	2054	4.17	0.63	0.55	0.55	12%	0.08	0.08	12%	0.03
VA	1900	1900	Base Outdoor High Pressure Sodium 2	Health	2014	2054	12.58	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1900	1901	Outdoor Lighting Controls (Photocell/T	Health	2014	2054	11.58	0.09	1.00	1.00	8%	0.03	0.03	27%	0.07
VA	1900	1902	LED Outdoor Area Lighting	Health	2014	2054	5.57	0.03	6.01	7.01	56%	0.06	0.09	74%	0.14
VA	1900	1903	Bi-Level LED Outdoor Lighting	Health	2014	2054	3.93	0.02	1.64	8.65	69%	0.01	0.10	86%	0.92

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Vintage Sgmt	Base Number	Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton,	Health	2014	2054	66.67	36.64	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 t	Health	2014	2054	60.98	33.51	5.69	5.69	9%	3.13	3.13	9%	0.03
VA	2000	2005	Chiller Tune Up/Diagnostics	Health	2014	2054	60.88	33.49	0.10	5.79	9%	0.03	3.15	9%	0.02
VA	2000	2006	VSD for Chiller Pumps and Towers	Health	2014	2054	60.75	33.45	0.14	5.93	9%	0.04	3.19	9%	0.04
VA	2000	2013	High Efficiency Chiller Motors	Health	2014	2054	60.55	33.34	0.20	6.12	9%	0.11	3.30	9%	0.05
VA	2000	2003	EMS - Chiller	Health	2014	2054	54.79	32.60	5.75	11.88	18%	0.74	4.04	11%	0.05
VA	2000	2012	Duct Testing/Sealing - Chiller	Health	2014	2054	44.38	26.88	10.41	22.29	33%	5.72	9.76	27%	0.18
VA	2000	2008	New Economizer - Chiller	Health	2014	2054	39.35	26.24	5.03	27.32	41%	0.65	10.41	28%	0.14
VA	2000	2002	Window Film (Standard) - Chiller	Health	2014	2054	39.29	26.20	0.06	27.38	41%	0.03	10.44	28%	0.29
VA	2000	2004	Cool Roof - Chiller	Health	2014	2054	39.18	26.14	0.11	27.49	41%	0.06	10.50	29%	0.77
VA	2000	2011	Duct/Pipe Insulation - Chiller	Health	2014	2054	38.74	25.90	0.44	27.93	42%	0.24	10.74	29%	2.99
VA	2100	2100	Base DX Packaged System, EER=10.:	Health	2014	2054	223.12	122.63	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2100	2102	DX Packaged System, EER=13.4, 10 t	Health	2014	2054	171.80	94.42	51.32	51.32	23%	28.20	28.20	23%	0.03
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Health	2014	2054	171.64	94.38	0.16	51.48	23%	0.04	28.25	23%	0.09
VA	2100	2108	Optimize Controls - DX	Health	2014	2054	168.50	93.98	3.14	54.62	24%	0.40	28.65	23%	0.07
VA	2100	2106	Prog. Thermostat - DX	Health	2014	2054	165.02	93.53	3.48	58.10	26%	0.45	29.10	24%	0.09
VA	2100	2112	Duct Testing/Sealing - DX	Health	2014	2054	154.98	88.01	10.03	68.14	31%	5.51	34.61	28%	0.19
VA	2100	2115	Window Film (Standard) - DX	Health	2014	2054	154.15	87.56	0.83	68.97	31%	0.46	35.07	29%	0.25
VA	2100	2107	Cool Roof - DX	Health	2014	2054	153.66	87.29	0.49	69.46	31%	0.27	35.34	29%	0.65
VA	2100	2114	Duct/Pipe Insulation - DX	Health	2014	2054	151.97	86.36	1.69	71.15	32%	0.93	36.27	30%	2.55
VA	2100	2111	Economizer Repair - DX	Health	2014	2054	151.97	86.36	0.00	71.15	32%	0.00	36.27	30%	#######
VA	2100	2109	Economizer - DX	Health	2014	2054	151.97	86.36	0.00	71.15	32%	0.00	36.27	30%	#######
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF	Health	2014	2054	142.15	78.13	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 H:	Health	2014	2054	124.57	68.46	17.58	17.58	12%	9.66	9.66	12%	0.02
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Health	2014	2054	31.81	17.48	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Health	2014	2054	63.96	12.98	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3002	Variable Speed Drive Control, 5 HP	Health	2014	2054	45.33	12.08	18.63	18.63	29%	0.90	0.90	7%	0.01
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Health	2014	2054	44.55	11.92	0.78	19.41	30%	0.16	1.06	8%	0.03
VA	3000	3003	Demand Controlled Ventilation	Health	2014	2054	40.31	10.16	4.24	23.65	37%	1.77	2.83	22%	0.84
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0	Health	2014	2054	222.31	45.13	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3100	3102	Variable Speed Drive Control, 15 HP	Health	2014	2054	157.57	41.99	64.74	64.74	29%	3.14	3.14	7%	0.00
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Health	2014	2054	157.20	41.91	0.37	65.11	29%	0.07	3.22	7%	0.01
VA	3100	3104	Electronically Commutated Motors (E(	Health	2014	2054	134.32	37.78	22.88	87.99	40%	4.14	7.36	16%	0.02
VA	3100	3105	Energy Recovery Ventilation (ERV)	Health	2014	2054	125.61	34.15	8.71	96.70	43%	3.63	10.98	24%	0.26
VA	3100	3107	Demand Controlled Ventilation	Health	2014	2054	113.65	29.17	11.96	108.66	49%	4.98	15.96	35%	1.03
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0	Health	2014	2054	236.21	47.95	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3204	Demand Controlled Ventilation	Health	2014	2054	213.72	38.59	22.49	22.49	10%	9.36	9.36	20%	0.58
VA	4000	4000	Base Built-Up Refrigeration System	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4100	Base Self-Contained Refrigeration	Health	2014	2054	43.75	6.34	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4103	Night covers for display cases (self-c	Health	2014	2054	43.03	6.23	0.73	0.73	2%	0.11	0.11	2%	0.00
VA	4100	4104	Freezer-Cooler Replacement Gaskets	Health	2014	2054	42.35	6.14	0.68	1.40	3%	0.10	0.20	3%	0.00
VA	4100	4108	Energy-Star Refrigerator, glass door	Health	2014	2054	42.01	6.09	0.34	1.74	4%	0.05	0.25	4%	0.02
VA	4100	4106	Energy-Star Refrigerator, solid door	Health	2014	2054	41.52	6.02	0.49	2.23	5%	0.07	0.32	5%	0.02
VA	4100	4110	Energy Star Ice Machines	Health	2014	2054	41.07	5.95	0.45	2.68	6%	0.07	0.39	6%	0.05
VA	4100	4112	Reach-in unit occupancy sensors	Health	2014	2054	41.06	5.95	0.01	2.70	6%	0.00	0.39	6%	0.28
VA	4100	4105	Bi-level LED Case Lighting (self-conta	Health	2014	2054	41.01	5.94	0.05	2.74	6%	0.01	0.40	6%	0.32
VA	5000	5000	Base Desktop PC	Health	2014	2054	9.92	1.41	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5000	5001	PC Network Power Management Enab	Health	2014	2054	5.32	1.08	4.60	4.60	46%	0.33	0.33	23%	0.02
VA	5000	5002	Energy Star or Better PC	Health	2014	2054	3.64	0.84	1.69	6.29	63%	0.24	0.57	40%	0.04
VA	5100	5100	Base Laptop PC	Health	2014	2054	0.51	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5100	5102	Energy Star or Better Laptop	Health	2014	2054	0.42	0.06	0.10	0.10	19%	0.01	0.01	19%	0.01
VA	5100	5101	Laptop Network Power Management E	Health	2014	2054	0.41	0.06	0.01	0.11	21%	0.00	0.02	21%	1.77
VA	5200	5200	Base Monitor, CRT	Health	2014	2054	2.73	0.39	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5200	5201	Energy Star or Better Monitor - CRT	Health	2014	2054	1.23	0.17	1.50	1.50	55%	0.21	0.21	55%	0.00
VA	5200	5202	Monitor Power Management Enabling	Health	2014	2054	0.83	0.15	0.40	1.90	70%	0.03	0.24	62%	0.03
VA	5200	5203	Plug-load controls - Commercial Sma	Health	2014	2054	0.77	0.14	0.07	1.97	72%	0.01	0.25	65%	0.33
VA	5300	5300	Base Monitor, LCD	Health	2014	2054	1.75	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5300	5301	Energy Star or Better Monitor - LCD	Health	2014	2054	1.41	0.20	0.34	0.34	20%	0.05	0.05	20%	0.01
VA	5300	5302	Monitor Power Management Enabling	Health	2014	2054	1.34	0.20	0.07	0.41	24%	0.00	0.05	22%	0.12
VA	5300	5303	Plug-load controls - Commercial Sma	Health	2014	2054	1.23	0.19	0.11	0.52	30%	0.00	0.06	23%	0.33
VA	5400	5400	Base Copier	Health	2014	2054	2.77	0.39	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5400	5401	Energy Star or Better Copier	Health	2014	2054	2.30	0.33	0.47	0.47	17%	0.07	0.07	17%	0.00
VA	5400	5402	Copier Power Management Enabling	Health	2014	2054	2.15	0.32	0.15	0.61	22%	0.01	0.08	19%	0.14
VA	5500	5500	Base Multifunction	Health	2014	2054	0.45	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5500	5502	ENERGY STAR Multi-Function Printer	Health	2014	2054	0.33	0.05	0.11	0.11	25%	0.02	0.02	25%	0.01
VA	5500	5501	Multifunction Power Management Ena	Health	2014	2054	0.29	0.04	0.05	0.16	36%	0.00	0.02	31%	0.34
VA	5600	5600	Base Printer	Health	2014	2054	2.25	0.32	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5600	5602	ENERGY STAR Printer	Health	2014	2054	1.46	0.21	0.78	0.78	35%	0.11	0.11	35%	0.00
VA	5600	5601	Printer Power Management Enabling	Health	2014	2054	1.25	0.19	0.21	0.99	44%	0.02	0.13	40%	0.07
VA	5700	5700	Base Data Center/Server Room	Health	2014	2054	39.44	5.61	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5700	5701	Data Center Improved Operations	Health	2014	2054	35.50	5.04	3.94	3.94	10%	0.56	0.56	10%	0.00
VA	5700	5702	Data Center Best Practices	Health	2014	2054	30.98	4.40	4.52	8.46	21%	0.64	1.20	21%	0.00

Commercial Electric Existing Construction
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Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	5700	5703	Data Center State of the Art practices	Health	2014	2054	29.25	4.16	1.74	10.20	26%	0.25	1.45	26%	0.00
VA	6000	6000	Base Water Heating	Health	2014	2054	16.04	2.07	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	6000	6001	Demand controlled circulating systems	Health	2014	2054	15.44	1.99	0.60	0.60	4%	0.08	0.08	4%	0.04
VA	6000	6007	Heat Trap	Health	2014	2054	14.64	1.89	0.80	1.40	9%	0.10	0.18	9%	0.04
VA	6000	6002	High Efficiency Water Heater (electric)	Health	2014	2054	14.35	1.85	0.29	1.69	11%	0.04	0.22	11%	0.08
VA	6000	6006	Heat Recovery Unit	Health	2014	2054	6.89	0.89	7.46	9.15	57%	0.96	1.18	57%	0.08
VA	6000	6004	Tankless Water Heater	Health	2014	2054	6.37	0.82	0.52	9.67	60%	0.07	1.25	60%	0.26
VA	6000	6008	Solar Water Heater	Health	2014	2054	5.48	0.71	0.89	10.56	66%	0.11	1.36	66%	0.30
VA	6000	6003	Hot Water Pipe Insulation	Health	2014	2054	5.43	0.70	0.05	10.61	66%	0.01	1.37	66%	0.35
VA	7000	7000	Base Refrigerated Vending Machines	Health	2014	2054	6.16	0.86	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7000	7001	Vending Misers (Refrigerated units)	Health	2014	2054	5.17	0.79	0.98	0.98	16%	0.07	0.07	8%	0.03
VA	7000	7002	Vending Misers (Refrigerated glass-fro	Health	2014	2054	4.64	0.75	0.54	1.52	25%	0.04	0.10	12%	0.05
VA	7100	7100	Base Non-Refrigerated Vending Machi	Health	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7100	7101	Vending Misers (Non-Refrigerated)	Health	2014	2054	0.07	0.01	0.06	0.06	46%	0.00	0.00	22%	0.42
VA	7200	7200	Base Oven	Health	2014	2054	9.72	1.85	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7300	7300	Base Fryer	Health	2014	2054	9.37	1.79	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7300	7301	Efficient Fryer	Health	2014	2054	8.77	1.67	0.60	0.60	6%	0.11	0.11	6%	0.43
VA	7400	7400	Base Steamer	Health	2014	2054	8.41	1.61	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Health	2014	2054	17.94	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HS	Health	2014	2054	16.93	0.00	1.01	1.01	6%	0.00	0.00	0%	0.02
VA	8100	8100	Base Heating, Other Electric	Health	2014	2054	25.25	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9500	Base Miscellaneous	Health	2014	2054	378.95	52.75	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9501	Xmisc	Health	2014	2054	378.95	52.75	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB	Lodging	2020	2054	9.24	1.31	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1031	ROB 4L4' High Performance T8 (86 W	Lodging	2020	2054	8.28	1.17	0.96	0.96	10%	0.14	0.14	10%	0.02
VA	1030	1032	ROB 4L4' Low Watt High Performance	Lodging	2020	2054	7.23	1.02	1.05	2.01	22%	0.15	0.29	22%	0.05
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8)	Lodging	2020	2054	7.19	1.02	0.03	2.05	22%	0.00	0.29	22%	0.05
VA	1030	1038	High Performance Lighting R/R - 25%	Lodging	2020	2054	6.64	0.96	0.55	2.60	28%	0.06	0.35	27%	0.07
VA	1030	1034	ROB 4L4' LED Tube, 2020	Lodging	2020	2054	5.57	0.81	1.07	3.67	40%	0.15	0.50	38%	0.35
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent F	Lodging	2020	2054	5.41	0.80	0.16	3.83	41%	0.01	0.51	39%	0.18
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Lodging	2020	2054	4.95	0.74	0.46	4.29	46%	0.07	0.57	44%	0.30
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB	Lodging	2020	2054	37.39	5.29	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1130	1131	ROB 2L4' High Performance T8 (86 W	Lodging	2020	2054	33.50	4.74	3.89	3.89	10%	0.55	0.55	10%	0.03
VA	1130	1132	ROB 2L4' Low Watt High Performance	Lodging	2020	2054	29.24	4.14	4.26	8.15	22%	0.60	1.15	22%	0.06
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8)	Lodging	2020	2054	29.10	4.13	0.13	8.28	22%	0.01	1.16	22%	0.07
VA	1130	1138	High Performance Lighting R/R - 25%	Lodging	2020	2054	26.87	3.88	2.23	10.52	28%	0.25	1.41	27%	0.10
VA	1130	1134	ROB 2L4' LED Tube, 2020	Lodging	2020	2054	25.57	3.70	1.30	11.82	32%	0.18	1.59	30%	0.29
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Lodging	2020	2054	23.39	3.39	2.18	14.00	37%	0.31	1.90	36%	0.37
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent F	Lodging	2020	2054	22.73	3.37	0.66	14.66	39%	0.02	1.92	36%	0.30
VA	1200	1200	Base Other Fluorescent Fixture	Lodging	2014	2054	0.73	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1200	1203	Lighting Control Tuneup (base other fl	Lodging	2014	2054	0.71	0.10	0.02	0.02	3%	0.00	0.00	1%	0.02
VA	1200	1201	ROB High Performance T8 (base othe	Lodging	2014	2054	0.63	0.09	0.07	0.09	13%	0.01	0.01	11%	0.10
VA	1200	1202	ROB Low Watt High Performance T8 (	Lodging	2014	2054	0.55	0.08	0.08	0.17	24%	0.01	0.02	22%	0.21
VA	1200	1205	High Performance Lighting R/R - 25%	Lodging	2014	2054	0.51	0.07	0.04	0.22	30%	0.00	0.03	27%	0.23
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent F	Lodging	2014	2054	0.47	0.07	0.04	0.25	35%	0.00	0.03	28%	0.20
VA	1330	1330	Base Incandescent Flood, 100W to Sc	Lodging	2020	2054	56.01	7.93	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1330	1332	LEDs (base incandescent flood) 2020	Lodging	2020	2054	10.81	1.53	45.20	45.20	81%	6.40	6.40	81%	0.01
VA	1430	1430	Base Incandescent A-Line Lamp, 72W	Lodging	2020	2054	20.16	2.85	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1430	1432	LEDs (base incandescent A-line 72W)	Lodging	2020	2054	4.23	0.60	15.94	15.94	79%	2.26	2.26	79%	0.01
VA	1530	1530	Base Incandescent A-Line Lamp, 53W	Lodging	2020	2054	14.84	2.10	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1530	1532	LEDs (base incandescent A-line 53W)	Lodging	2020	2054	4.24	0.60	10.60	10.60	71%	1.50	1.50	71%	0.01
VA	1630	1630	Base CFL 18W to screw-in replaceme	Lodging	2020	2054	11.67	1.65	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1630	1631	LED screw-in replacement (base CFL	Lodging	2020	2054	8.44	1.19	3.23	3.23	28%	0.46	0.46	28%	0.09
VA	1730	1730	Base CFL 23W to screw-in replaceme	Lodging	2020	2054	14.91	2.11	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1730	1731	LED screw-in replacement (base CFL	Lodging	2020	2054	11.03	1.56	3.88	3.88	26%	0.55	0.55	26%	0.07
VA	1800	1800	BaseMetal Halide, 465W	Lodging	2014	2054	29.88	4.23	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1800	1801	T5 (240W) (base metal halide)	Lodging	2014	2054	19.78	2.80	10.10	10.10	34%	1.43	1.43	34%	0.02
VA	1800	1805	High Performance Lighting R/R - 25%	Lodging	2014	2054	18.26	2.63	1.52	11.62	39%	0.17	1.60	38%	0.05
VA	1800	1806	Occupancy Sensor, High Bay T5	Lodging	2014	2054	17.63	2.61	0.63	12.25	41%	0.02	1.62	38%	0.05
VA	1850	1850	Base CFL Exit Sign	Lodging	2014	2054	6.70	0.95	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1851	LED Exit Sign	Lodging	2014	2054	3.78	0.54	2.91	2.91	44%	0.41	0.41	44%	0.03
VA	1900	1900	Base Outdoor High Pressure Sodium 2	Lodging	2014	2054	43.47	0.37	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1900	1901	Outdoor Lighting Controls (Photocell/T	Lodging	2014	2054	39.90	0.27	3.56	3.56	8%	0.10	0.10	28%	0.05
VA	1900	1902	LED Outdoor Area Lighting	Lodging	2014	2054	19.20	0.09	20.70	24.27	56%	0.18	0.28	75%	0.10
VA	1900	1903	Bi-Level LED Outdoor Lighting	Lodging	2014	2054	13.55	0.05	5.65	29.92	69%	0.04	0.33	87%	0.65
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton,	Lodging	2014	2054	150.18	90.43	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2000	2002	Window Film (Standard) - Chiller	Lodging	2014	2054	144.75	87.16	5.43	5.43	4%	3.27	3.27	4%	0.03
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 t	Lodging	2014	2054	132.40	79.72	12.36	17.78	12%	7.44	10.71	12%	0.05
VA	2000	2005	Chiller Tune Up/Diagnostics	Lodging	2014	2054	129.34	78.84	3.05	20.84	14%	0.88	11.59	13%	0.04
VA	2000	2013	High Efficiency Chiller Motors	Lodging	2014	2054	129.34	78.84	0.01	20.84	14%	0.00	11.59	13%	0.08
VA	2000	2006	VSD for Chiller Pumps and Towers	Lodging	2014	2054	128.83	78.69	0.51	21.35	14%	0.15	11.74	13%	0.06
VA	2000	2008	New Economizer - Chiller	Lodging	2014	2054	81.45	72.03	47.38	68.73	46%	6.66	18.40	20%	0.06

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Existing

Year 2020

Sgmt	Base Number	Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	2000	2003	EMS - Chiller	Lodging	2014	2054	74.71	71.08	6.74	75.47	50%	0.95	19.35	21%	0.13
VA	2000	2012	Duct Testing/Sealing - Chiller	Lodging	2014	2054	60.52	62.53	14.20	89.66	60%	8.55	27.90	31%	0.43
VA	2000	2004	Cool Roof - Chiller	Lodging	2014	2054	60.40	62.46	0.12	89.78	60%	0.07	27.97	31%	1.93
VA	2000	2011	Duct/Pipe Insulation - Chiller	Lodging	2014	2054	60.09	62.28	0.30	90.09	60%	0.18	28.15	31%	4.61
VA	2100	2100	Base DX Packaged System, EER=10.:	Lodging	2014	2054	383.60	230.99	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2100	2115	Window Film (Standard) - DX	Lodging	2014	2054	363.95	219.16	19.65	19.65	5%	11.83	11.83	5%	0.03
VA	2100	2102	DX Packaged System, EER=13.4, 10	Lodging	2014	2054	280.25	168.75	83.71	103.36	27%	50.41	62.24	27%	0.05
VA	2100	2108	Optimize Controls - DX	Lodging	2014	2054	275.11	168.03	5.13	108.49	28%	0.72	62.96	27%	0.08
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Lodging	2014	2054	271.25	166.91	3.87	112.36	29%	1.11	64.07	28%	0.15
VA	2100	2106	Prog. Thermostat - DX	Lodging	2014	2054	263.28	165.79	7.97	120.32	31%	1.12	65.19	28%	0.14
VA	2100	2112	Duct Testing/Sealing - DX	Lodging	2014	2054	247.27	156.16	16.01	136.33	36%	9.64	74.83	32%	0.31
VA	2100	2111	Economizer Repair - DX	Lodging	2014	2054	246.00	155.00	1.27	137.60	36%	1.15	75.98	33%	0.89
VA	2100	2107	Cool Roof - DX	Lodging	2014	2054	245.52	154.71	0.48	138.08	36%	0.29	76.27	33%	1.21
VA	2100	2109	Economizer - DX	Lodging	2014	2054	241.48	154.15	4.03	142.12	37%	0.57	76.84	33%	1.05
VA	2100	2110	Dual Enthalpy Economizer Replaces D	Lodging	2014	2054	241.48	154.14	0.01	142.13	37%	0.00	76.84	33%	1.77
VA	2100	2114	Duct/Pipe Insulation - DX	Lodging	2014	2054	238.85	152.57	2.62	144.75	38%	1.58	78.42	34%	2.97
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF	Lodging	2014	2054	297.25	178.99	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 H:	Lodging	2014	2054	260.49	156.85	36.76	36.76	12%	22.14	22.14	12%	0.03
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Lodging	2014	2054	62.42	37.58	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2300	2301	HE PTAC, EER=9.6, 1 ton	Lodging	2014	2054	53.96	32.49	8.45	8.45	14%	5.09	5.09	14%	0.08
VA	2300	2302	Occupancy Sensor (hotels)	Lodging	2014	2054	48.11	27.74	5.85	14.31	23%	4.75	9.84	26%	0.26
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Lodging	2014	2054	250.99	53.08	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Lodging	2014	2054	246.66	52.17	4.33	4.33	2%	0.92	0.92	2%	0.03
VA	3000	3003	Demand Controlled Ventilation	Lodging	2014	2054	212.47	37.30	34.19	38.52	15%	14.87	15.78	30%	0.97
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0	Lodging	2014	2054	43.39	9.18	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3203	Air Handler Optimization, 40 HP	Lodging	2014	2054	38.86	8.95	4.53	4.53	10%	0.23	0.23	3%	0.02
VA	3200	3204	Demand Controlled Ventilation	Lodging	2014	2054	33.47	6.61	5.39	9.92	23%	2.34	2.57	28%	1.06
VA	4000	4000	Base Built-Up Refrigeration System	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4100	Base Self-Contained Refrigeration	Lodging	2014	2054	141.67	20.71	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4103	Night covers for display cases (self-co	Lodging	2014	2054	135.53	19.81	6.14	6.14	4%	0.90	0.90	4%	0.00
VA	4100	4104	Freezer-Cooler Replacement Gaskets	Lodging	2014	2054	133.81	19.56	1.72	7.85	6%	0.25	1.15	6%	0.00
VA	4100	4109	Energy-Star Freezer, glass door	Lodging	2014	2054	131.77	19.27	2.04	9.89	7%	0.30	1.45	7%	0.00
VA	4100	4107	Energy-Star Freezer, solid door	Lodging	2014	2054	130.94	19.14	0.84	10.73	8%	0.12	1.57	8%	0.01
VA	4100	4106	Energy-Star Refrigerator, solid door	Lodging	2014	2054	130.36	19.06	0.57	11.30	8%	0.08	1.65	8%	0.01
VA	4100	4110	Energy Star Ice Machines	Lodging	2014	2054	129.30	18.90	1.06	12.37	9%	0.16	1.81	9%	0.02
VA	4100	4105	Bi-level LED Case Lighting (self-conta	Lodging	2014	2054	129.26	18.90	0.04	12.40	9%	0.01	1.81	9%	0.33
VA	4100	4101	Strip curtains for walk-ins (self-contain	Lodging	2014	2054	128.70	18.82	0.56	12.97	9%	0.08	1.90	9%	0.35
VA	5000	5000	Base Desktop PC	Lodging	2014	2054	9.10	1.35	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5000	5002	Energy Star or Better PC	Lodging	2014	2054	7.19	1.07	1.91	1.91	21%	0.28	0.28	21%	0.01
VA	5000	5001	PC Network Power Management Enab	Lodging	2014	2054	3.86	0.82	3.33	5.24	58%	0.25	0.53	39%	0.02
VA	5100	5100	Base Laptop PC	Lodging	2014	2054	0.44	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5100	5102	Energy Star or Better Laptop	Lodging	2014	2054	0.35	0.05	0.08	0.08	19%	0.01	0.01	19%	0.01
VA	5100	5101	Laptop Network Power Management E	Lodging	2014	2054	0.35	0.05	0.01	0.09	21%	0.00	0.01	21%	1.24
VA	5200	5200	Base Monitor, CRT	Lodging	2014	2054	4.29	0.64	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5200	5201	Energy Star or Better Monitor - CRT	Lodging	2014	2054	1.88	0.28	2.41	2.41	56%	0.36	0.36	56%	0.00
VA	5200	5202	Monitor Power Management Enabling	Lodging	2014	2054	1.43	0.25	0.45	2.86	67%	0.03	0.39	61%	0.02
VA	5200	5203	Plug-load controls - Commercial Smar	Lodging	2014	2054	1.31	0.23	0.11	2.97	69%	0.02	0.41	64%	0.21
VA	5300	5300	Base Monitor, LCD	Lodging	2014	2054	1.90	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5300	5301	Energy Star or Better Monitor - LCD	Lodging	2014	2054	1.71	0.25	0.19	0.19	10%	0.03	0.03	10%	0.01
VA	5300	5302	Monitor Power Management Enabling	Lodging	2014	2054	1.51	0.24	0.19	0.38	20%	0.01	0.04	15%	0.08
VA	5300	5303	Plug-load controls - Commercial Smar	Lodging	2014	2054	1.39	0.23	0.12	0.50	27%	0.00	0.05	17%	0.22
VA	5400	5400	Base Copier	Lodging	2014	2054	2.65	0.39	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5400	5401	Energy Star or Better Copier	Lodging	2014	2054	2.39	0.35	0.26	0.26	10%	0.04	0.04	10%	0.00
VA	5400	5402	Copier Power Management Enabling	Lodging	2014	2054	2.29	0.35	0.10	0.35	13%	0.01	0.05	12%	0.09
VA	5500	5500	Base Multifunction	Lodging	2014	2054	0.41	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5500	5502	ENERGY STAR Multi-Function Printer	Lodging	2014	2054	0.31	0.05	0.10	0.10	25%	0.02	0.02	25%	0.01
VA	5500	5501	Multifunction Power Management Ena	Lodging	2014	2054	0.25	0.04	0.06	0.16	39%	0.00	0.02	32%	0.26
VA	5600	5600	Base Printer	Lodging	2014	2054	1.15	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5600	5602	ENERGY STAR Printer	Lodging	2014	2054	0.75	0.11	0.40	0.40	35%	0.06	0.06	35%	0.00
VA	5600	5601	Printer Power Management Enabling	Lodging	2014	2054	0.61	0.10	0.14	0.54	47%	0.01	0.07	41%	0.06
VA	5700	5700	Base Data Center/Server Room	Lodging	2014	2054	40.24	5.98	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5700	5701	Data Center Improved Operations	Lodging	2014	2054	36.21	5.38	4.02	4.02	10%	0.60	0.60	10%	0.00
VA	5700	5702	Data Center Best Practices	Lodging	2014	2054	31.61	4.70	4.61	8.63	21%	0.68	1.28	21%	0.00
VA	5700	5703	Data Center State of the Art practices	Lodging	2014	2054	29.84	4.43	1.77	10.40	26%	0.26	1.55	26%	0.00
VA	6000	6000	Base Water Heating	Lodging	2014	2054	62.44	8.42	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	6000	6007	Heat Trap	Lodging	2014	2054	59.20	7.98	3.23	3.23	5%	0.44	0.44	5%	0.01
VA	6000	6006	Heat Recovery Unit	Lodging	2014	2054	51.51	6.95	7.70	10.93	18%	1.04	1.47	18%	0.02
VA	6000	6001	Demand controlled circulating systems	Lodging	2014	2054	49.58	6.69	1.93	12.86	21%	0.26	1.73	21%	0.03
VA	6000	6002	High Efficiency Water Heater (electric)	Lodging	2014	2054	48.58	6.55	0.99	13.85	22%	0.13	1.87	22%	0.03
VA	6000	6004	Tankless Water Heater	Lodging	2014	2054	44.94	6.06	3.64	17.50	28%	0.49	2.36	28%	0.05
VA	6000	6008	Solar Water Heater	Lodging	2014	2054	38.65	5.21	6.29	23.79	38%	0.85	3.21	38%	0.06

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Year 2020

Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	6000	6003	Hot Water Pipe Insulation	Lodging	2014	2054	37.99	5.12	0.66	24.45	39%	0.09	3.30	39%	0.07
VA	7000	7000	Base Refrigerated Vending Machines	Lodging	2014	2054	15.02	2.44	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7000	7001	Vending Misers (Refrigerated units)	Lodging	2014	2054	12.67	2.26	2.35	2.35	16%	0.19	0.19	8%	0.02
VA	7000	7002	Vending Misers (Refrigerated glass-fro	Lodging	2014	2054	11.40	2.15	1.27	3.62	24%	0.10	0.29	12%	0.05
VA	7100	7100	Base Non-Refrigerated Vending Machi	Lodging	2014	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7100	7101	Vending Misers (Non-Refrigerated)	Lodging	2014	2054	0.05	0.01	0.04	0.04	45%	0.00	0.00	22%	0.41
VA	7200	7200	Base Oven	Lodging	2014	2054	2.97	0.61	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7300	7300	Base Fryer	Lodging	2014	2054	7.48	1.53	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7400	7400	Base Steamer	Lodging	2014	2054	1.24	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Lodging	2014	2054	24.82	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 H	Lodging	2014	2054	23.42	0.00	1.40	1.40	6%	0.00	0.00	0%	0.02
VA	8100	8100	Base Heating, Other Electric	Lodging	2014	2054	19.91	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9500	Base Miscellaneous	Lodging	2014	2054	279.75	45.55	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9501	Xmisc	Lodging	2014	2054	279.75	45.55	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1E	ata Cente	2020	2054	17.07	2.97	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8)	ata Cente	2020	2054	17.02	2.97	0.05	0.05	0%	0.00	0.00	0%	0.01
VA	1030	1038	High Performance Lighting R/R - 25%	ata Cente	2020	2054	15.76	2.79	1.26	1.31	8%	0.18	0.18	6%	0.01
VA	1030	1031	ROB 4L4' High Performance T8 (86 Wat	ata Cente	2020	2054	14.16	2.51	1.61	2.91	17%	0.28	0.46	16%	0.02
VA	1030	1032	ROB 4L4' Low Watt High Performance	ata Cente	2020	2054	12.35	2.19	1.80	4.72	28%	0.31	0.77	26%	0.05
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent fat	ata Cente	2020	2054	11.42	2.15	0.93	5.65	33%	0.04	0.82	28%	0.07
VA	1030	1034	ROB 4L4' LED Tube, 2020	ata Cente	2020	2054	9.58	1.83	1.84	7.49	44%	0.32	1.14	38%	0.30
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	ata Cente	2020	2054	8.76	1.69	0.82	8.31	49%	0.14	1.28	43%	0.25
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1E	ata Cente	2020	2054	0.29	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8)	ata Cente	2020	2054	0.29	0.05	0.00	0.00	0%	0.00	0.00	0%	0.02
VA	1130	1138	High Performance Lighting R/R - 25%	ata Cente	2020	2054	0.27	0.05	0.02	0.02	8%	0.00	0.00	6%	0.03
VA	1130	1131	ROB 2L4' High Performance T8 (86 Wat	ata Cente	2020	2054	0.24	0.04	0.03	0.05	17%	0.00	0.01	16%	0.03
VA	1130	1132	ROB 2L4' Low Watt High Performance	ata Cente	2020	2054	0.21	0.04	0.03	0.08	28%	0.01	0.01	26%	0.06
VA	1130	1134	ROB 2L4' LED Tube, 2020	ata Cente	2020	2054	0.20	0.04	0.01	0.09	31%	0.00	0.01	30%	0.23
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent fat	ata Cente	2020	2054	0.18	0.03	0.01	0.11	36%	0.00	0.02	31%	0.13
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	ata Cente	2020	2054	0.17	0.03	0.02	0.12	42%	0.00	0.02	37%	0.31
VA	1200	1200	Base Other Fluorescent Fixture	ata Cente	2014	2054	0.63	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1200	1203	Lighting Control Tuneup (base other fl	ata Cente	2014	2054	0.61	0.11	0.01	0.01	2%	0.00	0.00	1%	0.00
VA	1200	1205	High Performance Lighting R/R - 25%	ata Cente	2014	2054	0.57	0.10	0.05	0.06	9%	0.01	0.01	7%	0.03
VA	1200	1201	ROB High Performance T8 (base othe	ata Cente	2014	2054	0.51	0.09	0.06	0.12	19%	0.01	0.02	16%	0.10
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent fat	ata Cente	2014	2054	0.44	0.09	0.07	0.18	29%	0.00	0.02	19%	0.13
VA	1200	1202	ROB Low Watt High Performance T8	ata Cente	2014	2054	0.39	0.08	0.06	0.24	38%	0.01	0.03	28%	0.23
VA	1330	1330	Base Incandescent Flood, 100W to Sca	ata Cente	2020	2054	5.27	0.92	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1330	1332	LEDs (base incandescent flood) 2020	ata Cente	2020	2054	1.04	0.18	4.24	4.24	80%	0.74	0.74	80%	0.01
VA	1430	1430	Base Incandescent A-Line Lamp, 72Wa	ata Cente	2020	2054	1.90	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1430	1432	LEDs (base incandescent A-line 72W)	ata Cente	2020	2054	0.40	0.07	1.49	1.49	79%	0.26	0.26	79%	0.01
VA	1530	1530	Base Incandescent A-Line Lamp, 53Wa	ata Cente	2020	2054	1.40	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1530	1532	LEDs (base incandescent A-line 53W)	ata Cente	2020	2054	0.41	0.07	0.99	0.99	71%	0.17	0.17	71%	0.01
VA	1630	1630	Base CFL 18W to screw-in replaceme	ata Cente	2020	2054	1.07	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1630	1631	LED screw-in replacement (base CFL	ata Cente	2020	2054	0.77	0.13	0.30	0.30	28%	0.05	0.05	28%	0.06
VA	1730	1730	Base CFL 23W to screw-in replaceme	ata Cente	2020	2054	1.36	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1730	1731	LED screw-in replacement (base CFL	ata Cente	2020	2054	1.01	0.18	0.35	0.35	26%	0.06	0.06	26%	0.05
VA	1800	1800	BaseMetal Halide, 465W	ata Cente	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1850	Base CFL Exit Sign	ata Cente	2014	2054	0.27	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1851	LED Exit Sign	ata Cente	2014	2054	0.15	0.03	0.12	0.12	44%	0.02	0.02	44%	0.03
VA	1900	1900	Base Outdoor High Pressure Sodium	ata Cente	2014	2054	4.01	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1900	1901	Outdoor Lighting Controls (Photocell/Ta	ata Cente	2014	2054	3.65	0.04	0.36	0.36	9%	0.01	0.01	18%	0.02
VA	1900	1902	LED Outdoor Area Lighting	ata Cente	2014	2054	1.76	0.02	1.89	2.25	56%	0.02	0.03	65%	0.10
VA	1900	1903	Bi-Level LED Outdoor Lighting	ata Cente	2014	2054	1.25	0.01	0.50	2.75	69%	0.01	0.03	77%	0.67
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton,	ata Cente	2014	2054	44.99	11.07	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2000	2010	Ceiling/roof Insulation - Chiller	ata Cente	2014	2054	44.79	11.02	0.20	0.20	0%	0.05	0.05	0%	0.00
VA	2000	2005	Chiller Tune Up/Diagnostics	ata Cente	2014	2054	44.77	11.02	0.02	0.22	0%	0.00	0.05	0%	0.01
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 t	ata Cente	2014	2054	40.94	10.08	3.82	4.05	9%	0.94	0.99	9%	0.01
VA	2000	2006	VSD for Chiller Pumps and Towers	ata Cente	2014	2054	40.66	10.05	0.29	4.33	10%	0.03	1.03	9%	0.01
VA	2000	2013	High Efficiency Chiller Motors	ata Cente	2014	2054	40.58	10.03	0.07	4.41	10%	0.02	1.04	9%	0.02
VA	2000	2003	EMS - Chiller	ata Cente	2014	2054	39.54	9.97	1.04	5.45	12%	0.06	1.10	10%	0.02
VA	2000	2008	New Economizer - Chiller	ata Cente	2014	2054	36.69	9.81	2.85	8.30	18%	0.16	1.26	11%	0.02
VA	2000	2002	Window Film (Standard) - Chiller	ata Cente	2014	2054	36.67	9.81	0.01	8.32	18%	0.00	1.27	11%	0.04
VA	2000	2012	Duct Testing/Sealing - Chiller	ata Cente	2014	2054	29.71	8.09	6.97	15.28	34%	1.72	2.98	27%	0.06
VA	2000	2004	Cool Roof - Chiller	ata Cente	2014	2054	29.61	8.07	0.09	15.38	34%	0.02	3.00	27%	0.09
VA	2000	2011	Duct/Pipe Insulation - Chiller	ata Cente	2014	2054	29.52	8.05	0.09	15.47	34%	0.02	3.03	27%	0.74
VA	2100	2100	Base DX Packaged System, EER=10.	ata Cente	2014	2054	25.66	6.32	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2100	2102	DX Packaged System, EER=13.4, 10	ata Cente	2014	2054	19.76	4.86	5.90	5.90	23%	1.45	1.45	23%	0.01
VA	2100	2111	Economizer Repair - DX	ata Cente	2014	2054	19.33	4.68	0.43	6.33	25%	0.19	1.64	26%	0.03
VA	2100	2108	Optimize Controls - DX	ata Cente	2014	2054	18.97	4.66	0.36	6.69	26%	0.02	1.66	26%	0.02
VA	2100	2109	Economizer - DX	ata Cente	2014	2054	16.67	4.53	2.29	8.98	35%	0.13	1.79	28%	0.03
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	ata Cente	2014	2054	16.67	4.53	0.01	8.99	35%	0.00	1.79	28%	0.04
VA	2100	2115	Window Film (Standard) - DX	ata Cente	2014	2054	16.32	4.44	0.34	9.33	36%	0.08	1.87	30%	0.05

APPENDIX H

Base Avoided Costs

ADDITIVE MEASURE LEVEL RESULTS

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Existing

Year 2020

Sgmt	Base Number	Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	2100	2106	Prog. Thermostat - DX	ata Cente	2014	2054	15.52	4.40	0.80	10.14	40%	0.05	1.92	30%	0.04
VA	2100	2112	Duct Testing/Sealing - DX	ata Cente	2014	2054	14.58	4.16	0.94	11.08	43%	0.23	2.15	34%	0.08
VA	2100	2110	Dual Enthalpy Economizer Replaces E	ata Cente	2014	2054	14.58	4.16	0.00	11.08	43%	0.00	2.15	34%	0.08
VA	2100	2107	Cool Roof - DX	ata Cente	2014	2054	14.45	4.13	0.12	11.21	44%	0.03	2.18	35%	0.10
VA	2100	2114	Duct/Pipe Insulation - DX	ata Cente	2014	2054	14.36	4.11	0.09	11.30	44%	0.02	2.21	35%	0.87
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF	ata Cente	2014	2054	3.29	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 H	ata Cente	2014	2054	2.88	0.71	0.41	0.41	12%	0.10	0.10	12%	0.01
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	ata Cente	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	ata Cente	2014	2054	6.59	1.62	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3002	Variable Speed Drive Control, 5 HP	ata Cente	2014	2054	5.97	1.58	0.61	0.61	9%	0.04	0.04	2%	0.01
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	ata Cente	2014	2054	5.88	1.56	0.10	0.71	11%	0.02	0.06	4%	0.01
VA	3000	3003	Demand Controlled Ventilation	ata Cente	2014	2054	5.54	1.41	0.34	1.05	16%	0.15	0.21	13%	0.30
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0	ata Cente	2014	2054	22.89	5.63	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3100	3102	Variable Speed Drive Control, 15 HP	ata Cente	2014	2054	20.77	5.50	2.12	2.12	9%	0.13	0.13	2%	0.00
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	ata Cente	2014	2054	20.64	5.47	0.12	2.25	10%	0.03	0.16	3%	0.01
VA	3100	3104	Electronically Commutated Motors (E	ata Cente	2014	2054	19.29	5.17	1.35	3.60	16%	0.30	0.47	8%	0.01
VA	3100	3103	Air Handler Optimization, 15 HP	ata Cente	2014	2054	17.47	5.06	1.82	5.42	24%	0.11	0.58	10%	0.01
VA	3100	3105	Energy Recovery Ventilation (ERV)	ata Cente	2014	2054	17.04	4.86	0.43	5.85	26%	0.19	0.77	14%	0.11
VA	3100	3107	Demand Controlled Ventilation	ata Cente	2014	2054	16.06	4.43	0.98	6.83	30%	0.44	1.21	21%	0.36
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0	ata Cente	2014	2054	24.32	5.99	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3202	Variable Speed Drive Control, 40 HP	ata Cente	2014	2054	22.06	5.85	2.26	2.26	9%	0.14	0.14	2%	0.01
VA	3200	3203	Air Handler Optimization, 40 HP	ata Cente	2014	2054	19.98	5.72	2.08	4.34	18%	0.13	0.27	5%	0.01
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	ata Cente	2014	2054	19.89	5.69	0.09	4.43	18%	0.02	0.29	5%	0.05
VA	3200	3204	Demand Controlled Ventilation	ata Cente	2014	2054	18.75	5.19	1.15	5.57	23%	0.51	0.80	13%	0.32
VA	4000	4000	Base Built-Up Refrigeration System	ata Cente	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4100	Base Self-Contained Refrigeration	ata Cente	2014	2054	3.64	0.68	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4109	Energy-Star Freezer, glass door	ata Cente	2014	2054	3.64	0.68	0.00	0.00	0%	0.00	0.00	0%	0.00
VA	4100	4104	Freezer-Cooler Replacement Gaskets	ata Cente	2014	2054	3.57	0.67	0.07	0.07	2%	0.01	0.01	2%	0.00
VA	4100	4107	Energy-Star Freezer, solid door	ata Cente	2014	2054	3.57	0.67	0.00	0.07	2%	0.00	0.01	2%	0.01
VA	4100	4108	Energy-Star Refrigerator, glass door	ata Cente	2014	2054	3.57	0.67	0.00	0.07	2%	0.00	0.01	2%	0.01
VA	4100	4106	Energy-Star Refrigerator, solid door	ata Cente	2014	2054	3.57	0.67	0.00	0.07	2%	0.00	0.01	2%	0.01
VA	4100	4110	Energy Star Ice Machines	ata Cente	2014	2054	3.57	0.67	0.00	0.08	2%	0.00	0.01	2%	0.02
VA	4100	4112	Reach-in unit occupancy sensors	ata Cente	2014	2054	3.56	0.67	0.00	0.08	2%	0.00	0.01	2%	0.27
VA	4100	4105	Bi-level LED Case Lighting (self-conta	ata Cente	2014	2054	3.56	0.67	0.00	0.08	2%	0.00	0.01	2%	0.30
VA	5000	5000	Base Desktop PC	ata Cente	2014	2054	0.48	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5000	5001	PC Network Power Management Ena	ata Cente	2014	2054	0.27	0.06	0.21	0.21	44%	0.02	0.02	23%	0.01
VA	5000	5002	Energy Star or Better PC	ata Cente	2014	2054	0.21	0.05	0.06	0.27	56%	0.01	0.03	35%	0.03
VA	5100	5100	Base Laptop PC	ata Cente	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5100	5102	Energy Star or Better Laptop	ata Cente	2014	2054	0.03	0.00	0.01	0.01	19%	0.00	0.00	19%	0.01
VA	5100	5101	Laptop Network Power Management E	ata Cente	2014	2054	0.03	0.00	0.00	0.01	21%	0.00	0.00	21%	1.24
VA	5200	5200	Base Monitor, CRT	ata Cente	2014	2054	0.26	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5200	5201	Energy Star or Better Monitor - CRT	ata Cente	2014	2054	0.15	0.03	0.11	0.11	43%	0.02	0.02	43%	0.00
VA	5200	5202	Monitor Power Management Enabling	ata Cente	2014	2054	0.13	0.02	0.02	0.13	50%	0.00	0.02	46%	0.01
VA	5200	5203	Plug-load controls - Commercial Sma	ata Cente	2014	2054	0.12	0.02	0.01	0.14	54%	0.00	0.02	50%	0.14
VA	5300	5300	Base Monitor, LCD	ata Cente	2014	2054	0.13	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5300	5301	Energy Star or Better Monitor - LCD	ata Cente	2014	2054	0.11	0.02	0.02	0.02	13%	0.00	0.00	13%	0.01
VA	5300	5302	Monitor Power Management Enabling	ata Cente	2014	2054	0.10	0.02	0.01	0.02	19%	0.00	0.00	16%	0.08
VA	5300	5303	Plug-load controls - Commercial Sma	ata Cente	2014	2054	0.09	0.02	0.01	0.03	25%	0.00	0.00	18%	0.24
VA	5400	5400	Base Copier	ata Cente	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5400	5401	Energy Star or Better Copier	ata Cente	2014	2054	0.10	0.02	0.01	0.01	10%	0.00	0.00	10%	0.00
VA	5400	5402	Copier Power Management Enabling	ata Cente	2014	2054	0.09	0.02	0.00	0.01	14%	0.00	0.00	12%	0.09
VA	5500	5500	Base Multifunction	ata Cente	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5500	5502	ENERGY STAR Multi-Function Printer	ata Cente	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01
VA	5500	5501	Multifunction Power Management Ena	ata Cente	2014	2054	0.01	0.00	0.00	0.01	38%	0.00	0.00	32%	0.28
VA	5600	5600	Base Printer	ata Cente	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5600	5602	ENERGY STAR Printer	ata Cente	2014	2054	0.03	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00
VA	5600	5601	Printer Power Management Enabling	ata Cente	2014	2054	0.02	0.00	0.00	0.02	46%	0.00	0.00	41%	0.06
VA	5700	5700	Base Data Center/Server Room	ata Cente	2014	2054	762.71	132.70	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5700	5701	Data Center Improved Operations	ata Cente	2014	2054	686.44	119.43	76.27	76.27	10%	13.27	13.27	10%	0.00
VA	5700	5702	Data Center Best Practices	ata Cente	2014	2054	599.11	104.24	87.33	163.60	21%	15.19	28.46	21%	0.00
VA	5700	5703	Data Center State of the Art practices	ata Cente	2014	2054	565.56	98.40	33.55	197.15	26%	5.84	34.30	26%	0.00
VA	6000	6000	Base Water Heating	ata Cente	2014	2054	0.38	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	6000	6007	Heat Trap	ata Cente	2014	2054	0.36	0.06	0.02	0.02	5%	0.00	0.00	5%	0.08
VA	6000	6002	High Efficiency Water Heater (electric)	ata Cente	2014	2054	0.36	0.06	0.01	0.03	7%	0.00	0.00	7%	0.16
VA	6000	6004	Tankless Water Heater	ata Cente	2014	2054	0.33	0.06	0.03	0.05	14%	0.00	0.01	14%	0.24
VA	6000	6008	Solar Water Heater	ata Cente	2014	2054	0.15	0.03	0.18	0.23	60%	0.03	0.04	60%	0.28
VA	6000	6006	Heat Recovery Unit	ata Cente	2014	2054	0.14	0.03	0.01	0.24	62%	0.00	0.04	62%	0.62
VA	6000	6001	Demand controlled circulating system	ata Cente	2014	2054	0.14	0.02	0.00	0.24	64%	0.00	0.04	64%	1.87
VA	7000	7000	Base Refrigerated Vending Machines	ata Cente	2014	2054	0.25	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7000	7001	Vending Misers (Refrigerated units)	ata Cente	2014	2054	0.21	0.04	0.04	0.04	16%	0.00	0.00	8%	0.01
VA	7000	7002	Vending Misers (Refrigerated glass-fr	ata Cente	2014	2054	0.19	0.04	0.02	0.06	24%	0.00	0.01	12%	0.02
VA	7100	7100	Base Non-Refrigerated Vending Machi	ata Cente	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS

Year 2020

Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	7100	7101	Vending Misers (Non-Refrigerated)	ata Cente	2014	2054	0.01	0.00	0.00	0.00	44%	0.00	0.00	23%	0.12
VA	7200	7200	Base Oven	ata Cente	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7300	7300	Base Fryer	ata Cente	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7400	7400	Base Steamer	ata Cente	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	ata Cente	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8100	8100	Base Heating, Other Electric	ata Cente	2014	2054	0.42	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9500	Base Miscellaneous	ata Cente	2014	2054	3.84	0.67	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9501	Xmisc	ata Cente	2014	2054	3.84	0.67	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EE	gious Wor	2020	2054	69.16	11.74	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1031	ROB 4L4' High Performance T8 (86 W	gious Wor	2020	2054	62.00	10.52	7.17	7.17	10%	1.22	1.22	10%	0.04
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8)	gious Wor	2020	2054	61.68	10.50	0.32	7.49	11%	0.03	1.24	11%	0.05
VA	1030	1038	High Performance Lighting R/R - 25%	gious Wor	2020	2054	57.00	9.87	4.67	12.16	18%	0.63	1.87	16%	0.07
VA	1030	1032	ROB 4L4' Low Watt High Performance	gious Wor	2020	2054	49.75	8.64	7.25	19.41	28%	1.23	3.10	26%	0.09
VA	1030	1034	ROB 4L4' LED Tube, 2020	gious Wor	2020	2054	41.74	7.28	8.02	27.43	40%	1.36	4.46	38%	0.58
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent f	gious Wor	2020	2054	40.62	7.23	1.11	28.54	41%	0.05	4.51	38%	0.28
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	gious Wor	2020	2054	37.16	6.64	3.47	32.01	46%	0.59	5.10	43%	0.49
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EE	gious Wor	2020	2054	52.96	8.99	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1130	1131	ROB 2L4' High Performance T8 (86 W	gious Wor	2020	2054	47.96	8.14	5.00	5.00	9%	0.85	0.85	9%	0.05
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8)	gious Wor	2020	2054	47.71	8.12	0.25	5.25	10%	0.02	0.87	10%	0.05
VA	1130	1138	High Performance Lighting R/R - 25%	gious Wor	2020	2054	44.09	7.63	3.61	8.87	17%	0.49	1.36	15%	0.08
VA	1130	1132	ROB 2L4' Low Watt High Performance	gious Wor	2020	2054	38.48	6.68	5.61	14.48	27%	0.95	2.31	26%	0.12
VA	1130	1134	ROB 2L4' LED Tube, 2020	gious Wor	2020	2054	36.62	6.36	1.86	16.34	31%	0.32	2.62	29%	0.47
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	gious Wor	2020	2054	33.50	5.83	3.13	19.46	37%	0.53	3.15	35%	0.59
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent f	gious Wor	2020	2054	32.60	5.80	0.89	20.36	38%	0.04	3.19	35%	0.47
VA	1200	1200	Base Other Fluorescent Fixture	gious Wor	2014	2054	0.72	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1200	1203	Lighting Control Tuneup (base other fl	gious Wor	2014	2054	0.70	0.12	0.02	0.02	3%	0.00	0.00	2%	0.03
VA	1200	1201	ROB High Performance T8 (base othe	gious Wor	2014	2054	0.65	0.11	0.05	0.08	10%	0.01	0.01	9%	0.17
VA	1200	1202	ROB Low Watt High Performance T8	gious Wor	2014	2054	0.57	0.10	0.08	0.16	22%	0.01	0.02	20%	0.35
VA	1200	1205	High Performance Lighting R/R - 25%	gious Wor	2014	2054	0.52	0.09	0.04	0.20	28%	0.01	0.03	25%	0.36
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent f	gious Wor	2014	2054	0.48	0.09	0.04	0.24	33%	0.00	0.03	26%	0.31
VA	1330	1330	Base Incandescent Flood, 100W to Sc	gious Wor	2020	2054	27.77	4.71	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1330	1332	LEDs (base incandescent flood) 2020	gious Wor	2020	2054	4.96	0.84	22.81	22.81	82%	3.87	3.87	82%	0.01
VA	1430	1430	Base Incandescent A-Line Lamp, 72W	gious Wor	2020	2054	10.00	1.70	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1430	1432	LEDs (base incandescent A-line 72W)	gious Wor	2020	2054	1.94	0.33	8.06	8.06	81%	1.37	1.37	81%	0.01
VA	1530	1530	Base Incandescent A-Line Lamp, 53W	gious Wor	2020	2054	7.36	1.25	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1530	1532	LEDs (base incandescent A-line 53W)	gious Wor	2020	2054	1.96	0.33	5.40	5.40	73%	0.92	0.92	73%	0.02
VA	1630	1630	Base CFL 18W to screw-in replaceme	gious Wor	2020	2054	4.14	0.70	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1630	1631	LED screw-in replacement (base CFL	gious Wor	2020	2054	2.99	0.51	1.15	1.15	28%	0.19	0.19	28%	0.13
VA	1730	1730	Base CFL 23W to screw-in replaceme	gious Wor	2020	2054	5.29	0.90	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1730	1731	LED screw-in replacement (base CFL	gious Wor	2020	2054	3.92	0.66	1.38	1.38	26%	0.23	0.23	26%	0.09
VA	1800	1800	BaseMetal Halide, 465W	gious Wor	2014	2054	3.51	0.60	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1800	1801	T5 (240W) (base metal halide)	gious Wor	2014	2054	2.33	0.39	1.19	1.19	34%	0.20	0.20	34%	0.03
VA	1800	1806	Occupancy Sensor, High Bay T5	gious Wor	2014	2054	2.25	0.39	0.08	1.26	36%	0.00	0.20	34%	0.08
VA	1800	1805	High Performance Lighting R/R - 25%	gious Wor	2014	2054	2.08	0.37	0.17	1.43	41%	0.02	0.23	38%	0.14
VA	1850	1850	Base CFL Exit Sign	gious Wor	2014	2054	2.02	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1850	1851	LED Exit Sign	gious Wor	2014	2054	1.09	0.18	0.93	0.93	46%	0.16	0.16	46%	0.05
VA	1900	1900	Base Outdoor High Pressure Sodium	gious Wor	2014	2054	25.23	1.95	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1900	1901	Outdoor Lighting Controls (Photocell/T	gious Wor	2014	2054	24.75	1.85	0.48	0.48	2%	0.11	0.11	5%	0.07
VA	1900	1902	LED Outdoor Area Lighting	gious Wor	2014	2054	11.91	0.85	12.84	13.32	53%	0.99	1.10	56%	0.16
VA	1900	1903	Bi-Level LED Outdoor Lighting	gious Wor	2014	2054	8.43	0.61	3.48	16.80	67%	0.24	1.34	69%	1.07
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton,	gious Wor	2014	2054	30.08	23.26	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2000	2010	Ceiling/roof Insulation - Chiller	gious Wor	2014	2054	29.71	22.97	0.38	0.38	1%	0.29	0.29	1%	0.04
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 t	gious Wor	2014	2054	27.17	21.01	2.54	2.91	10%	1.96	2.25	10%	0.08
VA	2000	2005	Chiller Tune Up/Diagnostics	gious Wor	2014	2054	27.15	21.00	0.02	2.93	10%	0.01	2.26	10%	0.06
VA	2000	2013	High Efficiency Chiller Motors	gious Wor	2014	2054	27.13	20.99	0.02	2.95	10%	0.02	2.28	10%	0.12
VA	2000	2006	VSD for Chiller Pumps and Towers	gious Wor	2014	2054	26.07	20.57	1.05	4.01	13%	0.42	2.69	12%	0.09
VA	2000	2003	EMS - Chiller	gious Wor	2014	2054	24.82	20.32	1.25	5.26	17%	0.25	2.94	13%	0.14
VA	2000	2012	Duct Testing/Sealing - Chiller	gious Wor	2014	2054	20.26	16.79	4.56	9.83	33%	3.53	6.47	28%	0.40
VA	2000	2002	Window Film (Standard) - Chiller	gious Wor	2014	2054	20.13	16.69	0.13	9.95	33%	0.10	6.57	28%	1.45
VA	2000	2004	Cool Roof - Chiller	gious Wor	2014	2054	20.09	16.66	0.04	9.99	33%	0.03	6.60	28%	6.31
VA	2000	2011	Duct/Pipe Insulation - Chiller	gious Wor	2014	2054	19.82	16.46	0.27	10.26	34%	0.21	6.81	29%	7.61
VA	2000	2008	New Economizer - Chiller	gious Wor	2014	2054	19.82	16.46	0.00	10.26	34%	0.00	6.81	29%	#######
VA	2100	2100	Base DX Packaged System, EER=10.	gious Wor	2014	2054	96.90	74.94	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2100	2113	Ceiling/roof Insulation - DX	gious Wor	2014	2054	96.90	74.94	0.00	0.00	0%	0.00	0.00	0%	0.04
VA	2100	2102	DX Packaged System, EER=13.4, 10	gious Wor	2014	2054	74.61	57.70	22.29	22.29	23%	17.24	17.24	23%	0.07
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	gious Wor	2014	2054	74.58	57.69	0.03	22.32	23%	0.01	17.25	23%	0.23
VA	2100	2112	Duct Testing/Sealing - DX	gious Wor	2014	2054	70.19	54.30	4.39	26.71	28%	3.39	20.64	28%	0.43
VA	2100	2106	Prog. Thermostat - DX	gious Wor	2014	2054	68.60	53.98	1.59	28.30	29%	0.32	20.96	28%	0.24
VA	2100	2108	Optimize Controls - DX	gious Wor	2014	2054	67.46	53.75	1.14	29.44	30%	0.23	21.18	28%	0.25
VA	2100	2115	Window Film (Standard) - DX	gious Wor	2014	2054	67.20	53.55	0.26	29.70	31%	0.20	21.39	29%	1.19
VA	2100	2107	Cool Roof - DX	gious Wor	2014	2054	67.07	53.45	0.13	29.83	31%	0.10	21.49	29%	6.09
VA	2100	2114	Duct/Pipe Insulation - DX	gious Wor	2014	2054	66.64	53.12	0.43	30.26	31%	0.33	21.82	29%	7.28

Commercial Electric Existing Construction
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Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF	gious Wor	2014	2054	78.85	60.98	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 H	gious Wor	2014	2054	69.10	53.44	9.75	9.75	12%	7.54	7.54	12%	0.07
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	gious Wor	2014	2054	78.27	60.53	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	2300	2301	HE PTAC, EER=9.6, 1 ton	gious Wor	2014	2054	67.67	52.33	10.60	10.60	14%	8.20	8.20	14%	0.16
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	gious Wor	2014	2054	72.92	20.72	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	gious Wor	2014	2054	71.66	20.36	1.26	1.26	2%	0.36	0.36	2%	0.13
VA	3000	3002	Variable Speed Drive Control, 5 HP	gious Wor	2014	2054	50.40	18.85	21.26	22.52	31%	1.51	1.86	9%	0.10
VA	3000	3003	Demand Controlled Ventilation	gious Wor	2014	2054	49.42	18.32	0.98	23.50	32%	0.54	2.40	12%	3.09
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0	gious Wor	2014	2054	58.13	16.52	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3100	3104	Electronically Commutated Motors (E	gious Wor	2014	2054	49.74	14.37	8.39	8.39	14%	2.14	2.14	13%	0.06
VA	3100	3103	Air Handler Optimization, 15 HP	gious Wor	2014	2054	46.33	14.13	3.41	11.80	20%	0.24	2.38	14%	0.08
VA	3100	3102	Variable Speed Drive Control, 15 HP	gious Wor	2014	2054	32.59	13.16	13.75	25.54	44%	0.97	3.36	20%	0.13
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	gious Wor	2014	2054	32.10	13.02	0.49	26.03	45%	0.14	3.49	21%	0.42
VA	3100	3105	Energy Recovery Ventilation (ERV)	gious Wor	2014	2054	31.69	12.80	0.41	26.44	45%	0.22	3.72	23%	0.86
VA	3100	3107	Demand Controlled Ventilation	gious Wor	2014	2054	31.07	12.46	0.62	27.06	47%	0.34	4.06	25%	3.92
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0	gious Wor	2014	2054	46.13	13.11	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	3200	3203	Air Handler Optimization, 40 HP	gious Wor	2014	2054	42.97	12.88	3.16	3.16	7%	0.22	0.22	2%	0.07
VA	3200	3202	Variable Speed Drive Control, 40 HP	gious Wor	2014	2054	30.22	11.98	12.75	15.91	34%	0.90	1.13	9%	0.21
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	gious Wor	2014	2054	30.10	11.94	0.12	16.03	35%	0.03	1.16	9%	1.02
VA	3200	3204	Demand Controlled Ventilation	gious Wor	2014	2054	29.51	11.62	0.59	16.62	36%	0.32	1.48	11%	3.28
VA	4000	4000	Base Built-Up Refrigeration System	gious Wor	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4100	Base Self-Contained Refrigeration	gious Wor	2014	2054	98.51	14.83	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	4100	4103	Night covers for display cases (self-c	gious Wor	2014	2054	97.55	14.69	0.95	0.95	1%	0.14	0.14	1%	0.00
VA	4100	4104	Freezer-Cooler Replacement Gaskets	gious Wor	2014	2054	96.17	14.48	1.39	2.34	2%	0.21	0.35	2%	0.00
VA	4100	4108	Energy-Star Refrigerator, glass door	gious Wor	2014	2054	95.55	14.38	0.62	2.96	3%	0.09	0.45	3%	0.01
VA	4100	4106	Energy-Star Refrigerator, solid door	gious Wor	2014	2054	93.94	14.14	1.60	4.56	5%	0.24	0.69	5%	0.01
VA	4100	4110	Energy Star Ice Machines	gious Wor	2014	2054	91.85	13.83	2.09	6.65	7%	0.31	1.00	7%	0.03
VA	4100	4112	Reach-in unit occupancy sensors	gious Wor	2014	2054	91.84	13.83	0.01	6.67	7%	0.00	1.00	7%	0.28
VA	4100	4105	Bi-level LED Case Lighting (self-conta	gious Wor	2014	2054	91.76	13.81	0.08	6.75	7%	0.01	1.02	7%	0.32
VA	5000	5000	Base Desktop PC	gious Wor	2014	2054	9.54	1.44	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5000	5001	PC Network Power Management Enat	gious Wor	2014	2054	5.24	1.11	4.30	4.30	45%	0.33	0.33	23%	0.02
VA	5000	5002	Energy Star or Better PC	gious Wor	2014	2054	3.61	0.87	1.63	5.93	62%	0.25	0.58	40%	0.05
VA	5100	5100	Base Laptop PC	gious Wor	2014	2054	0.66	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5100	5102	Energy Star or Better Laptop	gious Wor	2014	2054	0.53	0.08	0.12	0.12	19%	0.02	0.02	19%	0.02
VA	5100	5101	Laptop Network Power Management E	gious Wor	2014	2054	0.52	0.08	0.01	0.13	21%	0.00	0.02	21%	2.25
VA	5200	5200	Base Monitor, CRT	gious Wor	2014	2054	1.67	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5200	5201	Energy Star or Better Monitor - CRT	gious Wor	2014	2054	0.73	0.11	0.94	0.94	56%	0.14	0.14	56%	0.00
VA	5200	5202	Monitor Power Management Enabling	gious Wor	2014	2054	0.55	0.10	0.19	1.12	67%	0.01	0.16	62%	0.03
VA	5200	5203	Plug-load controls - Commercial Sma	gious Wor	2014	2054	0.51	0.09	0.04	1.17	70%	0.01	0.16	64%	0.39
VA	5300	5300	Base Monitor, LCD	gious Wor	2014	2054	1.99	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5300	5301	Energy Star or Better Monitor - LCD	gious Wor	2014	2054	1.63	0.25	0.36	0.36	18%	0.05	0.05	18%	0.02
VA	5300	5302	Monitor Power Management Enabling	gious Wor	2014	2054	1.57	0.24	0.06	0.41	21%	0.00	0.06	19%	0.15
VA	5300	5303	Plug-load controls - Commercial Sma	gious Wor	2014	2054	1.45	0.24	0.12	0.53	27%	0.00	0.06	21%	0.42
VA	5400	5400	Base Copier	gious Wor	2014	2054	3.87	0.59	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5400	5401	Energy Star or Better Copier	gious Wor	2014	2054	3.35	0.51	0.52	0.52	13%	0.08	0.08	13%	0.00
VA	5400	5402	Copier Power Management Enabling	gious Wor	2014	2054	3.19	0.49	0.17	0.68	18%	0.01	0.09	16%	0.17
VA	5500	5500	Base Multifunction	gious Wor	2014	2054	0.51	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5500	5502	ENERGY STAR Multi-Function Printer	gious Wor	2014	2054	0.38	0.06	0.13	0.13	25%	0.02	0.02	25%	0.01
VA	5500	5501	Multifunction Power Management Ena	gious Wor	2014	2054	0.32	0.05	0.06	0.19	37%	0.00	0.02	31%	0.47
VA	5600	5600	Base Printer	gious Wor	2014	2054	1.56	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5600	5602	ENERGY STAR Printer	gious Wor	2014	2054	1.02	0.15	0.54	0.54	35%	0.08	0.08	35%	0.00
VA	5600	5601	Printer Power Management Enabling	gious Wor	2014	2054	0.85	0.14	0.17	0.71	45%	0.01	0.10	40%	0.10
VA	5700	5700	Base Data Center/Server Room	gious Wor	2014	2054	8.06	1.22	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	5700	5701	Data Center Improved Operations	gious Wor	2014	2054	7.25	1.10	0.81	0.81	10%	0.12	0.12	10%	0.00
VA	5700	5702	Data Center Best Practices	gious Wor	2014	2054	6.33	0.96	0.92	1.73	21%	0.14	0.26	21%	0.00
VA	5700	5703	Data Center State of the Art practices	gious Wor	2014	2054	5.97	0.90	0.35	2.08	26%	0.05	0.32	26%	0.00
VA	6000	6000	Base Water Heating	gious Wor	2014	2054	27.02	3.99	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	6000	6007	Heat Trap	gious Wor	2014	2054	25.62	3.78	1.40	1.40	5%	0.21	0.21	5%	0.03
VA	6000	6002	High Efficiency Water Heater (electric)	gious Wor	2014	2054	25.11	3.71	0.51	1.91	7%	0.08	0.28	7%	0.06
VA	6000	6004	Tankless Water Heater	gious Wor	2014	2054	23.22	3.43	1.88	3.79	14%	0.28	0.56	14%	0.09
VA	6000	6003	Hot Water Pipe Insulation	gious Wor	2014	2054	22.78	3.36	0.44	4.24	16%	0.07	0.63	16%	0.11
VA	6000	6006	Heat Recovery Unit	gious Wor	2014	2054	22.04	3.25	0.74	4.98	18%	0.11	0.73	18%	0.10
VA	6000	6001	Demand controlled circulating system	gious Wor	2014	2054	21.21	3.13	0.83	5.80	21%	0.12	0.86	21%	0.31
VA	7000	7000	Base Refrigerated Vending Machines	gious Wor	2014	2054	4.50	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7000	7001	Vending Misers (Refrigerated units)	gious Wor	2014	2054	3.78	0.69	0.72	0.72	16%	0.06	0.06	8%	0.03
VA	7000	7002	Vending Misers (Refrigerated glass-fr	gious Wor	2014	2054	3.38	0.65	0.39	1.11	25%	0.03	0.09	12%	0.05
VA	7100	7100	Base Non-Refrigerated Vending Mach	gious Wor	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7100	7101	Vending Misers (Non-Refrigerated)	gious Wor	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	23%	0.44
VA	7200	7200	Base Oven	gious Wor	2014	2054	26.99	4.38	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7300	7300	Base Fryer	gious Wor	2014	2054	1.40	0.23	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	7300	7301	Efficient Fryer	gious Wor	2014	2054	1.31	0.21	0.09	0.09	6%	0.01	0.01	6%	0.43
VA	7400	7400	Base Steamer	gious Wor	2014	2054	1.23	0.20	0.00	0.00	0%	0.00	0.00	0%	N/A

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS Year 2020

Vintage Sgmt	Base Number	Existing Measure Numb	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	gious Wor	2014	2054	2.39	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 H	gious Wor	2014	2054	2.26	0.00	0.13	0.13	6%	0.00	0.00	0%	0.06
VA	8100	8100	Base Heating, Other Electric	gious Wor	2014	2054	19.53	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9500	Base Miscellaneous	gious Wor	2014	2054	333.79	55.49	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	9500	9501	Xmisc	gious Wor	2014	2054	333.79	55.49	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB	Misc	2020	2054	414.67	70.38	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8)	Misc	2020	2054	412.52	70.20	2.15	2.15	1%	0.18	0.18	0%	0.01
VA	1030	1038	High Performance Lighting R/R - 25%	Misc	2020	2054	381.28	66.00	31.25	33.40	8%	4.20	4.38	6%	0.02
VA	1030	1031	ROB 4L4' High Performance T8 (86 W	Misc	2020	2054	341.77	59.29	39.50	72.90	18%	6.70	11.08	16%	0.02
VA	1030	1032	ROB 4L4' Low Watt High Performance	Misc	2020	2054	298.29	51.91	43.48	116.38	28%	7.38	18.46	26%	0.04
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent F	Misc	2020	2054	290.34	51.59	7.94	124.33	30%	0.33	18.79	27%	0.08
VA	1030	1034	ROB 4L4' LED Tube, 2020	Misc	2020	2054	243.56	43.65	46.78	171.11	41%	7.94	26.73	38%	0.25
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Misc	2020	2054	222.77	40.12	20.79	191.90	46%	3.53	30.26	43%	0.20
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB	Misc	2020	2054	317.53	53.89	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8)	Misc	2020	2054	315.87	53.75	1.66	1.66	1%	0.14	0.14	0%	0.02

Commercial Electric New Construction
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Vintage Existing

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH
VA	100	100	Base Bldg Design - 15%	Office	2014	2053	45.23	10.30	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	100	101	High Performance Building/Int Design - Tier 1 15% - Office	Office	2014	2053	38.32	8.29	6.91	6.91	15%	2.01	2.01	20%	0.04
VA	200	200	Base Bldg Design - 30%	Office	2014	2053	36.18	8.24	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	200	201	High Performance Building/Int Design - Tier 2 30% - Office	Office	2014	2053	25.13	5.03	11.05	11.05	31%	3.21	3.21	39%	0.03
VA	300	300	Base Bldg Design - 50%	Office	2014	2053	8.14	1.85	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	300	301	High Performance Building/Int Design - Tier 3 50% - Office	Office	2014	2053	4.00	0.65	4.14	4.14	51%	1.21	1.21	65%	0.03
VA	400	400	Base Bldg Design - 70%	Office	2014	2053	0.90	0.21	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	400	401	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Office	Office	2014	2053	0.26	0.02	0.64	0.64	71%	0.19	0.19	91%	0.04
NC	100	100	Base Bldg Design - 15%	Office	2014	2053	1.89	0.43	0.00	0.00	0%	0.00	0.00	0%	N/A
NC	100	101	High Performance Building/Int Design - Tier 1 15% - Office	Office	2014	2053	1.60	0.35	0.29	0.29	15%	0.08	0.08	20%	0.04
NC	200	200	Base Bldg Design - 30%	Office	2014	2053	1.51	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A
NC	200	201	High Performance Building/Int Design - Tier 2 30% - Office	Office	2014	2053	1.05	0.21	0.46	0.46	31%	0.13	0.13	39%	0.03
NC	300	300	Base Bldg Design - 50%	Office	2014	2053	0.34	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A
NC	300	301	High Performance Building/Int Design - Tier 3 50% - Office	Office	2014	2053	0.17	0.03	0.17	0.17	51%	0.05	0.05	65%	0.03
NC	400	400	Base Bldg Design - 70%	Office	2014	2053	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A
NC	400	401	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Office	Office	2014	2053	0.01	0.00	0.03	0.03	71%	0.01	0.01	91%	0.03
VA	100	100	Base Bldg Design - 15%	Restaurant	2014	2053	19.73	4.18	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	100	102	High Performance Building/Int Design - Tier 1 15% - Restaurant	Restaurant	2014	2053	16.73	3.36	3.00	3.00	15%	0.81	0.81	20%	0.05
VA	200	200	Base Bldg Design - 30%	Restaurant	2014	2053	15.79	3.34	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	200	202	High Performance Building/Int Design - Tier 2 30% - Restaurant	Restaurant	2014	2053	10.98	2.04	4.80	4.80	30%	1.30	1.30	39%	0.04
VA	300	300	Base Bldg Design - 50%	Restaurant	2014	2053	3.55	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	300	302	High Performance Building/Int Design - Tier 3 50% - Restaurant	Restaurant	2014	2053	1.75	0.26	1.80	1.80	51%	0.49	0.49	65%	0.04
VA	400	400	Base Bldg Design - 70%	Restaurant	2014	2053	0.39	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	400	402	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Restaurant	Restaurant	2014	2053	0.11	0.01	0.28	0.28	71%	0.08	0.08	91%	0.04
NC	100	100	Base Bldg Design - 15%	Restaurant	2014	2053	0.52	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A
NC	100	102	High Performance Building/Int Design - Tier 1 15% - Restaurant	Restaurant	2014	2053	0.44	0.09	0.08	0.08	15%	0.02	0.02	20%	0.04
NC	200	200	Base Bldg Design - 30%	Restaurant	2014	2053	0.42	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A
NC	200	202	High Performance Building/Int Design - Tier 2 30% - Restaurant	Restaurant	2014	2053	0.29	0.05	0.13	0.13	30%	0.03	0.03	39%	0.03
NC	300	300	Base Bldg Design - 50%	Restaurant	2014	2053	0.09	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A
NC	300	302	High Performance Building/Int Design - Tier 3 50% - Restaurant	Restaurant	2014	2053	0.05	0.01	0.05	0.05	51%	0.01	0.01	65%	0.03
NC	400	400	Base Bldg Design - 70%	Restaurant	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A
NC	400	402	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Restaurant	Restaurant	2014	2053	0.00	0.00	0.01	0.01	71%	0.00	0.00	91%	0.04
VA	100	100	Base Bldg Design - 15%	Retail	2014	2053	40.98	9.62	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	100	103	High Performance Building/Int Design - Tier 1 15% - Retail	Retail	2014	2053	34.72	7.74	6.26	6.26	15%	1.88	1.88	20%	0.09
VA	200	200	Base Bldg Design - 30%	Retail	2014	2053	32.78	7.69	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	200	203	High Performance Building/Int Design - Tier 2 30% - Retail	Retail	2014	2053	22.77	4.69	10.01	10.01	31%	3.00	3.00	39%	0.06
VA	300	300	Base Bldg Design - 50%	Retail	2014	2053	7.38	1.73	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	300	303	High Performance Building/Int Design - Tier 3 50% - Retail	Retail	2014	2053	3.62	0.61	3.75	3.75	51%	1.13	1.13	65%	0.07
VA	400	400	Base Bldg Design - 70%	Retail	2014	2053	0.82	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A
VA	400	403	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Retail	Retail	2014	2053	0.24	0.02	0.58	0.58	71%	0.18	0.18	91%	0.07

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Existing
Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Office	2020.00	2054.00	151.74	28.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Office	2020.00	2054.00	150.56	28.14	1.18	1.18	1%	0.11	0.11	0%	0.01	0.01
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	2020.00	2054.00	139.27	26.46	11.29	12.47	8%	1.68	1.79	6%	0.01	0.01
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Office	2020.00	2054.00	125.08	23.81	14.19	26.66	18%	2.64	4.43	16%	0.02	0.02
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	2020.00	2054.00	113.50	21.66	11.58	38.24	25%	2.16	6.59	23%	0.05	0.03
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Office	2020.00	2054.00	103.97	21.22	9.53	47.77	31%	0.44	7.03	25%	0.05	0.03
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Office	2020.00	2054.00	87.22	18.10	16.75	64.52	43%	3.12	10.15	36%	0.24	0.08
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Office	2020.00	2054.00	79.77	16.71	7.45	71.97	47%	1.39	11.54	41%	0.20	0.10
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Office	2020.00	2054.00	2.57	0.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Office	2020.00	2054.00	2.55	0.48	0.02	0.02	1%	0.00	0.00	0%	0.01	0.01
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Office	2020.00	2054.00	2.35	0.45	0.19	0.21	8%	0.03	0.03	6%	0.02	0.02
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Office	2020.00	2054.00	2.11	0.40	0.24	0.46	18%	0.05	0.08	16%	0.02	0.02
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Office	2020.00	2054.00	1.84	0.35	0.27	0.72	28%	0.05	0.13	26%	0.05	0.03
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Office	2020.00	2054.00	1.75	0.34	0.09	0.81	32%	0.02	0.14	30%	0.18	0.05
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Office	2020.00	2054.00	1.60	0.33	0.15	0.96	37%	0.01	0.15	31%	0.10	0.06
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Office	2020.00	2054.00	1.47	0.30	0.14	1.10	43%	0.03	0.17	37%	0.25	0.08
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Office	2014.00	2054.00	5.57	1.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Office	2014.00	2054.00	5.30	1.01	0.27	0.27	5%	0.02	0.02	2%	0.00	0.00
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Office	2014.00	2054.00	4.90	0.95	0.40	0.66	12%	0.06	0.08	8%	0.03	0.02
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Office	2014.00	2054.00	4.39	0.86	0.51	1.17	21%	0.09	0.18	17%	0.08	0.04
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	2014.00	2054.00	3.75	0.83	0.64	1.81	33%	0.03	0.21	20%	0.10	0.06
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Office	2020.00	2054.00	51.51	9.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Office	2020.00	2054.00	12.41	2.31	39.10	39.10	76%	7.28	7.28	76%	0.00	0.00
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Office	2020.00	2054.00	18.54	3.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Office	2020.00	2054.00	4.83	0.90	13.72	13.72	74%	2.55	2.55	74%	0.00	0.00
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Office	2020.00	2054.00	13.65	2.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Office	2020.00	2054.00	4.73	0.88	8.92	8.92	65%	1.66	1.66	65%	0.01	0.01
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Office	2020.00	2054.00	3.37	0.63	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Office	2020.00	2054.00	2.43	0.45	0.93	0.93	28%	0.17	0.17	28%	0.05	0.05
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Office	2020.00	2054.00	4.30	0.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Office	2020.00	2054.00	3.18	0.59	1.12	1.12	26%	0.21	0.21	26%	0.04	0.04
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Office	2014.00	2054.00	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Office	2014.00	2054.00	1.80	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	1850	1851	LED Exit Sign	Office	2014.00	2054.00	1.01	0.19	0.79	0.79	44%	0.15	0.15	44%	0.02	0.02
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Office	2014.00	2054.00	12.31	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Office	2014.00	2054.00	9.85	0.06	2.46	2.46	20%	0.11	0.11	66%	0.05	0.05
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Office	2014.00	2054.00	4.74	-0.01	5.11	7.57	61%	0.07	0.18	108%	0.09	0.08
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Office	2014.00	2054.00	3.35	-0.03	1.39	8.96	73%	0.02	0.20	118%	0.59	0.16
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Office	2014.00	2054.00	19.03	13.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	2000	2010	Ceiling/roof Insulation - Chiller	Office	2014.00	2054.00	18.94	13.25	0.08	0.08	0%	0.06	0.06	0%	0.01	0.01
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	2014.00	2054.00	17.32	12.12	1.62	1.70	9%	1.13	1.19	9%	0.03	0.03
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Office	2014.00	2054.00	17.29	12.10	0.03	1.73	9%	0.02	1.21	9%	0.04	0.03
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Office	2014.00	2054.00	17.18	12.06	0.11	1.85	10%	0.04	1.25	9%	0.03	0.03
Opt-Out/Ex	2000	2003	EMS - Chiller	Office	2014.00	2054.00	15.98	11.85	1.20	3.05	16%	0.21	1.46	11%	0.05	0.03
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Office	2014.00	2054.00	14.95	11.67	1.03	4.08	21%	0.18	1.64	12%	0.05	0.04
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Office	2014.00	2054.00	14.94	11.67	0.00	4.08	21%	0.00	1.65	12%	0.09	0.04
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Office	2014.00	2054.00	12.10	9.68	2.84	6.92	36%	1.99	3.63	27%	0.15	0.08
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Office	2014.00	2054.00	12.07	9.65	0.04	6.96	37%	0.03	3.66	27%	0.22	0.09
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Office	2014.00	2054.00	12.03	9.63	0.04	7.00	37%	0.03	3.68	28%	1.86	0.10
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Office	2014.00	2054.00	86.33	60.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Office	2014.00	2054.00	66.48	46.51	19.86	19.86	23%	13.89	13.89	23%	0.02	0.02
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Office	2014.00	2054.00	63.48	43.37	2.99	22.85	26%	3.14	17.03	28%	0.05	0.03
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Office	2014.00	2054.00	62.40	43.18	1.08	23.93	28%	0.19	17.22	29%	0.06	0.03
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Office	2014.00	2054.00	61.11	42.27	1.29	25.22	29%	0.90	18.12	30%	0.10	0.03
Opt-Out/Ex	2100	2109	Economizer - DX	Office	2014.00	2054.00	54.39	41.10	6.72	31.94	37%	1.17	19.30	32%	0.07	0.04
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Office	2014.00	2054.00	51.08	38.79	3.31	35.25	41%	2.31	21.61	36%	0.19	0.05
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Office	2014.00	2054.00	50.00	38.60	1.09	36.33	42%	0.19	21.80	36%	0.10	0.06
Opt-Out/Ex	2100	2107	Cool Roof - DX	Office	2014.00	2054.00	49.57	38.30	0.43	36.76	43%	0.30	22.10	37%	0.25	0.06
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Office	2014.00	2054.00	49.56	38.30	0.01	36.77	43%	0.00	22.10	37%	0.20	0.06
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Office	2014.00	2054.00	49.24	38.07	0.32	37.09	43%	0.22	22.33	37%	2.07	0.08
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Office	2014.00	2054.00	58.94	41.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014.00	2054.00	51.65	36.14	7.29	7.29	12%	5.10	5.10	12%	0.02	0.02
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Office	2014.00	2054.00	9.44	6.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Office	2014.00	2054.00	46.72	14.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Office	2014.00	2054.00	45.96	13.88	0.76	0.76	2%	0.23	0.23	2%	0.02	0.02
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Office	2014.00	2054.00	34.57	13.02	11.39	12.15	26%	0.86	1.09	8%	0.01	0.02
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Office	2014.00	2054.00	32.69	11.94	1.88	14.03	30%	1.08	2.17	15%	0.64	0.10
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Office	2014.00	2054.00	8.09	2.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A
Opt-Out/Ex	3100	3102	Variable Speed Drive Control, 15 HP	Office	2014.00	2054.00	6.09	2.29	2.01	2.01	25%	0.15	0.15	6%	0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Opt-Out/Exempt/Nonjurisdictional New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Year 2014

Vintage Sgmt	Existing Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	Base MW	Economic GWH	Economic MW
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Office	2014	2053	6.32	1.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.32	1.44	0.00	0.00
Opt-Out/Ex	100	101	High Performance Building/Int Design - Tier 1 15% - Office	Office	2014	2053	5.36	1.16	0.97	0.97	15%	0.28	0.28	20%	0.04	0.04	0	0	2.04			0.97	0.28
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Office	2014	2053	5.06	1.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.06	1.15	0.00	0.00
Opt-Out/Ex	200	201	High Performance Building/Int Design - Tier 2 30% - Office	Office	2014	2053	3.51	0.70	1.54	1.54	31%	0.45	0.45	39%	0.03	0.03	0	0	2.85			1.54	0.45
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Office	2014	2053	1.14	0.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.14	0.26	0.00	0.00
Opt-Out/Ex	300	301	High Performance Building/Int Design - Tier 3 50% - Office	Office	2014	2053	0.56	0.09	0.58	0.58	51%	0.17	0.17	65%	0.03	0.03	0	0	2.71			0.58	0.17
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Office	2014	2053	0.13	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.03	0.00	0.00
Opt-Out/Ex	400	401	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Office	Office	2014	2053	0.04	0.00	0.09	0.09	71%	0.03	0.03	91%	0.04	0.04	0	0	2.42			0.09	0.03
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Retail	2014	2053	0.81	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.81	0.19	0.00	0.00
Opt-Out/Ex	100	103	High Performance Building/Int Design - Tier 1 15% - Retail	Retail	2014	2053	0.69	0.15	0.12	0.12	15%	0.04	0.04	20%	0.09	0.09	0	0	0.98			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Retail	2014	2053	0.65	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.65	0.15	0.00	0.00
Opt-Out/Ex	200	203	High Performance Building/Int Design - Tier 2 30% - Retail	Retail	2014	2053	0.45	0.09	0.20	0.20	31%	0.06	0.06	39%	0.06	0.06	0	0	1.37			0.20	0.06
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Retail	2014	2053	0.15	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.15	0.03	0.00	0.00
Opt-Out/Ex	300	303	High Performance Building/Int Design - Tier 3 50% - Retail	Retail	2014	2053	0.07	0.01	0.07	0.07	51%	0.02	0.02	65%	0.07	0.07	0	0	1.30			0.07	0.02
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Retail	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
Opt-Out/Ex	400	403	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Retail	Retail	2014	2053	0.00	0.00	0.01	0.01	71%	0.00	0.00	91%	0.07	0.07	0	0	1.16			0.01	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Grocery	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
Opt-Out/Ex	100	104	High Performance Building/Int Design - Tier 1 15% - Grocery	Grocery	2014	2053	0.02	0.00	0.00	0.00	15%	0.00	0.00	20%	0.03	0.03	0	0	2.52			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Grocery	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
Opt-Out/Ex	200	204	High Performance Building/Int Design - Tier 2 30% - Grocery	Grocery	2014	2053	0.01	0.00	0.01	0.01	30%	0.00	0.00	39%	0.02	0.02	0	0	3.52			0.01	0.00
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Grocery	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	300	304	High Performance Building/Int Design - Tier 3 50% - Grocery	Grocery	2014	2053	0.00	0.00	0.00	0.00	50%	0.00	0.00	65%	0.02	0.02	0	0	3.36			0.00	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Grocery	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	400	404	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Grocery	Grocery	2014	2053	0.00	0.00	0.00	0.00	70%	0.00	0.00	91%	0.03	0.03	0	0	2.99			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Warehouse	2014	2053	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00	0.00
Opt-Out/Ex	100	105	High Performance Building/Int Design - Tier 1 15% - Warehouse	Warehouse	2014	2053	0.09	0.02	0.02	0.02	15%	0.00	0.00	20%	0.10	0.10	0	0	0.79			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Warehouse	2014	2053	0.08	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.02	0.00	0.00
Opt-Out/Ex	200	205	High Performance Building/Int Design - Tier 2 30% - Warehouse	Warehouse	2014	2053	0.06	0.01	0.03	0.03	30%	0.01	0.01	39%	0.07	0.07	0	0	1.11			0.03	0.01
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Warehouse	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
Opt-Out/Ex	300	305	High Performance Building/Int Design - Tier 3 50% - Warehouse	Warehouse	2014	2053	0.01	0.00	0.01	0.01	51%	0.00	0.00	65%	0.08	0.08	0	0	1.06			0.01	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Warehouse	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	400	405	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Warehous	Warehouse	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.09	0.09	0	0	0.94			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	School	2014	2053	0.19	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.03	0.00	0.00
Opt-Out/Ex	100	106	High Performance Building/Int Design - Tier 1 15% - School	School	2014	2053	0.16	0.02	0.03	0.03	15%	0.01	0.01	20%	0.12	0.12	1	1	0.65			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	School	2014	2053	0.15	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.15	0.02	0.00	0.00
Opt-Out/Ex	200	206	High Performance Building/Int Design - Tier 2 30% - School	School	2014	2053	0.10	0.01	0.05	0.05	31%	0.01	0.01	39%	0.09	0.09	0	0	0.91			0.00	0.00
Opt-Out/Ex	300	300	Base Bldg Design - 50%	School	2014	2053	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
Opt-Out/Ex	300	306	High Performance Building/Int Design - Tier 3 50% - School	School	2014	2053	0.02	0.00	0.02	0.02	51%	0.00	0.00	65%	0.09	0.09	0	0	0.87			0.00	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	School	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	400	406	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - School	School	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.10	0.10	1	1	0.77			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Health	2014	2053	1.74	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.74	0.33	0.00	0.00
Opt-Out/Ex	100	107	High Performance Building/Int Design - Tier 1 15% - Health	Health	2014	2053	1.48	0.26	0.26	0.26	15%	0.06	0.06	20%	0.12	0.12	1	1	0.66			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Health	2014	2053	1.39	0.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.39	0.26	0.00	0.00
Opt-Out/Ex	200	207	High Performance Building/Int Design - Tier 2 30% - Health	Health	2014	2053	0.97	0.16	0.42	0.42	30%	0.10	0.10	39%	0.09	0.09	0	0	0.92			0.00	0.00
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Health	2014	2053	0.31	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.31	0.06	0.00	0.00
Opt-Out/Ex	300	307	High Performance Building/Int Design - Tier 3 50% - Health	Health	2014	2053	0.16	0.02	0.16	0.16	50%	0.04	0.04	65%	0.09	0.09	0	0	0.88			0.00	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Health	2014	2053	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
Opt-Out/Ex	400	407	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Health	Health	2014	2053	0.01	0.00	0.02	0.02	71%	0.01	0.01	91%	0.10	0.10	0	0	0.78			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Lodging	2014	2053	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
Opt-Out/Ex	100	108	High Performance Building/Int Design - Tier 1 15% - Lodging	Lodging	2014	2053	0.04	0.01	0.01	0.01	15%	0.00	0.00	20%	0.09	0.09	0	0	0.88			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Lodging	2014	2053	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
Opt-Out/Ex	200	208	High Performance Building/Int Design - Tier 2 30% - Lodging	Lodging	2014	2053	0.03	0.00	0.01	0.01	30%	0.00	0.00	39%	0.07	0.07	0	0	1.24			0.01	0.00
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Lodging	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
Opt-Out/Ex	300	308	High Performance Building/Int Design - Tier 3 50% - Lodging	Lodging	2014	2053	0.00	0.00	0.00	0.00	50%	0.00	0.00	65%	0.07	0.07	0	0	1.18			0.00	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Lodging	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	400	408	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Lodging	Lodging	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.08	0.08	0	0	1.05			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Data Centers	2014	2053	8.83	1.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.83	1.54	0.00	0.00
Opt-Out/Ex	100	109	High Performance Building/Int Design - Tier 1 15% - Data Centers	Data Centers	2014	2053	7.50	1.24	1.33	1.33	15%	0.30	0.30	20%	0.01	0.01	0	0	6.46			1.33	0.30
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Data Centers	2014	2053	7.07	1.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.07	1.23	0.00	0.00
Opt-Out/Ex	200	209	High Performance Building/Int Design - Tier 2 30% - Data Centers	Data Centers	2014	2053	4.94	0.75	2.13	2.13	30%	0.48	0.48	39%	0.01	0.01	0	0	9.05			2.13	0.48
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Data Centers	2014	2053	1.59	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.59	0.28	0.00	0.00
Opt-Out/Ex	300	309	High Performance Building/Int Design - Tier 3 50% - Data Centers	Data Centers	2014	2053	0.79	0.10	0.80	0.80	50%	0.18	0.18	65%	0.01	0.01	0	0	8.62			0.80	0.18
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Data Centers	2014	2053	0.18	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.03	0.00	0.00
Opt-Out/Ex	400	409	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Data Cent	Data Centers	2014	2053	0.05	0.00	0.12	0.12	70%	0.03	0.03	91%	0.01	0.01	0	0	7.68			0.12	0.03
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Non-Jurisdictional	2014	2053	0.38	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.38	0.08	0.00	0.00
Opt-Out/Ex	100	110	High Performance Building/Int Design - Tier 1 15% - Non-Jurisdictional	Non-Jurisdictional	2014	2053	0.32	0.06	0.06	0.06	15%	0.02	0.02	20%	0.06	0.06	0	0	1.44			0.06	0.02
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Non-Jurisdictional	2014	2053	0.30	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.30	0.06	0.00	0.00
Opt-Out/Ex	200	210	High Performance Building/Int Design - Tier 2 30% - Non-Jurisdictional	Non-Jurisdictional	2014	2053	0.21	0.04	0.09	0.09	30%	0.03	0.03	39%	0.04	0.04	0	0	2.02			0.09	0.03
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Non-Jurisdictional	2014	2053	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
Opt-Out/Ex	300	310	High Performance Building/Int Design - Tier 3 50% - Non-Jurisdictional	Non-Jurisdictional	2014	2053	0.03	0.01	0.03	0.03	51%	0.01	0.01	65%	0.04	0.04	0	0	1.93			0.03	0.01
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Non-Jurisdictional	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
Opt-Out/Ex	400	410	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Non-Jurisc	Non-Jurisdictional	2014	2053	0.00	0.00	0.01	0.01	71%	0.00	0.00	91%	0.05	0.05	0	0	1.72			0.01	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Misc	2014	2053	2.19	0.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.19	0.43	0.00	0.00
Opt-Out/Ex	100	112	High Performance Building/Int Design - Tier 1 15% - Miscellaneous	Misc	2014	2053	1.85	0.35	0.33	0.33	15%	0.08	0.08	20%	0.09	0.09	0	0	0.88			0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Opt-Out/Exempt/Nonjurisdictional New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Year 2014

Vintage Sgmt	Existing Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Misc	2014	2053	1.75	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.75	0.34	0.00	0.00
Opt-Out/Ex	200	212	High Performance Building/Int Design - Tier 2 30% - Miscellaneous	Misc	2014	2053	1.22	0.21	0.53	0.53	30%	0.13	0.13	39%	0.07	0.07	0	0	1.23			0.53	0.13
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Misc	2014	2053	0.39	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.08	0.00	0.00
Opt-Out/Ex	300	312	High Performance Building/Int Design - Tier 3 50% - Miscellaneous	Misc	2014	2053	0.19	0.03	0.20	0.20	51%	0.05	0.05	65%	0.07	0.07	0	0	1.17			0.20	0.05
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Misc	2014	2053	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
Opt-Out/Ex	400	412	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Miscellane	Misc	2014	2053	0.01	0.00	0.03	0.03	71%	0.01	0.01	91%	0.08	0.08	0	0	1.04			0.03	0.01
VA	100	100	Base Bldg Design - 15%	Non-Jurisdictional	2014	2053	79.60	16.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	79.60	16.85	0.00	0.00
VA	100	110	High Performance Building/Int Design - Tier 1 15% - Non-Jurisdictional	Non-Jurisdictional	2014	2053	67.47	13.57	12.13	12.13	15%	3.29	3.29	20%	0.06	0.06	0	0	1.44			12.13	3.29
VA	200	200	Base Bldg Design - 30%	Non-Jurisdictional	2014	2053	63.68	13.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	63.68	13.48	0.00	0.00
VA	200	210	High Performance Building/Int Design - Tier 2 30% - Non-Jurisdictional	Non-Jurisdictional	2014	2053	44.28	8.22	19.40	19.40	30%	5.26	5.26	39%	0.04	0.04	0	0	2.02			19.40	5.26
VA	300	300	Base Bldg Design - 50%	Non-Jurisdictional	2014	2053	14.33	3.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.33	3.03	0.00	0.00
VA	300	310	High Performance Building/Int Design - Tier 3 50% - Non-Jurisdictional	Non-Jurisdictional	2014	2053	7.05	1.06	7.28	7.28	51%	1.97	1.97	65%	0.04	0.04	0	0	1.93			7.28	1.97
VA	400	400	Base Bldg Design - 70%	Non-Jurisdictional	2014	2053	1.59	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.59	0.34	0.00	0.00
VA	400	410	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Non-Jurisc	Non-Jurisdictional	2014	2053	0.46	0.03	1.13	1.13	71%	0.31	0.31	91%	0.05	0.05	0	0	1.72			1.13	0.31

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY

Vintage Sgmt	Base Number	Existing Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	1000	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	Single Family	2014	2053	2,123.48	1,261.52	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2,123.48	1,261.52	0.00	0.00
VA	1000	1024	Self Install Weatherization (CAC)	Single Family	2014	2053	2,099.82	1,247.47	23.66	23.66	1%	14.06	14.06	1%	0.01	0.01	0	0	6.06			23.66	14.06
VA	1000	1022	Programmable Thermostat (CAC)	Single Family	2014	2053	2,087.47	1,240.13	12.34	36.01	2%	7.33	21.39	2%	0.04	0.02	0	0	2.20			12.34	7.33
VA	1000	1021	Return Duct Modification (CAC)	Single Family	2014	2053	2,075.37	1,232.94	12.10	48.11	2%	7.19	28.58	2%	0.06	0.03	0	0	1.75			12.10	7.19
VA	1000	1019	Duct Insulation (CAC)	Single Family	2014	2053	2,073.16	1,231.63	2.22	50.32	2%	1.32	29.90	2%	0.09	0.03	0	0	1.17			2.22	1.32
VA	1000	1004	Proper Refrigerant Charging and Air Flow (CAC)	Single Family	2014	2053	1,924.33	1,143.21	148.83	199.16	9%	88.42	118.32	9%	0.08	0.07	0	0	1.05			148.83	88.42
VA	1000	1025	Door Weatherization (CAC)	Single Family	2014	2053	1,893.00	1,124.60	31.33	230.48	11%	18.61	136.93	11%	0.07	0.07	0	0	0.94			0.00	0.00
VA	1000	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	1,778.11	1,056.34	114.89	345.38	16%	68.26	205.18	16%	0.13	0.09	0	0	0.77			0.00	0.00
VA	1000	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	1,677.46	996.55	100.65	446.02	21%	59.79	264.97	21%	0.16	0.10	0	0	0.65			0.00	0.00
VA	1000	1005	Proper Sizing and Quality Install (CAC)	Single Family	2014	2053	1,514.52	899.75	162.94	608.96	29%	96.80	361.78	29%	0.17	0.12	0	0	0.60			0.00	0.00
VA	1000	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	1,361.98	809.13	152.54	761.51	36%	90.62	452.40	36%	0.22	0.14	0	0	0.45			0.00	0.00
VA	1000	1014	Crawlspace insulation (CAC)	Single Family	2014	2053	1,353.27	803.95	8.70	770.21	36%	5.17	457.57	36%	0.26	0.14	0	0	0.40			0.00	0.00
VA	1000	1008	Ceiling R-0 to R-38 Insulation (CAC)	Single Family	2014	2053	1,315.09	781.27	38.18	808.39	38%	22.68	480.25	38%	0.27	0.15	0	0	0.38			0.00	0.00
VA	1000	1009	Ceiling R-0 to R-49 Insulation (CAC)	Single Family	2014	2053	1,314.53	780.94	0.55	808.95	38%	0.33	480.58	38%	3.00	0.15	5	0	0.03			0.00	0.00
VA	1000	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Single Family	2014	2053	1,254.71	745.40	59.82	868.77	41%	35.54	516.12	41%	0.33	0.16	1	0	0.25			0.00	0.00
VA	1000	1029	WINDOWS - Default With Sunscreen (CAC)	Single Family	2014	2053	1,131.76	672.36	122.95	991.72	47%	73.04	589.16	47%	0.36	0.19	1	0	0.22			0.00	0.00
VA	1000	1026	Ceiling Fans (CAC)	Single Family	2014	2053	1,119.10	664.84	12.66	1,004.38	47%	7.52	596.68	47%	0.51	0.19	1	0	0.19			0.00	0.00
VA	1000	1010	Ceiling R-11 to R-38 Insulaton (CAC)	Single Family	2014	2053	1,095.69	650.93	23.41	1,027.79	48%	13.91	610.59	48%	0.74	0.20	1	0	0.14			0.00	0.00
VA	1000	1011	Ceiling R-11 to R-49 Insulation (CAC)	Single Family	2014	2053	1,094.69	650.34	1.00	1,028.79	48%	0.59	611.18	48%	3.60	0.21	6	0	0.03			0.00	0.00
VA	1000	1020	Duct Testing and Sealing (CAC)	Single Family	2014	2053	1,090.03	647.57	4.67	1,033.45	49%	2.77	613.96	49%	1.06	0.21	2	0	0.10			0.00	0.00
VA	1000	1012	Ceiling R-19 to R-38 Insulation (CAC)	Single Family	2014	2053	1,083.96	643.96	6.07	1,039.52	49%	3.61	617.56	49%	1.26	0.22	2	0	0.08			0.00	0.00
VA	1000	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Single Family	2014	2053	1,078.68	640.83	5.27	1,044.80	49%	3.13	620.70	49%	1.30	0.22	2	0	0.08			0.00	0.00
VA	1000	1018	Cool Roof (CAC)	Single Family	2014	2053	1,060.37	629.95	18.31	1,063.11	50%	10.88	631.57	50%	1.34	0.24	2	0	0.07			0.00	0.00
VA	1000	1013	Ceiling R-19 to R-49 Insulation (CAC)	Single Family	2014	2053	1,059.82	629.62	0.55	1,063.66	50%	0.33	631.90	50%	3.72	0.24	6	0	0.03			0.00	0.00
VA	1000	1027	Whole House Fans (CAC)	Single Family	2014	2053	1,032.07	613.13	27.75	1,091.41	51%	16.49	648.39	51%	1.68	0.28	3	0	0.06			0.00	0.00
VA	1000	1028	Window Film (CAC)	Single Family	2014	2053	997.22	592.43	34.85	1,126.26	53%	20.70	669.09	53%	1.73	0.33	3	1	0.05			0.00	0.00
VA	1000	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	Single Family	2014	2053	995.17	591.21	2.05	1,128.31	53%	1.22	670.31	53%	2.48	0.33	4	1	0.04			0.00	0.00
VA	1000	1007	AC Filter Changes (CAC)	Single Family	2014	2053	990.93	588.70	4.24	1,132.55	53%	2.52	672.83	53%	1.83	0.34	3	1	0.04			0.00	0.00
VA	1000	1006	AC Maintenance and/or tune-up (CAC)	Single Family	2014	2053	986.52	586.07	4.41	1,136.96	54%	2.62	675.45	54%	2.09	0.34	4	1	0.03			0.00	0.00
VA	1000	1015	Basement insulation R-13 (CAC)	Single Family	2014	2053	982.22	583.52	4.30	1,141.26	54%	2.55	678.00	54%	3.64	0.35	6	1	0.03			0.00	0.00
VA	1000	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	Single Family	2014	2053	981.99	583.38	0.23	1,141.49	54%	0.14	678.14	54%	4.19	0.36	7	1	0.03			0.00	0.00
VA	1100	1100	Base Split-System Air Conditioner - Early Replacement (11 SEI	Single Family	2014	2053	349.12	207.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	349.12	207.41	0.00	0.00
VA	1100	1117	Duct Insulation (CAC early replacement)	Single Family	2014	2053	346.27	205.72	2.85	2.85	1%	1.69	1.69	1%	0.01	0.01	0	0	8.55			2.85	1.69
VA	1100	1122	Self Install Weatherization (CAC early replacement)	Single Family	2014	2053	340.44	202.25	5.84	8.69	2%	3.47	5.16	2%	0.01	0.01	0	0	5.57			5.84	3.47
VA	1100	1120	Programmable Thermostat (CAC early replacement)	Single Family	2014	2053	338.44	201.06	2.00	10.69	3%	1.19	6.35	3%	0.04	0.02	0	0	2.02			2.00	1.19
VA	1100	1119	Return Duct Modification (CAC early replacement)	Single Family	2014	2053	336.47	199.89	1.96	12.65	4%	1.17	7.51	4%	0.07	0.03	0	0	1.61			1.96	1.17
VA	1100	1123	Door Weatherization (CAC early replacement)	Single Family	2014	2053	330.11	196.11	6.37	19.02	5%	3.78	11.30	5%	0.06	0.04	0	0	1.09			6.37	3.78
VA	1100	1102	Proper Refrigerant Charging and Air Flow (CAC early replacem	Single Family	2014	2053	302.78	179.88	27.32	46.34	13%	16.23	27.53	13%	0.09	0.07	0	0	0.94			0.00	0.00
VA	1100	1116	Cool Roof (CAC early replacement)	Single Family	2014	2053	271.17	161.09	31.62	77.96	22%	18.78	46.31	22%	0.14	0.10	0	0	0.70			0.00	0.00
VA	1100	1125	Whole House Fans (CAC early replacement)	Single Family	2014	2053	221.49	131.58	49.68	127.64	37%	29.51	75.83	37%	0.17	0.12	0	0	0.58			0.00	0.00
VA	1100	1103	Proper Sizing and Quality Install (CAC early replacement)	Single Family	2014	2053	196.79	116.91	24.70	152.34	44%	14.67	90.50	44%	0.23	0.14	0	0	0.44			0.00	0.00
VA	1100	1112	Crawlspace insulation (CAC early replacement)	Single Family	2014	2053	195.53	116.16	1.26	153.59	44%	0.75	91.25	44%	0.32	0.14	1	0	0.33			0.00	0.00
VA	1100	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Single Family	2014	2053	190.01	112.88	5.52	159.11	46%	3.28	94.52	46%	0.34	0.15	1	0	0.31			0.00	0.00
VA	1100	1113	Basement insulation R-13 (CAC early replacement)	Single Family	2014	2053	182.51	108.43	7.50	166.61	48%	4.46	98.98	48%	0.37	0.16	1	0	0.29			0.00	0.00
VA	1100	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	182.43	108.38	0.08	166.69	48%	0.05	99.03	48%	3.82	0.16	6	0	0.03			0.00	0.00
VA	1100	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early r	Single Family	2014	2053	179.74	106.78	2.70	169.39	49%	1.60	100.63	49%	0.45	0.16	1	0	0.23			0.00	0.00
VA	1100	1118	Duct Testing and Sealing (CAC early replacement)	Single Family	2014	2053	178.06	105.78	1.68	171.06	49%	1.00	101.63	49%	0.52	0.17	1	0	0.20			0.00	0.00
VA	1100	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early re	Single Family	2014	2053	169.96	100.97	8.10	179.17	51%	4.81	106.44	51%	0.43	0.18	1	0	0.19			0.00	0.00
VA	1100	1124	Ceiling Fans (CAC early replacement)	Single Family	2014	2053	168.37	100.03	1.58	180.75	52%	0.94	107.38	52%	0.72	0.18	1	0	0.13			0.00	0.00
VA	1100	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Single Family	2014	2053	164.85	97.94	3.52	184.27	53%	2.09	109.47	53%	0.87	0.20	1	0	0.12			0.00	0.00
VA	1100	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	164.70	97.85	0.15	184.42	53%	0.09	109.56	53%	4.23	0.20	7	0	0.02			0.00	0.00
VA	1100	1126	Window Film (CAC early replacement)	Single Family	2014	2053	152.35	90.51	12.35	196.77	56%	7.34	116.90	56%	0.86	0.24	1	0	0.09			0.00	0.00
VA	1100	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	Single Family	2014	2053	145.08	86.19	7.27	204.04	58%	4.32	121.22	58%	1.09	0.27	2	0	0.08			0.00	0.00
VA	1100	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Single Family	2014	2053	144.27	85.71	0.81	204.85	59%	0.48	121.70	59%	1.67	0.28	3	0	0.06			0.00	0.00
VA	1100	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	144.20	85.66	0.08	204.93	59%	0.04	121.74	59%	4.83	0.28	8	0	0.02			0.00	0.00
VA	1100	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Single Family	2014	2053	143.90	85.49	0.30	205.22	59%	0.18	121.92	59%	3.03	0.28	5	0	0.03			0.00	0.00
VA	1100	1105	AC Filter Changes (CAC early replacement)	Single Family	2014	2053	143.29	85.12	0.61	205.84	59%	0.36	122.28	59%	2.23	0.29	4	0	0.03			0.00	0.00
VA	1100	1104	AC Maintenance and/or tune-up (CAC early replacement)	Single Family	2014	2053	142.65	84.75	0.64	206.47	59%	0.38	122.66	59%	2.55	0.30	4	0	0.03			0.00	0.00
VA	1100	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality I	Single Family	2014	2053	138.99	82.57	3.66	210.13	60%	2.17	124.84	60%	3.37	0.35	6	1	0.02			0.00	0.00
VA	1100	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Single Family	2014	2053	138.96	82.55	0.03	210.16	60%	0.02	124.86	60%	5.23	0.35	9	1	0.02			0.00	0.00
VA	1200	1200	Base Heat Pump Cooling (13 SEER)	Single Family	2014	2053	1,802.58	1,070.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,802.58	1,070.88	0.00	0.00
VA	1200	1219	Duct Insulation (HP cooling)	Single Family	2014	2053	1,787.87	1,062.14	14.71	14.71	1%	8.74	8.74	1%	0.01	0.01	0	0	8.75			14.71	8.74
VA	1200	1223	Self Install Weatherization (HP cooling)	Single Family	2014	2053	1,767.94	1,050.30	19.92	34.64	2%	11.84	20.58	2%	0.04	0.03	0	0	2.19			19.92	11.84
VA	1200	1221	Programmable Thermostat (HP cooling)	Single Family	2014	2053	1,741.39	1,034.53	26.56	61.19	3%	15.78	36.35	3%	0.06	0.04	0	0	1.59			26.56	15.78
VA	1200	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Single Family	2014	2053	1,446.34	859.24	295.05	356.24	20%	175.29	211.64	20%	0.08	0.07	0	0	1.18			295.05	175.29
VA	1200	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	Single Family	2014	2053	1,342.50	797.56	103.83	460.08	26%	61.68	273.32	26%	0.10	0.08	0	0	0.83			0.00	0.00
VA	1200	1224	Door Weatherization (HP cooling)	Single Family	2014	2053	1,320.65	784.57	21.86	481.93	27%	12.98	286.31	27%	0.09	0.08	0	0	0.74			0.00	0.00
VA	1200	1218	Cool Roof (HP cooling)	Single Family	2014	2053	1,182.74	702.64	137.91	619.84	34%	81.93	368.24	34%	0.16	0.10	0	0	0.60			0.00	0.00
VA	1200	1226	Whole House Fans (HP cooling)	Single Family	2014	2053	966.05	573.92	216.68	836.53	46%	128.73	496.97	46%	0.19	0.12	0	0	0.50			0.00	0.00
VA	1200	1205	Proper Sizing and Quality Install (HP cooling)	Single Family	2014	2053	872.22	518.17	93.84	930.36	52%	55.75	552.71	52%	0.29	0.14	0	0	0.35			0.00	0.00
VA	1200	1214	Crawlspace insulation (HP cooling)	Single Family	2014	2053	866.64	514.85	5.58	935.94	52%	3.31	556.03	52%	0.36	0.14	1	0	0.29			0.00	0.00
VA	1200	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	Single Family	2014	2053	841.94	500.18	24.70	960.64	53%	14.67	570.70	53%	0.38	0.15	1	0	0.28			0.00	0.00
VA	1200	1215	Basement insulation R-13 (HP cooling)	Single Family	2014	2053	808.61	480.38	33.33	993.97	55%	19.80	590.50	55%	0.42	0.16	1	0	0.25			0.00	0.00
VA	1200	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	Single Family	2014	2053	807.86	479.93	0.76	994.72	55%	0.45	590.95	55%	1.95	0.16	3	0	0.05			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY

Vintage Sgmt	Base Number	Existing Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	1200	1220	Duct Testing and Sealing (HP cooling)	Single Family	2014	2053	800.31	475.45	7.54	1,002.27	56%	4.48	595.43	56%	0.58	0.16	1	0	0.17			0.00	0.00
VA	1200	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Single Family	2014	2053	763.89	453.82	36.42	1,038.69	58%	21.64	617.07	58%	0.48	0.17	1	0	0.17			0.00	0.00
VA	1200	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Single Family	2014	2053	752.60	447.11	11.29	1,049.98	58%	6.71	623.77	58%	0.84	0.18	1	0	0.13			0.00	0.00
VA	1200	1225	Ceiling Fans (HP cooling)	Single Family	2014	2053	745.60	442.95	7.01	1,056.98	59%	4.16	627.94	59%	0.82	0.18	1	0	0.12			0.00	0.00
VA	1200	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	Single Family	2014	2053	729.61	433.45	15.99	1,072.97	60%	9.50	637.43	60%	0.96	0.19	2	0	0.11			0.00	0.00
VA	1200	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	Single Family	2014	2053	728.13	432.57	1.48	1,074.45	60%	0.88	638.31	60%	2.16	0.20	4	0	0.05			0.00	0.00
VA	1200	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Single Family	2014	2053	727.50	432.19	0.63	1,075.08	60%	0.38	638.69	60%	1.36	0.20	2	0	0.08			0.00	0.00
VA	1200	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	Single Family	2014	2053	723.56	429.85	3.94	1,079.02	60%	2.34	641.03	60%	1.73	0.20	3	0	0.06			0.00	0.00
VA	1200	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	Single Family	2014	2053	722.72	429.35	0.84	1,079.86	60%	0.50	641.53	60%	2.18	0.20	4	0	0.05			0.00	0.00
VA	1200	1207	Heat Pump Filter Replacement	Single Family	2014	2053	719.64	427.53	3.08	1,082.94	60%	1.83	643.36	60%	2.49	0.21	4	0	0.03			0.00	0.00
VA	1200	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Single Family	2014	2053	717.15	426.05	2.49	1,085.43	60%	1.48	644.83	60%	5.83	0.22	10	0	0.02			0.00	0.00
VA	1200	1206	Heat pump tune up	Single Family	2014	2053	713.96	424.15	3.19	1,088.62	60%	1.90	646.73	60%	4.04	0.24	7	0	0.02			0.00	0.00
VA	1300	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	Single Family	2014	2053	274.13	162.86	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	274.13	162.86	0.00	0.00
VA	1300	1319	Duct Insulation (HP cooling Early Replacement)	Single Family	2014	2053	271.89	161.53	2.24	2.24	1%	1.33	1.33	1%	0.01	0.01	0	0	7.54			2.24	1.33
VA	1300	1323	Self Install Weatherization (HP cooling Early Replacement)	Single Family	2014	2053	268.86	159.73	3.03	5.27	2%	1.80	3.13	2%	0.04	0.03	0	0	1.89			3.03	1.80
VA	1300	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Ea	Single Family	2014	2053	223.31	132.66	45.56	50.82	19%	27.06	30.19	19%	0.09	0.09	0	0	1.04			45.56	27.06
VA	1300	1321	Programmable Thermostat (HP cooling Early Replacement)	Single Family	2014	2053	219.95	130.67	3.35	54.18	20%	1.99	32.19	20%	0.11	0.09	0	0	0.83			0.00	0.00
VA	1300	1324	Door Weatherization (HP cooling Early Replacement)	Single Family	2014	2053	215.79	128.20	4.16	58.34	21%	2.47	34.66	21%	0.09	0.09	0	0	0.80			0.00	0.00
VA	1300	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Re	Single Family	2014	2053	200.30	118.99	15.49	73.83	27%	9.20	43.86	27%	0.12	0.09	0	0	0.70			0.00	0.00
VA	1300	1318	Cool Roof (HP cooling Early Replacement)	Single Family	2014	2053	179.38	106.57	20.92	94.75	35%	12.43	56.29	35%	0.18	0.11	0	0	0.52			0.00	0.00
VA	1300	1326	Whole House Fans (HP cooling early replacement)	Single Family	2014	2053	146.52	87.04	32.86	127.61	47%	19.52	75.81	47%	0.22	0.14	0	0	0.43			0.00	0.00
VA	1300	1305	Proper Sizing and Quality Install (HP cooling Early Replacemer	Single Family	2014	2053	132.29	78.59	14.23	141.84	52%	8.46	84.27	52%	0.34	0.16	1	0	0.30			0.00	0.00
VA	1300	1314	Crawlspace insulation (HP cooling Early Replacement)	Single Family	2014	2053	131.44	78.09	0.84	142.69	52%	0.50	84.77	52%	0.42	0.16	1	0	0.25			0.00	0.00
VA	1300	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Single Family	2014	2053	127.70	75.86	3.75	146.44	53%	2.23	86.99	53%	0.44	0.17	1	0	0.24			0.00	0.00
VA	1300	1315	Basement insulation R-13 (HP cooling Early Replacement)	Single Family	2014	2053	122.65	72.86	5.05	151.48	55%	3.00	89.99	55%	0.49	0.18	1	0	0.22			0.00	0.00
VA	1300	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Single Family	2014	2053	122.54	72.80	0.11	151.60	55%	0.07	90.06	55%	2.27	0.18	4	0	0.05			0.00	0.00
VA	1300	1320	Duct Testing and Sealing (HP cooling Early Replacement)	Single Family	2014	2053	121.39	72.12	1.14	152.74	56%	0.68	90.74	56%	0.68	0.19	1	0	0.15			0.00	0.00
VA	1300	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling E	Single Family	2014	2053	115.87	68.84	5.52	158.26	58%	3.28	94.02	58%	0.56	0.20	1	0	0.15			0.00	0.00
VA	1300	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling I	Single Family	2014	2053	114.16	67.82	1.71	159.98	58%	1.02	95.04	58%	0.97	0.21	2	0	0.11			0.00	0.00
VA	1300	1325	Ceiling Fans (HP cooling early replacement)	Single Family	2014	2053	113.09	67.19	1.06	161.04	59%	0.63	95.67	59%	0.96	0.21	2	0	0.10			0.00	0.00
VA	1300	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Single Family	2014	2053	110.67	65.75	2.42	163.46	60%	1.44	97.11	60%	1.12	0.23	2	0	0.09			0.00	0.00
VA	1300	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement	Single Family	2014	2053	110.44	65.61	0.22	163.69	60%	0.13	97.24	60%	2.52	0.23	4	0	0.04			0.00	0.00
VA	1300	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacem	Single Family	2014	2053	110.35	65.56	0.10	163.78	60%	0.06	97.30	60%	1.58	0.23	3	0	0.07			0.00	0.00
VA	1300	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement	Single Family	2014	2053	109.75	65.20	0.60	164.38	60%	0.35	97.66	60%	2.01	0.24	3	0	0.05			0.00	0.00
VA	1300	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement	Single Family	2014	2053	109.62	65.12	0.13	164.51	60%	0.08	97.73	60%	2.54	0.24	4	0	0.04			0.00	0.00
VA	1300	1307	Heat Pump Filter Replacement	Single Family	2014	2053	109.16	64.85	0.47	164.98	60%	0.28	98.01	60%	2.90	0.25	5	0	0.02			0.00	0.00
VA	1300	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacer	Single Family	2014	2053	108.78	64.62	0.38	165.35	60%	0.22	98.23	60%	6.79	0.26	11	0	0.02			0.00	0.00
VA	1300	1306	Heat pump tune up	Single Family	2014	2053	108.29	64.34	0.48	165.84	60%	0.29	98.52	60%	4.70	0.27	8	0	0.01			0.00	0.00
VA	1400	1400	Base Room Air Conditioner - EER 10.6	Single Family	2014	2053	112.24	66.68	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	112.24	66.68	0.00	0.00
VA	1400	1413	Self Install Weatherization (RAC)	Single Family	2014	2053	110.99	65.94	1.25	1.25	1%	0.74	0.74	1%	0.03	0.03	0	0	2.83			1.25	0.74
VA	1400	1414	Door Weatherization (RAC)	Single Family	2014	2053	109.18	64.86	1.81	3.06	3%	1.07	1.82	3%	0.14	0.10	0	0	0.48			0.00	0.00
VA	1400	1411	Cool Roof (RAC)	Single Family	2014	2053	97.78	58.09	11.40	14.46	13%	6.77	8.59	13%	0.24	0.21	0	0	0.39			0.00	0.00
VA	1400	1416	Whole House Fans (RAC)	Single Family	2014	2053	79.87	47.45	17.91	32.37	29%	10.64	19.23	29%	0.29	0.26	0	0	0.33			0.00	0.00
VA	1400	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Single Family	2014	2053	75.39	44.79	4.48	36.85	33%	2.66	21.89	33%	0.31	0.26	1	0	0.25			0.00	0.00
VA	1400	1417	Window Film (RAC)	Single Family	2014	2053	59.56	35.38	15.83	52.68	47%	9.41	31.30	47%	0.43	0.31	1	1	0.19			0.00	0.00
VA	1400	1404	Ceiling R-0 to R-38 Insulation (RAC)	Single Family	2014	2053	57.97	34.44	1.59	54.27	48%	0.94	32.24	48%	0.75	0.33	1	1	0.14			0.00	0.00
VA	1400	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Single Family	2014	2053	57.12	33.93	0.86	55.13	49%	0.51	32.75	49%	0.90	0.34	2	1	0.12			0.00	0.00
VA	1400	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Single Family	2014	2053	54.01	32.09	3.11	58.23	52%	1.85	34.59	52%	0.72	0.36	1	1	0.11			0.00	0.00
VA	1400	1405	Ceiling R-0 to R-49 Insulation (RAC)	Single Family	2014	2053	53.97	32.06	0.04	58.27	52%	0.02	34.62	52%	4.53	0.36	8	1	0.02			0.00	0.00
VA	1400	1415	Ceiling Fans (RAC)	Single Family	2014	2053	53.47	31.76	0.50	58.77	52%	0.30	34.92	52%	1.46	0.37	2	1	0.07			0.00	0.00
VA	1400	1406	Ceiling R-11 to R-38 Insulaton (RAC)	Single Family	2014	2053	52.45	31.16	1.02	59.79	53%	0.60	35.52	53%	1.93	0.39	3	1	0.05			0.00	0.00
VA	1400	1407	Ceiling R-11 to R-49 Insulation (RAC)	Single Family	2014	2053	52.36	31.11	0.09	59.88	53%	0.05	35.57	53%	4.67	0.40	8	1	0.02			0.00	0.00
VA	1400	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	Single Family	2014	2053	52.14	30.97	0.23	60.10	54%	0.13	35.71	54%	2.58	0.41	4	1	0.04			0.00	0.00
VA	1400	1418	WINDOWS - Default With Sunscreen (RAC)	Single Family	2014	2053	49.65	29.50	2.49	62.59	56%	1.48	37.18	56%	2.03	0.47	3	1	0.04			0.00	0.00
VA	1400	1408	Ceiling R-19 to R-38 Insulation (RAC)	Single Family	2014	2053	49.40	29.35	0.25	62.84	56%	0.15	37.34	56%	3.42	0.49	6	1	0.03			0.00	0.00
VA	1400	1409	Ceiling R-19 to R-49 Insulation (RAC)	Single Family	2014	2053	49.35	29.32	0.05	62.89	56%	0.03	37.36	56%	4.96	0.49	8	1	0.02			0.00	0.00
VA	1400	1403	Room AC Filter Replacement	Single Family	2014	2053	49.14	29.19	0.21	63.10	56%	0.12	37.49	56%	4.18	0.50	7	1	0.02			0.00	0.00
VA	1500	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	Single Family	2014	2053	23.56	14.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	23.56	14.00	0.00	0.00
VA	1500	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early	Single Family	2014	2053	20.43	12.14	3.13	3.13	13%	1.86	1.86	13%	0.63	0.63	1	1	0.12			0.00	0.00
VA	1600	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	Single Family	2014	2053	25.36	15.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.36	15.07	0.00	0.00
VA	1600	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/da	Single Family	2014	2053	21.52	12.79	3.84	3.84	15%	2.28	2.28	15%	0.18	0.18	0	0	0.48			0.00	0.00
VA	1700	1700	Base Furnace Fan - Furnace & CAC	Single Family	2014	2053	1,754.83	900.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,754.83	900.13	0.00	0.00
VA	1700	1701	ECM Furnace Fan (variable speed motor) - Cooling	Single Family	2014	2053	974.90	500.07	779.92	779.92	44%	400.06	400.06	44%	0.03	0.03	0	0	3.44			779.92	400.06
VA	2000	2000	Base Heat Pump Space Heating (7.7 HSPF)	Single Family	2014	2053	2,499.04	296.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2,499.04	296.50	0.00	0.00
VA	2000	2016	Duct Insulation (HP heating)	Single Family	2014	2053	2,478.64	294.08	20.40	20.40	1%	2.42	2.42	1%	0.01	0.01	0	0	9.24			20.40	2.42
VA	2000	2021	Self Install Weatherization (HP heating)	Single Family	2014	2053	2,451.02	290.81	27.62	48.02	2%	3.28	5.70	2%	0.02	0.02	0	0	2.49			27.62	3.28
VA	2000	2019	Programmable Thermostat (HP heating)	Single Family	2014	2053	2,414.21	286.44	36.82	84.84	3%	4.37	10.07	3%	0.05	0.03	0	0	1.28			36.82	4.37
VA	2000	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Single Family	2014	2053	2,191.76	260.05	222.45	307.28	12%	26.39	36.46	12%	0.08	0.07	1	1	0.75			0.00	0.00
VA	2000	2022	Door Weatherization (HP heating)	Single Family	2014	2053	2,170.07	257.47	21.69	328.97	13%	2.57	39.03	13%	0.08	0.07	1	1	0.65			0.00	0.00
VA	2000	2012	Crawlspace insulation (HP heating)	Single Family	2014	2053	2,156.21	255.83	13.85	342.83	14%	1.64	40.68	14%	0.12	0.07	1	1	0.55			0.00	0.00
VA	2000	2006	Ceiling R-0 to R-38 Insulation (HP heating)	Single Family	2014	2053	2,094.77	248.54	61.45	404.27	16%	7.29	47.97	16%	0.13	0.08	1	1	0.53			0.00	0.00
VA	2000	2018	Heat Recovery Ventilators (HP heating)	Single Family	2014	2053	1,640.19	194.60	454.58	858.85	34%	53.93	101.90	34%	0.14	0.11	1	1	0.50			0.00	0.00
VA	2000	2013	Basement insulation R-13 (HP heating)	Single Family	2014	2053	1,575.39	186.92	64.80	923.65	37%	7.69	109.59	37%	0.18	0.11	2	1	0.37			0.00	0.00
VA	2000	2007	Ceiling R-0 to R-49 Insulation (HP heating)	Single Family	2014	2053	1,573.92	186.74	1.48	925.12	37%	0.18	109.76	37%	0.85	0.12	7	1	0.08			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY

Vintage Sgmt	Base Number	Existing Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	2000	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Single Family	2014	2053	1,502.29	178.24	71.62	996.75	40%	8.50	118.26	40%	0.21	0.12	2	1	0.27			0.00	0.00
VA	2000	2017	Duct Testing and Sealing (HP heating)	Single Family	2014	2053	1,488.27	176.58	14.03	1,010.77	40%	1.66	119.93	40%	0.26	0.12	2	1	0.25			0.00	0.00
VA	2000	2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Single Family	2014	2053	1,466.96	174.05	21.31	1,032.08	41%	2.53	122.45	41%	0.38	0.13	3	1	0.18			0.00	0.00
VA	2000	2008	Ceiling R-11 to R-38 Insulaton (HP heating)	Single Family	2014	2053	1,435.50	170.32	31.45	1,063.54	43%	3.73	126.19	43%	0.41	0.14	3	1	0.16			0.00	0.00
VA	2000	2009	Ceiling R-11 to R-49 Insulation (HP heating)	Single Family	2014	2053	1,432.59	169.97	2.91	1,066.45	43%	0.35	126.53	43%	0.93	0.14	8	1	0.07			0.00	0.00
VA	2000	2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	Single Family	2014	2053	1,431.35	169.83	1.24	1,067.69	43%	0.15	126.68	43%	0.58	0.14	5	1	0.12			0.00	0.00
VA	2000	2010	Ceiling R-19 to R-38 Insulation (HP heating)	Single Family	2014	2053	1,423.60	168.91	7.75	1,075.44	43%	0.92	127.60	43%	0.74	0.15	6	1	0.09			0.00	0.00
VA	2000	2011	Ceiling R-19 to R-49 Insulation (HP heating)	Single Family	2014	2053	1,421.94	168.71	1.65	1,077.10	43%	0.20	127.79	43%	0.94	0.15	8	1	0.07			0.00	0.00
VA	2000	2003	Ground Source Heat Pump with Desuperheater (HP heating)	Single Family	2014	2053	1,294.15	153.55	127.79	1,204.89	48%	15.16	142.96	48%	1.75	0.32	15	3	0.04			0.00	0.00
VA	2000	2005	Heat Pump Filter Replacement	Single Family	2014	2053	1,288.64	152.89	5.51	1,210.40	48%	0.65	143.61	48%	1.18	0.32	10	3	0.04			0.00	0.00
VA	2000	2004	Heat pump tune up	Single Family	2014	2053	1,282.90	152.21	5.74	1,216.14	49%	0.68	144.29	49%	1.90	0.33	16	3	0.03			0.00	0.00
VA	2000	2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Single Family	2014	2053	1,278.47	151.69	4.44	1,220.57	49%	0.53	144.82	49%	2.77	0.34	23	3	0.02			0.00	0.00
VA	2100	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSP	Single Family	2014	2053	420.83	49.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	420.83	49.93	0.00	0.00
VA	2100	2116	Duct Insulation (HP heating early replacement)	Single Family	2014	2053	417.39	49.52	3.43	3.43	1%	0.41	0.41	1%	0.01	0.01	0	0	8.82			3.43	0.41
VA	2100	2121	Self Install Weatherization (HP heating early replacement)	Single Family	2014	2053	412.74	48.97	4.65	8.09	2%	0.55	0.96	2%	0.02	0.02	0	0	2.38			4.65	0.55
VA	2100	2119	Programmable Thermostat (HP heating early replacement)	Single Family	2014	2053	406.54	48.24	6.20	14.29	3%	0.74	1.69	3%	0.05	0.03	0	0	1.22			6.20	0.74
VA	2100	2102	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early	Single Family	2014	2053	369.08	43.79	37.46	51.75	12%	4.44	6.14	12%	0.09	0.07	1	1	0.72			0.00	0.00
VA	2100	2122	Door Weatherization (HP heating early replacement)	Single Family	2014	2053	365.25	43.34	3.83	55.57	13%	0.45	6.59	13%	0.08	0.07	1	1	0.65			0.00	0.00
VA	2100	2112	Crawlspace insulation (HP heating early replacement)	Single Family	2014	2053	362.93	43.06	2.33	57.90	14%	0.28	6.87	14%	0.13	0.07	1	1	0.52			0.00	0.00
VA	2100	2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Single Family	2014	2053	352.58	41.83	10.34	68.25	16%	1.23	8.10	16%	0.13	0.08	1	1	0.50			0.00	0.00
VA	2100	2118	Heat Recovery Ventilators (HP heating early replacement)	Single Family	2014	2053	276.07	32.76	76.51	144.76	34%	9.08	17.18	34%	0.14	0.11	1	1	0.48			0.00	0.00
VA	2100	2113	Basement insulation R-13 (HP heating early replacement)	Single Family	2014	2053	265.18	31.46	10.90	155.65	37%	1.29	18.47	37%	0.19	0.12	2	1	0.36			0.00	0.00
VA	2100	2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	264.93	31.43	0.25	155.90	37%	0.03	18.50	37%	0.89	0.12	8	1	0.08			0.00	0.00
VA	2100	2120	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating e	Single Family	2014	2053	252.87	30.00	12.06	167.96	40%	1.43	19.93	40%	0.22	0.13	2	1	0.26			0.00	0.00
VA	2100	2117	Duct Testing and Sealing (HP heating early replacement)	Single Family	2014	2053	250.51	29.72	2.36	170.32	40%	0.28	20.21	40%	0.28	0.13	2	1	0.24			0.00	0.00
VA	2100	2123	WINDOWS - Double-Glazed Clear to Energy Star (HP heating	Single Family	2014	2053	246.92	29.30	3.59	173.91	41%	0.43	20.63	41%	0.39	0.14	3	1	0.17			0.00	0.00
VA	2100	2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Single Family	2014	2053	241.63	28.67	5.29	179.20	43%	0.63	21.26	43%	0.43	0.14	4	1	0.16			0.00	0.00
VA	2100	2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	241.14	28.61	0.49	179.69	43%	0.06	21.32	43%	0.98	0.15	8	1	0.07			0.00	0.00
VA	2100	2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replaceme	Single Family	2014	2053	240.93	28.59	0.21	179.90	43%	0.02	21.34	43%	0.61	0.15	5	1	0.11			0.00	0.00
VA	2100	2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Single Family	2014	2053	239.62	28.43	1.30	181.20	43%	0.15	21.50	43%	0.78	0.15	7	1	0.09			0.00	0.00
VA	2100	2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	239.35	28.40	0.28	181.48	43%	0.03	21.53	43%	0.98	0.15	8	1	0.07			0.00	0.00
VA	2100	2103	Ground Source Heat Pump with Desuperheater (HP heating ea	Single Family	2014	2053	217.84	25.85	21.51	202.99	48%	2.55	24.08	48%	1.83	0.33	15	3	0.03			0.00	0.00
VA	2100	2105	Heat Pump Filter Replacement (heating)	Single Family	2014	2053	216.91	25.74	0.93	203.92	48%	0.11	24.19	48%	1.24	0.33	10	3	0.04			0.00	0.00
VA	2100	2104	Heat pump tune up (heating)	Single Family	2014	2053	215.94	25.62	0.97	204.89	49%	0.11	24.31	49%	2.00	0.34	17	3	0.03			0.00	0.00
VA	2100	2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacem	Single Family	2014	2053	215.20	25.53	0.75	205.63	49%	0.09	24.40	49%	2.91	0.35	24	3	0.02			0.00	0.00
VA	2200	2200	Base Resistance Space Heating (Primary)	Single Family	2014	2053	1,220.36	144.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,220.36	144.79	0.00	0.00
VA	2200	2201	Air Source Heat Pump (resistance heating)	Single Family	2014	2053	972.08	115.34	248.28	248.28	20%	29.46	29.46	20%	0.01	0.01	0	0	4.49			248.28	29.46
VA	2200	2216	Self Install Weatherization	Single Family	2014	2053	961.25	114.05	10.83	259.11	21%	1.29	30.74	21%	0.02	0.01	0	0	2.34			10.83	1.29
VA	2200	2214	Programmable Thermostat (resistance heating)	Single Family	2014	2053	946.81	112.34	14.44	273.55	22%	1.71	32.46	22%	0.04	0.02	0	0	1.65			14.44	1.71
VA	2200	2217	Door Weatherization (resistance heating)	Single Family	2014	2053	930.71	110.43	16.10	289.65	24%	1.91	34.37	24%	0.04	0.02	0	0	1.15			16.10	1.91
VA	2200	2203	Ceiling R-0 to R-38 Insulation (resistance heating)	Single Family	2014	2053	902.03	107.02	28.68	318.33	26%	3.40	37.77	26%	0.11	0.03	1	0	0.59			0.00	0.00
VA	2200	2213	Heat Recovery Ventilators (resistance heating)	Single Family	2014	2053	706.29	83.80	195.75	514.07	42%	23.22	60.99	42%	0.13	0.07	1	1	0.52			0.00	0.00
VA	2200	2209	Crawlspace insulation (resistance heating)	Single Family	2014	2053	702.14	83.31	4.14	518.22	42%	0.49	61.49	42%	0.17	0.07	1	1	0.39			0.00	0.00
VA	2200	2210	Basement insulation R-13 (resistance heating)	Single Family	2014	2053	659.41	78.24	42.74	560.95	46%	5.07	66.56	46%	0.18	0.08	1	1	0.38			0.00	0.00
VA	2200	2204	Ceiling R-0 to R-49 Insulation (resistance heating)	Single Family	2014	2053	658.88	78.17	0.53	561.48	46%	0.06	66.62	46%	0.99	0.08	8	1	0.07			0.00	0.00
VA	2200	2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance he	Single Family	2014	2053	628.90	74.62	29.98	591.46	48%	3.56	70.18	48%	0.21	0.08	2	1	0.27			0.00	0.00
VA	2200	2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance h	Single Family	2014	2053	618.62	73.40	10.28	601.74	49%	1.22	71.40	49%	0.33	0.09	3	1	0.21			0.00	0.00
VA	2200	2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	Single Family	2014	2053	604.24	71.69	14.38	616.13	50%	1.71	73.10	50%	0.38	0.09	3	1	0.18			0.00	0.00
VA	2200	2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Single Family	2014	2053	603.50	71.60	0.74	616.86	51%	0.09	73.19	51%	0.41	0.09	3	1	0.17			0.00	0.00
VA	2200	2206	Ceiling R-11 to R-49 Insulation (resistance heating)	Single Family	2014	2053	602.45	71.48	1.05	617.91	51%	0.12	73.31	51%	1.08	0.10	9	1	0.06			0.00	0.00
VA	2200	2207	Ceiling R-19 to R-38 Insulation (resistance heating)	Single Family	2014	2053	598.72	71.04	3.74	621.65	51%	0.44	73.76	51%	0.64	0.10	5	1	0.11			0.00	0.00
VA	2200	2208	Ceiling R-19 to R-49 Insulation (resistance heating)	Single Family	2014	2053	598.12	70.97	0.59	622.24	51%	0.07	73.83	51%	1.09	0.10	9	1	0.06			0.00	0.00
VA	2200	2202	Ground Source Heat Pump with Desuperheater (resistance hea	Single Family	2014	2053	593.20	70.38	4.92	627.16	51%	0.58	74.41	51%	21.03	0.26	177	2	0.00			0.00	0.00
VA	2200	2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Single Family	2014	2053	590.35	70.04	2.85	630.01	52%	0.34	74.75	52%	1.80	0.27	15	2	0.04			0.00	0.00
VA	3030	3030	Base Halogen Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	183.04	20.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	183.04	20.49	0.00	0.00
VA	3030	3032	LEDs (base Halogen 0.5 hrs/day) 2020	Single Family	2020	2053	58.50	6.55	124.54	124.54	68%	13.94	13.94	68%	0.04	0.04	0	0	2.15			124.54	13.94
VA	3130	3130	Base Halogen Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	751.77	84.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	751.77	84.17	0.00	0.00
VA	3130	3132	LEDs (base Halogen 2.5 hrs/day) 2020	Single Family	2020	2053	196.96	22.05	554.81	554.81	74%	62.12	62.12	74%	0.01	0.01	0	0	11.68			554.81	62.12
VA	3230	3230	Base Halogen Lighting - 6 hrs/day 2020	Single Family	2020	2053	496.82	55.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	496.82	55.62	0.00	0.00
VA	3230	3232	LEDs (base Halogen 6 hrs/day) 2020	Single Family	2020	2053	158.78	17.78	338.04	338.04	68%	37.85	37.85	68%	0.00	0.00	0	0	15.99			338.04	37.85
VA	3330	3330	Base CFL Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	35.20	3.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	35.20	3.94	0.00	0.00
VA	3330	3331	LEDs (base CFL 0.5 hrs/day) 2020	Single Family	2020	2053	25.69	2.88	9.50	9.50	27%	1.06	1.06	27%	0.21	0.21	2	2	0.37			0.00	0.00
VA	3430	3430	Base CFL Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	144.30	16.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	144.30	16.16	0.00	0.00
VA	3430	3431	LEDs (base CFL 2.5 hrs/day) 2020	Single Family	2020	2053	105.34	11.79	38.96	38.96	27%	4.36	4.36	27%	0.04	0.04	0	0	1.86			38.96	4.36
VA	3530	3530	Base CFL Lighting - 6 hrs/day 2020	Single Family	2020	2053	95.03	10.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	95.03	10.64	0.00	0.00
VA	3530	3531	LEDs (base CFL 6 hrs/day) 2020	Single Family	2020	2053	69.37	7.77	25.66	25.66	27%	2.87	2.87	27%	0.02	0.02	0	0	2.78			25.66	2.87
VA	3630	3630	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	112.88	12.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	112.88	12.64	0.00	0.00
VA	3630	3632	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Single Family	2020	2053	44.61	4.99	68.27	68.27	60%	7.64	7.64	60%	0.01	0.01	0	0	6.49			68.27	7.64
VA	3730	3730	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	467.66	52.36	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	467.66	52.36	0.00	0.00
VA	3730	3732	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Single Family	2020	2053	184.82	20.69	282.84	282.84	60%	31.67	31.67	60%	0.00	0.00	0	0	32.45			282.84	31.67
VA	3830	3830	Base Halogen (Specialty) Lighting - 6 hrs/day 2020	Single Family	2020	2053	309.62	34.66	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	309.62	34.66	0.00	0.00
VA	3830	3832	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Single Family	2020	2053	122.36	13.70	187.26	187.26	60%	20.97	20.97	60%	0.00	0.00	0	0	48.19			187.26	20.97
VA	3900	3900	Base Fluorescent Fixture 1.8 hrs/day	Single Family	2014	2053	777.81	87.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	777.81	87.08	0.00	0.00
VA	3900	3902	ROB 2L4'T8, 1EB	Single Family	2014	2053	567.97	63.59	209.84	209.84	27%	23.49	23.49	27%	0.04	0.04	0	0	2.16			209.84	23.49

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage — Existing

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	4000	4000	Base Refrigerator	Single Family	2014	2053	991.68	160.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	991.68	160.73	0.00	0.00
VA	4000	4001	Refrigerator (Energy Star)	Single Family	2014	2053	835.60	135.43	156.08	156.08	16%	25.30	25.30	16%	0.04	0.04	0	0	1.71			156.08	25.30
VA	4100	4100	Base Refrigerator--Early Replacement	Single Family	2014	2053	140.69	22.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	140.69	22.80	0.00	0.00
VA	4100	4101	Refrigerator - Early Replacement (Energy Star)	Single Family	2014	2053	77.73	12.60	62.96	62.96	45%	10.20	10.20	45%	0.09	0.09	1	1	0.56			0.00	0.00
VA	4200	4200	Base 2nd Refrigerator - Recycling	Single Family	2014	2053	618.86	100.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	618.86	100.30	0.00	0.00
VA	4200	4201	2nd Refrigerator Recycling	Single Family	2014	2053	159.36	25.83	459.50	459.50	74%	74.48	74.48	74%	0.03	0.03	0	0	2.02			459.50	74.48
VA	4500	4500	Base Freezer	Single Family	2014	2053	417.14	67.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	417.14	67.61	0.00	0.00
VA	4500	4501	Freezer (Energy Star)	Single Family	2014	2053	380.37	61.65	36.77	36.77	9%	5.96	5.96	9%	0.05	0.05	0	0	1.10			36.77	5.96
VA	4600	4600	Base Early Replacement Freezer	Single Family	2014	2053	104.06	16.47	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	104.06	16.47	0.00	0.00
VA	4600	4601	Freezer - Early Replacement (Energy Star)	Single Family	2014	2053	47.80	7.57	56.26	56.26	54%	8.91	8.91	54%	0.04	0.04	0	0	1.35			56.26	8.91
VA	4700	4700	Base 2nd Freezer Recycling	Single Family	2014	2053	32.02	5.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	32.02	5.07	0.00	0.00
VA	4700	4701	2nd Freezer Recycling	Single Family	2014	2053	16.17	2.56	15.85	15.85	50%	2.51	2.51	50%	0.02	0.02	0	0	2.78			15.85	2.51
VA	5000	5000	Base Water Heating (40 gal, EF=0.88)	Single Family	2014	2053	2,760.04	339.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2,760.04	339.93	0.00	0.00
VA	5000	5006	Pipe Wrap	Single Family	2014	2053	2,675.24	329.49	84.80	84.80	3%	10.44	10.44	3%	0.02	0.02	0	0	3.70			84.80	10.44
VA	5000	5007	Hot water turndown 5 degrees	Single Family	2014	2053	2,665.88	328.34	9.36	94.16	3%	1.15	11.60	3%	0.02	0.02	0	0	2.70			9.36	1.15
VA	5000	5008	Hot water turndown 10 degrees	Single Family	2014	2053	2,653.22	326.78	12.66	106.82	4%	1.56	13.16	4%	0.02	0.02	0	0	2.69			12.66	1.56
VA	5000	5010	Hot water turndown 20 degrees	Single Family	2014	2053	2,652.09	326.64	1.13	107.95	4%	0.14	13.29	4%	0.02	0.02	0	0	2.68			1.13	0.14
VA	5000	5009	Hot water turndown 15 degrees	Single Family	2014	2053	2,649.11	326.27	2.98	110.93	4%	0.37	13.66	4%	0.02	0.02	0	0	2.67			2.98	0.37
VA	5000	5015	Low Flow Showerhead 1.5 Gal/Min	Single Family	2014	2053	2,569.93	316.52	79.18	190.11	7%	9.75	23.41	7%	0.02	0.02	0	0	2.34			79.18	9.75
VA	5000	5011	Drain Water Heat Recovery (GFX)	Single Family	2014	2053	2,473.33	304.62	96.60	286.71	10%	11.90	35.31	10%	0.05	0.03	0	0	1.35			96.60	11.90
VA	5000	5014	Faucent Aerators	Single Family	2014	2053	2,420.92	298.17	52.41	339.12	12%	6.46	41.77	12%	0.05	0.03	0	0	1.15			52.41	6.46
VA	5000	5005	DHW Tank Wrap	Single Family	2014	2053	2,279.91	280.80	141.00	480.13	17%	17.37	59.13	17%	0.05	0.04	0	0	1.04			141.00	17.37
VA	5000	5003	Heat Pump Water Heater - Energy Star	Single Family	2014	2053	1,954.44	240.71	325.48	805.60	29%	40.09	99.22	29%	0.06	0.05	1	0	0.97			0.00	0.00
VA	5000	5004	Solar Domestic Water Heating	Single Family	2014	2053	1,041.06	128.22	913.38	1,718.98	62%	112.49	211.71	62%	0.16	0.11	1	1	0.43			0.00	0.00
VA	5000	5012	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	2014	2053	1,038.30	127.88	2.77	1,721.74	62%	0.34	212.05	62%	3.70	0.11	30	1	0.02			0.00	0.00
VA	5000	5013	Energy Star Dishwasher (EF=0.72)	Single Family	2014	2053	1,036.03	127.60	2.27	1,724.01	62%	0.28	212.33	62%	3.64	0.12	30	1	0.02			0.00	0.00
VA	5100	5100	Base Water Heating Early Replacement to Heat Pump Water H	Single Family	2014	2053	487.07	59.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	487.07	59.99	0.00	0.00
VA	5100	5101	Heat Pump Water Heater - Energy Star - Early Replacement	Single Family	2014	2053	417.53	51.42	69.53	69.53	14%	8.56	8.56	14%	0.07	0.07	1	1	0.94			0.00	0.00
VA	5500	5500	Base Clotheswasher (MEF=1.26)	Single Family	2014	2053	74.50	13.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	74.50	13.46	0.00	0.00
VA	5500	5501	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	2014	2053	56.55	10.22	17.95	17.95	24%	3.24	3.24	24%	1.18	1.18	7	7	0.06			0.00	0.00
VA	5600	5600	Base Clothes Dryer (EF=3.01)	Single Family	2014	2053	1,055.90	178.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,055.90	178.70	0.00	0.00
VA	5600	5602	High Efficiency CD (EF=3.01 w/moisture sensor)	Single Family	2014	2053	861.96	145.88	193.94	193.94	18%	32.82	32.82	18%	0.05	0.05	0	0	1.32			193.94	32.82
VA	5600	5601	Heat Pump Dryer	Single Family	2014	2053	430.98	72.94	430.98	624.92	59%	72.94	105.76	59%	0.77	0.55	5	3	0.08			0.00	0.00
VA	5700	5700	Base Dishwasher (EF=0.65)	Single Family	2014	2053	256.25	42.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	256.25	42.02	0.00	0.00
VA	5700	5701	Energy Star Dishwasher (EF=0.72)	Single Family	2014	2053	247.12	40.53	9.13	9.13	4%	1.50	1.50	4%	1.59	1.59	10	10	0.04			0.00	0.00
VA	6000	6000	Base Single Speed Pool Pump (RET)	Single Family	2014	2053	278.12	33.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	278.12	33.07	0.00	0.00
VA	6000	6002	Variable-Speed Pool Pump (<1 hp)	Single Family	2014	2053	77.04	9.16	201.08	201.08	72%	23.91	23.91	72%	0.03	0.03	0	0	1.79			201.08	23.91
VA	6000	6001	PV-Powered Pool Pumps	Single Family	2014	2053	3.08	0.37	73.96	275.04	99%	8.79	32.71	99%	1.02	0.30	9	2	0.06			0.00	0.00
VA	7000	7000	Base Plasma TV	Single Family	2014	2053	135.72	19.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	135.72	19.58	0.00	0.00
VA	7000	7001	Energy Star Plasma TV	Single Family	2014	2053	123.92	17.88	11.80	11.80	9%	1.70	1.70	9%	0.01	0.01	0	0	6.59			11.80	1.70
VA	7000	7002	Plug Load Controls - Smart Power Strip (base plasma TV)	Single Family	2014	2053	122.98	17.74	0.94	12.74	9%	0.14	1.84	9%	4.08	0.31	28	2	0.01			0.00	0.00
VA	7100	7100	Base LCD TV	Single Family	2014	2053	317.27	45.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	317.27	45.78	0.00	0.00
VA	7100	7101	Energy Star LCD TV	Single Family	2014	2053	207.82	29.98	109.45	109.45	34%	15.79	15.79	34%	0.00	0.00	0	0	14.55			109.45	15.79
VA	7100	7102	Plug Load Controls - Smart Power Strip (base LCD TV)	Single Family	2014	2053	203.47	29.36	4.35	113.80	36%	0.63	16.42	36%	4.38	0.17	30	1	0.01			0.00	0.00
VA	7200	7200	Base CRT TV	Single Family	2014	2053	103.11	14.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	103.11	14.88	0.00	0.00
VA	7200	7202	Plug Load Controls - Smart Power Strip (base CRT TV)	Single Family	2014	2053	97.12	14.01	5.99	5.99	6%	0.86	0.86	6%	1.20	1.20	8	8	0.04			0.00	0.00
VA	7300	7300	Base Set-Top Box	Single Family	2014	2053	389.53	56.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	389.53	56.20	0.00	0.00
VA	7400	7400	Base DVD Player	Single Family	2014	2053	47.21	6.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	47.21	6.81	0.00	0.00
VA	7400	7401	Energy Star DVD Player	Single Family	2014	2053	22.25	3.21	24.96	24.96	53%	3.60	3.60	53%	0.01	0.01	0	0	3.68			24.96	3.60
VA	7400	7402	Plug Load Controls - Smart Power Strip (base DVD player)	Single Family	2014	2053	2.42	0.35	19.83	44.78	95%	2.86	6.46	95%	0.74	0.34	5	2	0.07			0.00	0.00
VA	7500	7500	Base Desktop PC	Single Family	2014	2053	423.38	55.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	423.38	55.78	0.00	0.00
VA	7500	7501	Energy Star Desktop PC	Single Family	2014	2053	373.57	49.21	49.81	49.81	12%	6.56	6.56	12%	0.00	0.00	0	0	13.66			49.81	6.56
VA	7500	7502	Plug Load Controls - Smart Power Strip (base Desktop PC)	Single Family	2014	2053	268.77	35.41	104.80	154.61	37%	13.81	20.37	37%	0.08	0.06	1	0	0.62			0.00	0.00
VA	7600	7600	Base Laptop PC	Single Family	2014	2053	75.86	9.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	75.86	9.99	0.00	0.00
VA	7600	7601	Energy Star Laptop PC	Single Family	2014	2053	63.79	8.40	12.07	12.07	16%	1.59	1.59	16%	0.03	0.03	0	0	2.05			12.07	1.59
VA	8000	8000	Base Cooking	Single Family	2014	2053	929.00	296.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	929.00	296.60	0.00	0.00
VA	9000	9000	Base Miscellaneous	Single Family	2014	2053	565.76	74.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	565.76	74.53	0.00	0.00
VA	9900	9900	Base House Use	Single Family	2014	2053	25,081.46	6,210.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25,081.46	6,210.75	0.00	0.00
VA	9900	9901	Indirect Feedback	Single Family	2014	2053	24,708.94	6,118.50	372.52	372.52	1%	92.24	92.24	1%	0.02	0.02	0	0	2.36			372.52	92.24
VA	9900	9902	Direct Feedback	Single Family	2014	2053	23,544.13	5,830.07	1,164.81	1,537.33	6%	288.44	380.68	6%	0.06	0.05	0	0	0.93			0.00	0.00
VA	1000	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	Multi-Family	2014	2053	157.52	93.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	157.52	93.58	0.00	0.00
VA	1000	1024	Self Install Weatherization (CAC)	Multi-Family	2014	2053	155.02	92.09	2.51	2.51	2%	1.49	1.49	2%	0.02	0.02	0	0	4.09			2.51	1.49
VA	1000	1025	Door Weatherization (CAC)	Multi-Family	2014	2053	147.51	87.63	7.51	10.02	6%	4.46	5.95	6%	0.07	0.06	0	0	0.92			0.00	0.00
VA	1000	1022	Programmable Thermostat (CAC)	Multi-Family	2014	2053	146.36	86.95	1.15	11.16	7%	0.68	6.63	7%	0.12	0.07	0	0	0.76			0.00	0.00
VA	1000	1004	Proper Refrigerant Charging and Air Flow (CAC)	Multi-Family	2014	2053	135.85	80.71	10.51	21.67	14%	6.24	12.87	14%	0.12	0.09	0	0	0.68			0.00	0.00
VA	1000	1019	Duct Insulation (CAC)	Multi-Family	2014	2053	135.58	80.54	0.28	21.95	14%	0.16	13.04	14%	0.18	0.09	0	0	0.58			0.00	0.00
VA	1000	1021	Return Duct Modification (CAC)	Multi-Family	2014	2053	134.79	80.08	0.79	22.73	14%	0.47	13.51	14%	0.19	0.10	0	0	0.56			0.00	0.00
VA	1000	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	126.15	74.95	8.64	31.37	20%	5.13	18.64	20%	0.20	0.13	0	0	0.50			0.00	0.00
VA	1000	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	118.61	70.47	7.54	38.91	25%	4.48	23.12	25%	0.24	0.15	0	0	0.42			0.00	0.00
VA	1000	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	106.03	62.99	12.58	51.49	33%	7.48	30.59	33%	0.31	0.19	1	0	0.32			0.00	0.00
VA	1000	1014	Crawlspace insulation (CAC)	Multi-Family	2014	2053	105.66	62.77	0.37	51.87	33%	0.22	30.81	33%	0.35	0.19	1	0	0.30			0.00	0.00
VA	1000	1026	Ceiling Fans (CAC)	Multi-Family	2014	2053	100.02	59.42	5.64	57.50	37%	3.35	34.16	37%	0.40	0.21	1	0	0.24			0.00	0.00
VA	1000	1005	Proper Sizing and Quality Install (CAC)	Multi-Family	2014	2053	90.31	53.65	9.72	67.22	43%	5.77	39.93	43%	0.57	0.26	1	0	0.18			0.00	0.00
VA	1000	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Multi-Family	2014	2053	86.20	51.21	4.11	71.33	45%	2.44	42.37	45%	0.53	0.28	1	0	0.15			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY

Vintage Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	1000	1008	Ceiling R-0 to R-38 Insulation (CAC)	Multi-Family	2014	2053	79.00	46.93	7.20	78.53	50%	4.28	46.65	50%	0.74	0.32	1	1	0.14			0.00	0.00
VA	1000	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Multi-Family	2014	2053	77.23	45.88	1.76	80.29	51%	1.05	47.70	51%	0.83	0.33	1	1	0.13			0.00	0.00
VA	1000	1020	Duct Testing and Sealing (CAC)	Multi-Family	2014	2053	75.24	44.70	1.99	82.28	52%	1.18	48.88	52%	0.88	0.34	1	1	0.12			0.00	0.00
VA	1000	1009	Ceiling R-0 to R-49 Insulation (CAC)	Multi-Family	2014	2053	75.15	44.64	0.09	82.38	52%	0.06	48.94	52%	9.01	0.35	15	1	0.01			0.00	0.00
VA	1000	1029	WINDOWS - Default With Sunscreen (CAC)	Multi-Family	2014	2053	69.95	41.55	5.20	87.58	56%	3.09	52.03	56%	1.08	0.40	2	1	0.08			0.00	0.00
VA	1000	1010	Ceiling R-11 to R-38 Insulaton (CAC)	Multi-Family	2014	2053	68.90	40.93	1.04	88.62	56%	0.62	52.65	56%	2.03	0.42	3	1	0.05			0.00	0.00
VA	1000	1018	Cool Roof (CAC)	Multi-Family	2014	2053	66.71	39.63	2.19	90.82	58%	1.30	53.95	58%	1.93	0.45	3	1	0.05			0.00	0.00
VA	1000	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	Multi-Family	2014	2053	66.09	39.26	0.62	91.43	58%	0.37	54.32	58%	2.47	0.47	4	1	0.04			0.00	0.00
VA	1000	1028	Window Film (CAC)	Multi-Family	2014	2053	62.19	36.95	3.90	95.33	61%	2.32	56.64	61%	1.93	0.53	3	1	0.04			0.00	0.00
VA	1000	1027	Whole House Fans (CAC)	Multi-Family	2014	2053	58.54	34.78	3.65	98.98	63%	2.17	58.80	63%	2.43	0.60	4	1	0.04			0.00	0.00
VA	1000	1011	Ceiling R-11 to R-49 Insulation (CAC)	Multi-Family	2014	2053	58.51	34.76	0.04	99.02	63%	0.02	58.82	63%	11.58	0.60	19	1	0.01			0.00	0.00
VA	1000	1012	Ceiling R-19 to R-38 Insulation (CAC)	Multi-Family	2014	2053	58.40	34.70	0.11	99.12	63%	0.06	58.89	63%	4.03	0.60	7	1	0.03			0.00	0.00
VA	1000	1013	Ceiling R-19 to R-49 Insulation (CAC)	Multi-Family	2014	2053	58.39	34.69	0.01	99.13	63%	0.01	58.89	63%	11.61	0.61	20	1	0.01			0.00	0.00
VA	1000	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	Multi-Family	2014	2053	58.08	34.51	0.31	99.44	63%	0.18	59.08	63%	6.44	0.62	11	1	0.02			0.00	0.00
VA	1000	1015	Basement insulation R-13 (CAC)	Multi-Family	2014	2053	57.95	34.43	0.13	99.57	63%	0.08	59.16	63%	6.52	0.63	11	1	0.02			0.00	0.00
VA	1000	1007	AC Filter Changes (CAC)	Multi-Family	2014	2053	57.78	34.32	0.17	99.75	63%	0.10	59.26	63%	6.33	0.64	11	1	0.01			0.00	0.00
VA	1000	1006	AC Maintenance and/or tune-up (CAC)	Multi-Family	2014	2053	57.60	34.22	0.18	99.93	63%	0.11	59.37	63%	7.24	0.65	12	1	0.01			0.00	0.00
VA	1100	1100	Base Split-System Air Conditioner - Early Replacement (11 SEI	Multi-Family	2014	2053	47.64	28.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	47.64	28.30	0.00	0.00
VA	1100	1122	Self Install Weatherization (CAC early replacement)	Multi-Family	2014	2053	46.84	27.83	0.80	0.80	2%	0.48	0.48	2%	0.01	0.01	0	0	6.99			0.80	0.48
VA	1100	1117	Duct Insulation (CAC early replacement)	Multi-Family	2014	2053	46.46	27.60	0.38	1.19	2%	0.23	0.70	2%	0.02	0.02	0	0	4.56			0.38	0.23
VA	1100	1123	Door Weatherization (CAC early replacement)	Multi-Family	2014	2053	44.26	26.29	2.20	3.39	7%	1.31	2.01	7%	0.04	0.03	0	0	1.53			2.20	1.31
VA	1100	1120	Programmable Thermostat (CAC early replacement)	Multi-Family	2014	2053	43.91	26.09	0.34	3.73	8%	0.20	2.22	8%	0.07	0.04	0	0	1.29			0.34	0.20
VA	1100	1102	Proper Refrigerant Charging and Air Flow (CAC early replacem	Multi-Family	2014	2053	40.08	23.81	3.83	7.56	16%	2.28	4.49	16%	0.07	0.05	0	0	1.14			3.83	2.28
VA	1100	1119	Return Duct Modification (CAC early replacement)	Multi-Family	2014	2053	39.85	23.67	0.23	7.79	16%	0.14	4.63	16%	0.11	0.06	0	0	0.94			0.00	0.00
VA	1100	1112	Crawlspace insulation (CAC early replacement)	Multi-Family	2014	2053	39.71	23.59	0.14	7.94	17%	0.08	4.71	17%	0.17	0.06	0	0	0.63			0.00	0.00
VA	1100	1116	Cool Roof (CAC early replacement)	Multi-Family	2014	2053	35.27	20.95	4.44	12.37	26%	2.64	7.35	26%	0.17	0.10	0	0	0.57			0.00	0.00
VA	1100	1125	Whole House Fans (CAC early replacement)	Multi-Family	2014	2053	28.39	16.87	6.88	19.25	40%	4.09	11.44	40%	0.23	0.14	0	0	0.42			0.00	0.00
VA	1100	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early r	Multi-Family	2014	2053	27.68	16.45	0.71	19.96	42%	0.42	11.86	42%	0.37	0.15	1	0	0.29			0.00	0.00
VA	1100	1103	Proper Sizing and Quality Install (CAC early replacement)	Multi-Family	2014	2053	24.43	14.52	3.25	23.21	49%	1.93	13.79	49%	0.37	0.18	1	0	0.27			0.00	0.00
VA	1100	1118	Duct Testing and Sealing (CAC early replacement)	Multi-Family	2014	2053	23.71	14.08	0.73	23.93	50%	0.43	14.22	50%	0.43	0.19	1	0	0.24			0.00	0.00
VA	1100	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early re	Multi-Family	2014	2053	22.63	13.44	1.08	25.01	53%	0.64	14.86	53%	0.35	0.20	1	0	0.23			0.00	0.00
VA	1100	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Multi-Family	2014	2053	20.74	12.32	1.89	26.90	56%	1.12	15.98	56%	0.50	0.22	1	0	0.21			0.00	0.00
VA	1100	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	20.71	12.31	0.03	26.93	57%	0.02	16.00	57%	5.77	0.22	10	0	0.02			0.00	0.00
VA	1100	1113	Basement insulation R-13 (CAC early replacement)	Multi-Family	2014	2053	20.48	12.17	0.23	27.16	57%	0.14	16.14	57%	0.67	0.23	1	0	0.16			0.00	0.00
VA	1100	1124	Ceiling Fans (CAC early replacement)	Multi-Family	2014	2053	19.95	11.85	0.53	27.69	58%	0.32	16.45	58%	0.74	0.24	1	0	0.13			0.00	0.00
VA	1100	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Multi-Family	2014	2053	19.65	11.67	0.30	27.99	59%	0.18	16.63	59%	1.26	0.25	2	0	0.08			0.00	0.00
VA	1100	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	Multi-Family	2014	2053	18.71	11.12	0.94	28.93	61%	0.56	17.19	61%	1.06	0.27	2	0	0.08			0.00	0.00
VA	1100	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Multi-Family	2014	2053	18.54	11.01	0.17	29.10	61%	0.10	17.29	61%	1.55	0.28	3	0	0.07			0.00	0.00
VA	1100	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	18.53	11.01	0.01	29.11	61%	0.01	17.30	61%	6.45	0.28	11	0	0.02			0.00	0.00
VA	1100	1126	Window Film (CAC early replacement)	Multi-Family	2014	2053	17.68	10.50	0.85	29.97	63%	0.51	17.80	63%	1.56	0.32	3	1	0.05			0.00	0.00
VA	1100	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Multi-Family	2014	2053	17.64	10.48	0.03	30.00	63%	0.02	17.82	63%	2.36	0.32	4	1	0.04			0.00	0.00
VA	1100	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	17.64	10.48	0.00	30.00	63%	0.00	17.82	63%	6.78	0.32	11	1	0.02			0.00	0.00
VA	1100	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality I	Multi-Family	2014	2053	16.74	9.95	0.90	30.90	65%	0.53	18.36	65%	2.57	0.39	4	1	0.03			0.00	0.00
VA	1100	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Multi-Family	2014	2053	16.65	9.89	0.09	30.99	65%	0.05	18.41	65%	3.97	0.40	7	1	0.03			0.00	0.00
VA	1100	1105	AC Filter Changes (CAC early replacement)	Multi-Family	2014	2053	16.60	9.86	0.05	31.04	65%	0.03	18.44	65%	3.89	0.40	7	1	0.02			0.00	0.00
VA	1100	1104	AC Maintenance and/or tune-up (CAC early replacement)	Multi-Family	2014	2053	16.55	9.83	0.05	31.09	65%	0.03	18.47	65%	4.44	0.41	7	1	0.02			0.00	0.00
VA	1200	1200	Base Heat Pump Cooling (13 SEER)	Multi-Family	2014	2053	245.48	145.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	245.48	145.83	0.00	0.00
VA	1200	1219	Duct Insulation (HP cooling)	Multi-Family	2014	2053	243.47	144.64	2.00	2.00	1%	1.19	1.19	1%	0.03	0.03	0	0	3.83			2.00	1.19
VA	1200	1223	Self Install Weatherization (HP cooling)	Multi-Family	2014	2053	239.60	142.34	3.88	5.88	2%	2.30	3.49	2%	0.04	0.03	0	0	2.19			3.88	2.30
VA	1200	1224	Door Weatherization (HP cooling)	Multi-Family	2014	2053	227.99	135.45	11.61	17.49	7%	6.90	10.39	7%	0.05	0.05	0	0	1.29			11.61	6.90
VA	1200	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Multi-Family	2014	2053	189.36	112.50	38.63	56.12	23%	22.95	33.34	23%	0.08	0.07	0	0	1.14			38.63	22.95
VA	1200	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	Multi-Family	2014	2053	175.77	104.42	13.59	69.71	28%	8.08	41.41	28%	0.10	0.08	0	0	0.80			0.00	0.00
VA	1200	1221	Programmable Thermostat (HP cooling)	Multi-Family	2014	2053	172.29	102.35	3.48	73.19	30%	2.07	43.48	30%	0.16	0.08	0	0	0.56			0.00	0.00
VA	1200	1214	Crawlspace insulation (HP cooling)	Multi-Family	2014	2053	171.68	101.99	0.60	73.79	30%	0.36	43.84	30%	0.24	0.08	0	0	0.44			0.00	0.00
VA	1200	1218	Cool Roof (HP cooling)	Multi-Family	2014	2053	152.50	90.60	19.19	92.98	38%	11.40	55.24	38%	0.24	0.12	0	0	0.39			0.00	0.00
VA	1200	1226	Whole House Fans (HP cooling)	Multi-Family	2014	2053	122.76	72.93	29.74	122.72	50%	17.67	72.91	50%	0.33	0.17	1	0	0.29			0.00	0.00
VA	1200	1220	Duct Testing and Sealing (HP cooling)	Multi-Family	2014	2053	119.11	70.76	3.65	126.37	51%	2.17	75.07	51%	0.53	0.18	1	0	0.19			0.00	0.00
VA	1200	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Multi-Family	2014	2053	113.69	67.54	5.42	131.79	54%	3.22	78.29	54%	0.44	0.19	1	0	0.19			0.00	0.00
VA	1200	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	Multi-Family	2014	2053	104.09	61.84	9.59	141.38	58%	5.70	83.99	58%	0.61	0.22	1	0	0.17			0.00	0.00
VA	1200	1205	Proper Sizing and Quality Install (HP cooling)	Multi-Family	2014	2053	93.98	55.83	10.11	151.49	62%	6.01	90.00	62%	0.75	0.25	1	0	0.14			0.00	0.00
VA	1200	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	93.72	55.68	0.26	151.76	62%	0.15	90.16	62%	3.57	0.26	6	0	0.03			0.00	0.00
VA	1200	1215	Basement insulation R-13 (HP cooling)	Multi-Family	2014	2053	92.69	55.07	1.03	152.79	62%	0.61	90.77	62%	0.92	0.26	2	0	0.11			0.00	0.00
VA	1200	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Multi-Family	2014	2053	90.38	53.69	2.31	155.10	63%	1.37	92.14	63%	1.08	0.28	2	0	0.10			0.00	0.00
VA	1200	1225	Ceiling Fans (HP cooling)	Multi-Family	2014	2053	88.02	52.29	2.36	157.46	64%	1.40	93.54	64%	1.05	0.29	2	0	0.09			0.00	0.00
VA	1200	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	Multi-Family	2014	2053	86.67	51.49	1.35	158.80	65%	0.80	94.34	65%	1.73	0.30	3	1	0.06			0.00	0.00
VA	1200	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	86.55	51.42	0.13	158.93	65%	0.07	94.42	65%	3.87	0.30	7	1	0.03			0.00	0.00
VA	1200	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Multi-Family	2014	2053	85.65	50.88	0.90	159.83	65%	0.53	94.95	65%	2.42	0.31	4	1	0.04			0.00	0.00
VA	1200	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	Multi-Family	2014	2053	85.50	50.79	0.15	159.98	65%	0.09	95.04	65%	3.12	0.32	5	1	0.03			0.00	0.00
VA	1200	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	85.47	50.77	0.03	160.01	65%	0.02	95.06	65%	3.93	0.32	7	1	0.03			0.00	0.00
VA	1200	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Multi-Family	2014	2053	84.77	50.36	0.70	160.71	65%	0.42	95.48	65%	7.69	0.35	13	1	0.01			0.00	0.00
VA	1200	1207	Heat Pump Filter Replacement	Multi-Family	2014	2053	84.51	50.21	0.26	160.97	66%	0.15	95.63	66%	5.86	0.36	10	1	0.01			0.00	0.00
VA	1200	1206	Heat pump tune up	Multi-Family	2014	2053	84.25	50.05	0.27	161.23	66%	0.16	95.79	66%	9.46	0.37	16	1	0.01			0.00	0.00
VA	1300	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	Multi-Family	2014	2053	44.29	26.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	44.29	26.31	0.00	0.00
VA	1300	1319	Duct Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	43.93	26.10	0.36	0.36	1%	0.21	0.21	1%	0.03	0.03	0	0	3.91			0.36	0.21

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage — Existing

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	1300	1323	Self Install Weatherization (HP cooling Early Replacement)	Multi-Family	2014	2053	43.23	25.68	0.70	1.06	2%	0.42	0.63	2%	0.04	0.03	0	0	2.24			0.70	0.42
VA	1300	1324	Door Weatherization (HP cooling Early Replacement)	Multi-Family	2014	2053	41.18	24.47	2.05	3.11	7%	1.22	1.85	7%	0.05	0.05	0	0	1.29			2.05	1.22
VA	1300	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Ea	Multi-Family	2014	2053	34.20	20.32	6.98	10.09	23%	4.15	5.99	23%	0.08	0.07	0	0	1.17			6.98	4.15
VA	1300	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Re	Multi-Family	2014	2053	31.75	18.86	2.46	12.54	28%	1.46	7.45	28%	0.10	0.08	0	0	0.82			0.00	0.00
VA	1300	1314	Crawlspace insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	31.64	18.80	0.11	12.65	29%	0.07	7.52	29%	0.23	0.08	0	0	0.46			0.00	0.00
VA	1300	1321	Programmable Thermostat (HP cooling Early Replacement)	Multi-Family	2014	2053	31.01	18.42	0.63	13.28	30%	0.37	7.89	30%	0.21	0.08	0	0	0.42			0.00	0.00
VA	1300	1318	Cool Roof (HP cooling Early Replacement)	Multi-Family	2014	2053	27.55	16.36	3.47	16.74	38%	2.06	9.95	38%	0.24	0.12	0	0	0.40			0.00	0.00
VA	1300	1326	Whole House Fans (HP cooling early replacement)	Multi-Family	2014	2053	22.17	13.17	5.37	22.12	50%	3.19	13.14	50%	0.32	0.17	1	0	0.30			0.00	0.00
VA	1300	1320	Duct Testing and Sealing (HP cooling Early Replacement)	Multi-Family	2014	2053	21.51	12.78	0.66	22.78	51%	0.39	13.53	51%	0.52	0.18	1	0	0.20			0.00	0.00
VA	1300	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling E	Multi-Family	2014	2053	20.54	12.20	0.98	23.75	54%	0.58	14.11	54%	0.43	0.19	1	0	0.19			0.00	0.00
VA	1300	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	18.80	11.17	1.73	25.49	58%	1.03	15.14	58%	0.60	0.21	1	0	0.18			0.00	0.00
VA	1300	1305	Proper Sizing and Quality Install (HP cooling Early Replacemer	Multi-Family	2014	2053	16.98	10.09	1.83	27.31	62%	1.09	16.23	62%	0.73	0.25	1	0	0.14			0.00	0.00
VA	1300	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	16.93	10.06	0.05	27.36	62%	0.03	16.25	62%	3.49	0.25	6	0	0.03			0.00	0.00
VA	1300	1315	Basement insulation R-13 (HP cooling Early Replacement)	Multi-Family	2014	2053	16.74	9.95	0.19	27.55	62%	0.11	16.37	62%	0.90	0.26	2	0	0.12			0.00	0.00
VA	1300	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling E	Multi-Family	2014	2053	16.33	9.70	0.42	27.96	63%	0.25	16.61	63%	1.06	0.27	2	0	0.10			0.00	0.00
VA	1300	1325	Ceiling Fans (HP cooling early replacement)	Multi-Family	2014	2053	15.90	9.45	0.43	28.39	64%	0.25	16.87	64%	1.02	0.28	2	0	0.09			0.00	0.00
VA	1300	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Multi-Family	2014	2053	15.66	9.30	0.24	28.63	65%	0.14	17.01	65%	1.69	0.29	3	0	0.06			0.00	0.00
VA	1300	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement	Multi-Family	2014	2053	15.63	9.29	0.02	28.66	65%	0.01	17.02	65%	3.78	0.30	6	0	0.03			0.00	0.00
VA	1300	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacem	Multi-Family	2014	2053	15.47	9.19	0.16	28.82	65%	0.10	17.12	65%	2.37	0.31	4	1	0.04			0.00	0.00
VA	1300	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement	Multi-Family	2014	2053	15.44	9.18	0.03	28.85	65%	0.02	17.14	65%	3.05	0.31	5	1	0.03			0.00	0.00
VA	1300	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement	Multi-Family	2014	2053	15.44	9.17	0.01	28.85	65%	0.00	17.14	65%	3.83	0.31	6	1	0.03			0.00	0.00
VA	1300	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacer	Multi-Family	2014	2053	15.31	9.10	0.13	28.98	65%	0.08	17.22	65%	7.51	0.34	13	1	0.01			0.00	0.00
VA	1300	1307	Heat Pump Filter Replacement	Multi-Family	2014	2053	15.27	9.07	0.05	29.02	66%	0.03	17.24	66%	5.73	0.35	10	1	0.01			0.00	0.00
VA	1300	1306	Heat pump tune up	Multi-Family	2014	2053	15.22	9.04	0.05	29.07	66%	0.03	17.27	66%	9.24	0.37	16	1	0.01			0.00	0.00
VA	1400	1400	Base Room Air Conditioner - EER 10.6	Multi-Family	2014	2053	13.91	8.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.91	8.26	0.00	0.00
VA	1400	1413	Self Install Weatherization (RAC)	Multi-Family	2014	2053	13.69	8.13	0.22	0.22	2%	0.13	0.13	2%	0.01	0.01	0	0	8.28			0.22	0.13
VA	1400	1414	Door Weatherization (RAC)	Multi-Family	2014	2053	13.02	7.74	0.66	0.88	6%	0.39	0.53	6%	0.04	0.03	0	0	1.87			0.66	0.39
VA	1400	1411	Cool Roof (RAC)	Multi-Family	2014	2053	11.57	6.87	1.46	2.34	17%	0.86	1.39	17%	0.13	0.09	0	0	0.76			0.00	0.00
VA	1400	1416	Whole House Fans (RAC)	Multi-Family	2014	2053	9.31	5.53	2.26	4.60	33%	1.34	2.73	33%	0.17	0.13	0	0	0.56			0.00	0.00
VA	1400	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Multi-Family	2014	2053	8.81	5.23	0.51	5.10	37%	0.30	3.03	37%	0.19	0.14	0	0	0.44			0.00	0.00
VA	1400	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Multi-Family	2014	2053	8.59	5.10	0.22	5.32	38%	0.13	3.16	38%	0.29	0.14	0	0	0.36			0.00	0.00
VA	1400	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Multi-Family	2014	2053	8.08	4.80	0.51	5.83	42%	0.30	3.46	42%	0.23	0.15	0	0	0.34			0.00	0.00
VA	1400	1404	Ceiling R-0 to R-38 Insulation (RAC)	Multi-Family	2014	2053	7.44	4.42	0.64	6.47	46%	0.38	3.84	46%	0.36	0.17	1	0	0.29			0.00	0.00
VA	1400	1405	Ceiling R-0 to R-49 Insulation (RAC)	Multi-Family	2014	2053	7.43	4.41	0.02	6.48	47%	0.01	3.85	47%	2.17	0.18	4	0	0.05			0.00	0.00
VA	1400	1415	Ceiling Fans (RAC)	Multi-Family	2014	2053	7.23	4.30	0.19	6.68	48%	0.12	3.97	48%	0.50	0.18	1	0	0.19			0.00	0.00
VA	1400	1417	Window Film (RAC)	Multi-Family	2014	2053	6.58	3.91	0.65	7.33	53%	0.39	4.35	53%	0.50	0.21	1	0	0.16			0.00	0.00
VA	1400	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	Multi-Family	2014	2053	6.52	3.87	0.07	7.39	53%	0.04	4.39	53%	1.00	0.22	2	0	0.11			0.00	0.00
VA	1400	1418	WINDOWS - Default With Sunscreen (RAC)	Multi-Family	2014	2053	6.20	3.69	0.31	7.70	55%	0.18	4.58	55%	0.79	0.24	1	0	0.10			0.00	0.00
VA	1400	1406	Ceiling R-11 to R-38 Insulaton (RAC)	Multi-Family	2014	2053	6.12	3.64	0.08	7.79	56%	0.05	4.63	56%	1.10	0.25	2	0	0.10			0.00	0.00
VA	1400	1407	Ceiling R-11 to R-49 Insulation (RAC)	Multi-Family	2014	2053	6.11	3.63	0.01	7.80	56%	0.00	4.63	56%	2.64	0.25	4	0	0.04			0.00	0.00
VA	1400	1408	Ceiling R-19 to R-38 Insulation (RAC)	Multi-Family	2014	2053	6.10	3.63	0.01	7.81	56%	0.01	4.64	56%	1.84	0.26	3	0	0.06			0.00	0.00
VA	1400	1409	Ceiling R-19 to R-49 Insulation (RAC)	Multi-Family	2014	2053	6.10	3.62	0.00	7.81	56%	0.00	4.64	56%	2.65	0.26	4	0	0.04			0.00	0.00
VA	1400	1403	Room AC Filter Replacement	Multi-Family	2014	2053	6.08	3.61	0.02	7.83	56%	0.01	4.65	56%	2.61	0.26	4	0	0.02			0.00	0.00
VA	1500	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	Multi-Family	2014	2053	1.09	0.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.09	0.65	0.00	0.00
VA	1500	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early	Multi-Family	2014	2053	0.95	0.56	0.15	0.15	13%	0.09	0.09	13%	1.05	1.05	2	2	0.07			0.00	0.00
VA	1600	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	Multi-Family	2014	2053	3.17	1.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.17	1.88	0.00	0.00
VA	1600	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/da	Multi-Family	2014	2053	2.68	1.59	0.49	0.49	15%	0.29	0.29	15%	0.19	0.19	0	0	0.47			0.00	0.00
VA	1700	1700	Base Furnace Fan - Furnace & CAC	Multi-Family	2014	2053	232.33	119.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	232.33	119.17	0.00	0.00
VA	1700	1701	ECM Furnace Fan (variable speed motor) - Cooling	Multi-Family	2014	2053	129.07	66.21	103.26	103.26	44%	52.97	52.97	44%	0.03	0.03	0	0	3.45			103.26	52.97
VA	2000	2000	Base Heat Pump Space Heating (7.7 HSPF)	Multi-Family	2014	2053	362.58	43.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	362.58	43.02	0.00	0.00
VA	2000	2016	Duct Insulation (HP heating)	Multi-Family	2014	2053	359.63	42.67	2.96	2.96	1%	0.35	0.35	1%	0.02	0.02	0	0	3.15			2.96	0.35
VA	2000	2021	Self Install Weatherization (HP heating)	Multi-Family	2014	2053	353.90	41.99	5.72	8.68	2%	0.68	1.03	2%	0.03	0.03	0	0	1.94			5.72	0.68
VA	2000	2022	Door Weatherization (HP heating)	Multi-Family	2014	2053	340.51	40.40	13.39	22.07	6%	1.59	2.62	6%	0.05	0.04	0	0	0.96			0.00	0.00
VA	2000	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Multi-Family	2014	2053	309.14	36.68	31.38	53.45	15%	3.72	6.34	15%	0.11	0.08	1	1	0.57			0.00	0.00
VA	2000	2012	Crawlspace insulation (HP heating)	Multi-Family	2014	2053	308.05	36.55	1.08	54.53	15%	0.13	6.47	15%	0.15	0.08	1	1	0.44			0.00	0.00
VA	2000	2019	Programmable Thermostat (HP heating)	Multi-Family	2014	2053	301.95	35.83	6.10	60.63	17%	0.72	7.19	17%	0.14	0.09	1	1	0.42			0.00	0.00
VA	2000	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Multi-Family	2014	2053	288.21	34.20	13.74	74.37	21%	1.63	8.82	21%	0.20	0.11	2	1	0.28			0.00	0.00
VA	2000	2017	Duct Testing and Sealing (HP heating)	Multi-Family	2014	2053	279.65	33.18	8.57	82.94	23%	1.02	9.84	23%	0.26	0.13	2	1	0.25			0.00	0.00
VA	2000	2006	Ceiling R-0 to R-38 Insulation (HP heating)	Multi-Family	2014	2053	256.05	30.38	23.59	106.53	29%	2.80	12.64	29%	0.29	0.16	2	1	0.24			0.00	0.00
VA	2000	2007	Ceiling R-0 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	255.34	30.30	0.71	107.24	30%	0.08	12.72	30%	1.52	0.17	13	1	0.04			0.00	0.00
VA	2000	2013	Basement insulation R-13 (HP heating)	Multi-Family	2014	2053	252.53	29.96	2.82	110.06	30%	0.33	13.06	30%	0.39	0.18	3	1	0.17			0.00	0.00
VA	2000	2018	Heat Recovery Ventilators (HP heating)	Multi-Family	2014	2053	197.73	23.46	54.80	164.86	45%	6.50	19.56	45%	0.43	0.26	4	2	0.16			0.00	0.00
VA	2000	2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Multi-Family	2014	2053	192.95	22.89	4.78	169.63	47%	0.57	20.13	47%	0.61	0.27	5	2	0.11			0.00	0.00
VA	2000	2008	Ceiling R-11 to R-38 Insulaton (HP heating)	Multi-Family	2014	2053	190.00	22.54	2.95	172.58	48%	0.35	20.48	48%	0.92	0.28	8	2	0.07			0.00	0.00
VA	2000	2009	Ceiling R-11 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	189.73	22.51	0.27	172.86	48%	0.03	20.51	48%	2.04	0.29	17	2	0.03			0.00	0.00
VA	2000	2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	Multi-Family	2014	2053	187.75	22.28	1.97	174.83	48%	0.23	20.74	48%	1.28	0.30	11	2	0.05			0.00	0.00
VA	2000	2003	Ground Source Heat Pump with Desuperheater (HP heating)	Multi-Family	2014	2053	170.46	20.23	17.29	192.12	53%	2.05	22.79	53%	2.45	0.49	21	4	0.03			0.00	0.00
VA	2000	2010	Ceiling R-19 to R-38 Insulation (HP heating)	Multi-Family	2014	2053	170.17	20.19	0.30	192.42	53%	0.04	22.83	53%	1.81	0.49	15	4	0.04			0.00	0.00
VA	2000	2011	Ceiling R-19 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	170.10	20.18	0.06	192.48	53%	0.01	22.84	53%	2.28	0.49	19	4	0.03			0.00	0.00
VA	2000	2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Multi-Family	2014	2053	168.71	20.02	1.39	193.88	53%	0.17	23.00	53%	4.47	0.52	38	4	0.02			0.00	0.00
VA	2000	2005	Heat Pump Filter Replacement	Multi-Family	2014	2053	168.20	19.96	0.51	194.38	54%	0.06	23.06	54%	3.41	0.53	29	4	0.01			0.00	0.00
VA	2000	2004	Heat pump tune up	Multi-Family	2014	2053	167.67	19.89	0.53	194.91	54%	0.06	23.13	54%	5.50	0.54	46	5	0.01			0.00	0.00
VA	2100	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSP	Multi-Family	2014	2053	87.04	10.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	87.04	10.33	0.00	0.00
VA	2100	2116	Duct Insulation (HP heating early replacement)	Multi-Family	2014	2053	86.32	10.24	0.71	0.71	1%	0.08	0.08	1%	0.02	0.02	0	0	4.29			0.71	0.08

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY

Vintage Sgmt	Base Number	Existing Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	2100	2121	Self Install Weatherization (HP heating early replacement)	Multi-Family	2014	2053	84.95	10.08	1.37	2.08	2%	0.16	0.25	2%	0.02	0.02	0	0	2.64			1.37	0.16
VA	2100	2122	Door Weatherization (HP heating early replacement)	Multi-Family	2014	2053	82.59	9.80	2.36	4.44	5%	0.28	0.53	5%	0.05	0.04	0	0	0.96			0.00	0.00
VA	2100	2102	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early	Multi-Family	2014	2053	74.98	8.90	7.61	12.05	14%	0.90	1.43	14%	0.08	0.06	1	1	0.79			0.00	0.00
VA	2100	2112	Crawlspace insulation (HP heating early replacement)	Multi-Family	2014	2053	74.72	8.87	0.26	12.32	14%	0.03	1.46	14%	0.11	0.07	1	1	0.60			0.00	0.00
VA	2100	2119	Programmable Thermostat (HP heating early replacement)	Multi-Family	2014	2053	73.24	8.69	1.48	13.79	16%	0.18	1.64	16%	0.10	0.07	1	1	0.58			0.00	0.00
VA	2100	2120	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating e	Multi-Family	2014	2053	69.91	8.29	3.33	17.13	20%	0.40	2.03	20%	0.15	0.08	1	1	0.39			0.00	0.00
VA	2100	2117	Duct Testing and Sealing (HP heating early replacement)	Multi-Family	2014	2053	67.83	8.05	2.08	19.20	22%	0.25	2.28	22%	0.19	0.10	2	1	0.35			0.00	0.00
VA	2100	2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Multi-Family	2014	2053	62.11	7.37	5.72	24.93	29%	0.68	2.96	29%	0.21	0.12	2	1	0.32			0.00	0.00
VA	2100	2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Multi-Family	2014	2053	61.94	7.35	0.17	25.10	29%	0.02	2.98	29%	1.10	0.13	9	1	0.06			0.00	0.00
VA	2100	2113	Basement insulation R-13 (HP heating early replacement)	Multi-Family	2014	2053	61.25	7.27	0.69	25.79	30%	0.08	3.06	30%	0.28	0.13	2	1	0.24			0.00	0.00
VA	2100	2118	Heat Recovery Ventilators (HP heating early replacement)	Multi-Family	2014	2053	47.96	5.69	13.29	39.08	45%	1.58	4.64	45%	0.32	0.19	3	2	0.21			0.00	0.00
VA	2100	2123	WINDOWS - Double-Glazed Clear to Energy Star (HP heating	Multi-Family	2014	2053	46.80	5.55	1.16	40.24	46%	0.14	4.77	46%	0.44	0.20	4	2	0.15			0.00	0.00
VA	2100	2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Multi-Family	2014	2053	46.08	5.47	0.72	40.95	47%	0.08	4.86	47%	0.67	0.21	6	2	0.10			0.00	0.00
VA	2100	2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Multi-Family	2014	2053	46.02	5.46	0.07	41.02	47%	0.01	4.87	47%	1.49	0.21	13	2	0.05			0.00	0.00
VA	2100	2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replaceme	Multi-Family	2014	2053	45.54	5.40	0.48	41.50	48%	0.06	4.92	48%	0.93	0.22	8	2	0.07			0.00	0.00
VA	2100	2103	Ground Source Heat Pump with Desuperheater (HP heating ea	Multi-Family	2014	2053	41.34	4.91	4.19	45.69	52%	0.50	5.42	52%	1.78	0.36	15	3	0.04			0.00	0.00
VA	2100	2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Multi-Family	2014	2053	41.27	4.90	0.07	45.76	53%	0.01	5.43	53%	1.32	0.37	11	3	0.05			0.00	0.00
VA	2100	2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Multi-Family	2014	2053	41.26	4.89	0.02	45.78	53%	0.00	5.43	53%	1.66	0.37	14	3	0.04			0.00	0.00
VA	2100	2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacem	Multi-Family	2014	2053	40.92	4.85	0.34	46.12	53%	0.04	5.47	53%	3.25	0.39	27	3	0.02			0.00	0.00
VA	2100	2105	Heat Pump Filter Replacement (heating)	Multi-Family	2014	2053	40.79	4.84	0.12	46.24	53%	0.01	5.49	53%	2.48	0.39	21	3	0.02			0.00	0.00
VA	2100	2104	Heat pump tune up (heating)	Multi-Family	2014	2053	40.67	4.83	0.13	46.37	53%	0.02	5.50	53%	4.00	0.40	34	3	0.01			0.00	0.00
VA	2200	2200	Base Resistance Space Heating (Primary)	Multi-Family	2014	2053	374.37	44.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	374.37	44.42	0.00	0.00
VA	2200	2201	Air Source Heat Pump (resistance heating)	Multi-Family	2014	2053	295.43	35.05	78.94	78.94	21%	9.37	9.37	21%	0.01	0.01	0	0	5.17			78.94	9.37
VA	2200	2216	Self Install Weatherization	Multi-Family	2014	2053	290.73	34.49	4.70	83.64	22%	0.56	9.92	22%	0.02	0.01	0	0	2.57			4.70	0.56
VA	2200	2217	Door Weatherization (resistance heating)	Multi-Family	2014	2053	277.47	32.92	13.26	96.90	26%	1.57	11.50	26%	0.03	0.02	0	0	1.53			13.26	1.57
VA	2200	2214	Programmable Thermostat (resistance heating)	Multi-Family	2014	2053	271.97	32.27	5.49	102.40	27%	0.65	12.15	27%	0.07	0.02	1	0	0.82			0.00	0.00
VA	2200	2209	Crawlspace insulation (resistance heating)	Multi-Family	2014	2053	270.90	32.14	1.08	103.48	28%	0.13	12.28	28%	0.10	0.02	1	0	0.70			0.00	0.00
VA	2200	2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance he	Multi-Family	2014	2053	258.57	30.68	12.33	115.80	31%	1.46	13.74	31%	0.14	0.03	1	0	0.41			0.00	0.00
VA	2200	2203	Ceiling R-0 to R-38 Insulation (resistance heating)	Multi-Family	2014	2053	234.98	27.88	23.59	139.39	37%	2.80	16.54	37%	0.18	0.06	2	0	0.38			0.00	0.00
VA	2200	2204	Ceiling R-0 to R-49 Insulation (resistance heating)	Multi-Family	2014	2053	234.42	27.81	0.56	139.95	37%	0.07	16.60	37%	1.20	0.06	10	1	0.06			0.00	0.00
VA	2200	2210	Basement insulation R-13 (resistance heating)	Multi-Family	2014	2053	230.44	27.34	3.98	143.93	38%	0.47	17.08	38%	0.26	0.07	2	1	0.26			0.00	0.00
VA	2200	2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance h	Multi-Family	2014	2053	224.09	26.59	6.35	150.28	40%	0.75	17.83	40%	0.28	0.08	2	1	0.24			0.00	0.00
VA	2200	2213	Heat Recovery Ventilators (resistance heating)	Multi-Family	2014	2053	175.46	20.82	48.63	198.91	53%	5.77	23.60	53%	0.30	0.13	3	1	0.22			0.00	0.00
VA	2200	2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	Multi-Family	2014	2053	172.56	20.47	2.91	201.81	54%	0.34	23.94	54%	0.58	0.14	5	1	0.12			0.00	0.00
VA	2200	2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Multi-Family	2014	2053	170.03	20.17	2.53	204.34	55%	0.30	24.24	55%	0.62	0.14	5	1	0.11			0.00	0.00
VA	2200	2206	Ceiling R-11 to R-49 Insulation (resistance heating)	Multi-Family	2014	2053	169.82	20.15	0.21	204.55	55%	0.02	24.27	55%	1.66	0.15	14	1	0.04			0.00	0.00
VA	2200	2202	Ground Source Heat Pump with Desuperheater (resistance hea	Multi-Family	2014	2053	170.00	20.17	-0.18	204.37	55%	-0.02	24.25	55%	-154.51	0.29	-1,302	2	0.00			0.00	0.00
VA	2200	2207	Ceiling R-19 to R-38 Insulation (resistance heating)	Multi-Family	2014	2053	169.66	20.13	0.34	204.71	55%	0.04	24.29	55%	0.99	0.29	8	2	0.07			0.00	0.00
VA	2200	2208	Ceiling R-19 to R-49 Insulation (resistance heating)	Multi-Family	2014	2053	169.61	20.12	0.05	204.77	55%	0.01	24.29	55%	1.67	0.29	14	2	0.04			0.00	0.00
VA	2200	2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Multi-Family	2014	2053	167.68	19.89	1.93	206.69	55%	0.23	24.52	55%	2.01	0.30	17	3	0.03			0.00	0.00
VA	3030	3030	Base Halogen Lighting - 0.5 hrs/day 2020	Multi-Family	2020	2053	21.22	2.38	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	21.22	2.38	0.00	0.00
VA	3030	3032	LEDs (base Halogen 0.5 hrs/day) 2020	Multi-Family	2020	2053	5.56	0.62	15.66	15.66	74%	1.75	1.75	74%	0.03	0.03	0	0	2.34			15.66	1.75
VA	3130	3130	Base Halogen Lighting - 2.5 hrs/day 2020	Multi-Family	2020	2053	88.41	9.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	88.41	9.90	0.00	0.00
VA	3130	3132	LEDs (base Halogen 2.5 hrs/day) 2020	Multi-Family	2020	2053	23.16	2.59	65.25	65.25	74%	7.30	7.30	74%	0.01	0.01	0	0	11.68			65.25	7.30
VA	3230	3230	Base Halogen Lighting - 6 hrs/day 2020	Multi-Family	2020	2053	55.17	6.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	55.17	6.18	0.00	0.00
VA	3230	3232	LEDs (base Halogen 6 hrs/day) 2020	Multi-Family	2020	2053	17.63	1.97	37.54	37.54	68%	4.20	4.20	68%	0.00	0.00	0	0	15.99			37.54	4.20
VA	3330	3330	Base CFL Lighting - 0.5 hrs/day 2020	Multi-Family	2020	2053	3.97	0.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.97	0.44	0.00	0.00
VA	3330	3331	LEDs (base CFL 0.5 hrs/day) 2020	Multi-Family	2020	2053	2.90	0.32	1.07	1.07	27%	0.12	0.12	27%	0.21	0.21	2	2	0.37			0.00	0.00
VA	3430	3430	Base CFL Lighting - 2.5 hrs/day 2020	Multi-Family	2020	2053	16.33	1.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.33	1.83	0.00	0.00
VA	3430	3431	LEDs (base CFL 2.5 hrs/day) 2020	Multi-Family	2020	2053	11.92	1.33	4.41	4.41	27%	0.49	0.49	27%	0.04	0.04	0	0	1.84			4.41	0.49
VA	3530	3530	Base CFL Lighting - 6 hrs/day 2020	Multi-Family	2020	2053	11.03	1.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.03	1.24	0.00	0.00
VA	3530	3531	LEDs (base CFL 6 hrs/day) 2020	Multi-Family	2020	2053	8.05	0.90	2.98	2.98	27%	0.33	0.33	27%	0.02	0.02	0	0	2.80			2.98	0.33
VA	3630	3630	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2020	Multi-Family	2020	2053	9.32	1.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.32	1.04	0.00	0.00
VA	3630	3632	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Multi-Family	2020	2053	3.68	0.41	5.64	5.64	60%	0.63	0.63	60%	0.01	0.01	0	0	6.49			5.64	0.63
VA	3730	3730	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2020	Multi-Family	2020	2053	37.63	4.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	37.63	4.21	0.00	0.00
VA	3730	3732	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Multi-Family	2020	2053	14.87	1.66	22.76	22.76	60%	2.55	2.55	60%	0.00	0.00	0	0	32.45			22.76	2.55
VA	3830	3830	Base Halogen (Specialty) Lighting - 6 hrs/day 2020	Multi-Family	2020	2053	25.80	2.89	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.80	2.89	0.00	0.00
VA	3830	3832	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Multi-Family	2020	2053	10.20	1.14	15.61	15.61	60%	1.75	1.75	60%	0.00	0.00	0	0	48.19			15.61	1.75
VA	3900	3900	Base Fluorescent Fixture 1.8 hrs/day	Multi-Family	2014	2053	59.58	6.67	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	59.58	6.67	0.00	0.00
VA	3900	3902	ROB 2L4'T8, 1EB	Multi-Family	2014	2053	43.51	4.87	16.07	16.07	27%	1.80	1.80	27%	0.04	0.04	0	0	2.17			16.07	1.80
VA	4000	4000	Base Refrigerator	Multi-Family	2014	2053	217.96	35.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	217.96	35.33	0.00	0.00
VA	4000	4001	Refrigerator (Energy Star)	Multi-Family	2014	2053	173.06	28.05	44.90	44.90	21%	7.28	7.28	21%	0.05	0.05	0	0	1.41			44.90	7.28
VA	4100	4100	Base Refrigerator--Early Replacement	Multi-Family	2014	2053	29.59	4.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	29.59	4.80	0.00	0.00
VA	4100	4101	Refrigerator - Early Replacement (Energy Star)	Multi-Family	2014	2053	13.93	2.26	15.67	15.67	53%	2.54	2.54	53%	0.13	0.13	1	1	0.40			0.00	0.00
VA	4200	4200	Base 2nd Refrigerator - Recycling	Multi-Family	2014	2053	3.49	0.57	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.49	0.57	0.00	0.00
VA	4200	4201	2nd Refrigerator Recycling	Multi-Family	2014	2053	0.90	0.15	2.59	2.59	74%	0.42	0.42	74%	0.05	0.05	0	0	1.04			2.59	0.42
VA	4500	4500	Base Freezer	Multi-Family	2014	2053	20.38	3.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	20.38	3.30	0.00	0.00
VA	4500	4501	Freezer (Energy Star)	Multi-Family	2014	2053	18.47	2.99	1.91	1.91	9%	0.31	0.31	9%	0.06	0.06	0	0	1.04			1.91	0.31
VA	4600	4600	Base Early Replacement Freezer	Multi-Family	2014	2053	5.04	0.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.04	0.80	0.00	0.00
VA	4600	4601	Freezer - Early Replacement (Energy Star)	Multi-Family	2014	2053	2.23	0.35	2.81	2.81	56%	0.44	0.44	56%	0.04	0.04	0	0	1.23			2.81	0.44
VA	4700	4700	Base 2nd Freezer Recycling	Multi-Family	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	5000	5000	Base Water Heating (40 gal, EF=0.88)	Multi-Family	2014	2053	795.29	97.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	795.29	97.95	0.00	0.00
VA	5000	5006	Pipe Wrap	Multi-Family	2014	2053	770.86	94.94	24.43	24.43	3%	3.01	3.01	3%	0.02	0.02	0	0	2.92			24.43	3.01
VA	5000	5015	Low Flow Showerhead 1.5 Gal/Min	Multi-Family	2014	2053	745.47	91.81	25.39	49.82	6%	3.13	6.14	6%	0.02	0.02	0	0	2.69			25.39	3.13

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY

Vintage Sgmt	Base Number	Existing Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	5000	5008	Hot water turndown 10 degrees	Multi-Family	2014	2053	740.05	91.15	5.42	55.24	7%	0.67	6.80	7%	0.02	0.02	0	0	2.07			5.42	0.67
VA	5000	5007	Hot water turndown 5 degrees	Multi-Family	2014	2053	736.09	90.66	3.96	59.20	7%	0.49	7.29	7%	0.02	0.02	0	0	2.06			3.96	0.49
VA	5000	5009	Hot water turndown 15 degrees	Multi-Family	2014	2053	734.82	90.50	1.27	60.47	8%	0.16	7.45	8%	0.02	0.02	0	0	2.04			1.27	0.16
VA	5000	5010	Hot water turndown 20 degrees	Multi-Family	2014	2053	734.34	90.44	0.48	60.95	8%	0.06	7.51	8%	0.02	0.02	0	0	2.04			0.48	0.06
VA	5000	5014	Faucent Aerators	Multi-Family	2014	2053	719.00	88.55	15.34	76.29	10%	1.89	9.40	10%	0.04	0.02	0	0	1.51			15.34	1.89
VA	5000	5011	Drain Water Heat Recovery (GFX)	Multi-Family	2014	2053	691.97	85.23	27.03	103.32	13%	3.33	12.72	13%	0.07	0.04	1	0	1.03			27.03	3.33
VA	5000	5005	DHW Tank Wrap	Multi-Family	2014	2053	653.13	80.44	38.84	142.16	18%	4.78	17.51	18%	0.06	0.04	0	0	0.83			0.00	0.00
VA	5000	5003	Heat Pump Water Heater - Energy Star	Multi-Family	2014	2053	563.23	69.37	89.91	232.06	29%	11.07	28.58	29%	0.08	0.06	1	0	0.79			0.00	0.00
VA	5000	5004	Solar Domestic Water Heating	Multi-Family	2014	2053	475.22	58.53	88.00	320.07	40%	10.84	39.42	40%	0.20	0.10	2	1	0.33			0.00	0.00
VA	5000	5012	Energy Star CW CEE Tier 2 (MEF=2.0)	Multi-Family	2014	2053	473.22	58.28	2.01	322.07	40%	0.25	39.67	40%	2.25	0.11	18	1	0.03			0.00	0.00
VA	5000	5013	Energy Star Dishwasher (EF=0.72)	Multi-Family	2014	2053	472.18	58.16	1.03	323.11	41%	0.13	39.79	41%	2.93	0.12	24	1	0.02			0.00	0.00
VA	5100	5100	Base Water Heating Early Replacement to Heat Pump Water H	Multi-Family	2014	2053	140.35	17.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	140.35	17.29	0.00	0.00
VA	5100	5101	Heat Pump Water Heater - Energy Star - Early Replacement	Multi-Family	2014	2053	121.03	14.91	19.32	19.32	14%	2.38	2.38	14%	0.08	0.08	1	1	0.78			0.00	0.00
VA	5500	5500	Base Clotheswasher (MEF=1.26)	Multi-Family	2014	2053	13.76	2.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.76	2.49	0.00	0.00
VA	5500	5501	Energy Star CW CEE Tier 2 (MEF=2.0)	Multi-Family	2014	2053	9.84	1.78	3.92	3.92	28%	0.71	0.71	28%	1.21	1.21	7	7	0.05			0.00	0.00
VA	5600	5600	Base Clothes Dryer (EF=3.01)	Multi-Family	2014	2053	258.64	43.77	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	258.64	43.77	0.00	0.00
VA	5600	5602	High Efficiency CD (EF=3.01 w/moisture sensor)	Multi-Family	2014	2053	211.14	35.73	47.51	47.51	18%	8.04	8.04	18%	0.03	0.03	0	0	1.85			47.51	8.04
VA	5600	5601	Heat Pump Dryer	Multi-Family	2014	2053	105.57	17.87	105.57	153.08	59%	17.87	25.91	59%	0.55	0.39	3	2	0.11			0.00	0.00
VA	5700	5700	Base Dishwasher (EF=0.65)	Multi-Family	2014	2053	60.34	9.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	60.34	9.90	0.00	0.00
VA	5700	5701	Energy Star Dishwasher (EF=0.72)	Multi-Family	2014	2053	58.19	9.54	2.15	2.15	4%	0.35	0.35	4%	1.59	1.59	10	10	0.04			0.00	0.00
VA	6000	6000	Base Single Speed Pool Pump (RET)	Multi-Family	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	7000	7000	Base Plasma TV	Multi-Family	2014	2053	18.99	2.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.99	2.74	0.00	0.00
VA	7000	7001	Energy Star Plasma TV	Multi-Family	2014	2053	17.31	2.50	1.68	1.68	9%	0.24	0.24	9%	0.01	0.01	0	0	6.90			1.68	0.24
VA	7000	7002	Plug Load Controls - Smart Power Strip (base plasma TV)	Multi-Family	2014	2053	17.08	2.46	0.23	1.91	10%	0.03	0.28	10%	2.23	0.28	15	2	0.02			0.00	0.00
VA	7100	7100	Base LCD TV	Multi-Family	2014	2053	56.69	8.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	56.69	8.18	0.00	0.00
VA	7100	7101	Energy Star LCD TV	Multi-Family	2014	2053	36.03	5.20	20.66	20.66	36%	2.98	2.98	36%	0.00	0.00	0	0	14.79			20.66	2.98
VA	7100	7102	Plug Load Controls - Smart Power Strip (base LCD TV)	Multi-Family	2014	2053	34.66	5.00	1.37	22.03	39%	0.20	3.18	39%	2.36	0.15	16	1	0.02			0.00	0.00
VA	7200	7200	Base CRT TV	Multi-Family	2014	2053	17.04	2.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.04	2.46	0.00	0.00
VA	7200	7202	Plug Load Controls - Smart Power Strip (base CRT TV)	Multi-Family	2014	2053	15.32	2.21	1.73	1.73	10%	0.25	0.25	10%	0.66	0.66	5	5	0.08			0.00	0.00
VA	7300	7300	Base Set-Top Box	Multi-Family	2014	2053	56.64	8.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	56.64	8.17	0.00	0.00
VA	7400	7400	Base DVD Player	Multi-Family	2014	2053	9.64	1.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.64	1.39	0.00	0.00
VA	7400	7401	Energy Star DVD Player	Multi-Family	2014	2053	4.52	0.65	5.12	5.12	53%	0.74	0.74	53%	0.01	0.01	0	0	3.83			5.12	0.74
VA	7400	7402	Plug Load Controls - Smart Power Strip (base DVD player)	Multi-Family	2014	2053	0.35	0.05	4.17	9.29	96%	0.60	1.34	96%	0.69	0.32	5	2	0.07			0.00	0.00
VA	7500	7500	Base Desktop PC	Multi-Family	2014	2053	70.86	9.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	70.86	9.33	0.00	0.00
VA	7500	7501	Energy Star Desktop PC	Multi-Family	2014	2053	61.76	8.14	9.10	9.10	13%	1.20	1.20	13%	0.00	0.00	0	0	13.52			9.10	1.20
VA	7500	7502	Plug Load Controls - Smart Power Strip (base Desktop PC)	Multi-Family	2014	2053	32.35	4.26	29.41	38.51	54%	3.87	5.07	54%	0.05	0.04	0	0	1.05			29.41	3.87
VA	7600	7600	Base Laptop PC	Multi-Family	2014	2053	14.28	1.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.28	1.88	0.00	0.00
VA	7600	7601	Energy Star Laptop PC	Multi-Family	2014	2053	11.90	1.57	2.38	2.38	17%	0.31	0.31	17%	0.03	0.03	0	0	2.03			2.38	0.31
VA	8000	8000	Base Cooking	Multi-Family	2014	2053	198.97	63.52	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	198.97	63.52	0.00	0.00
VA	9000	9000	Base Miscellaneous	Multi-Family	2014	2053	119.20	15.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	119.20	15.70	0.00	0.00
VA	9900	9900	Base House Use	Multi-Family	2014	2053	4,108.27	1,017.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4,108.27	1,017.30	0.00	0.00
VA	9900	9901	Indirect Feedback	Multi-Family	2014	2053	4,047.26	1,002.19	61.02	61.02	1%	15.11	15.11	1%	0.03	0.03	0	0	1.54			61.02	15.11
VA	9900	9902	Direct Feedback	Multi-Family	2014	2053	3,864.22	956.87	183.04	244.06	6%	45.33	60.43	6%	0.09	0.08	0	0	0.61			0.00	0.00
NC	1000	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	Single Family	2014	2053	50.03	29.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	50.03	29.72	0.00	0.00
NC	1000	1024	Self Install Weatherization (CAC)	Single Family	2014	2053	49.38	29.33	0.66	0.66	1%	0.39	0.39	1%	0.02	0.02	0	0	5.21			0.66	0.39
NC	1000	1022	Programmable Thermostat (CAC)	Single Family	2014	2053	48.98	29.10	0.39	1.05	2%	0.23	0.62	2%	0.06	0.03	0	0	1.52			0.39	0.23
NC	1000	1021	Return Duct Modification (CAC)	Single Family	2014	2053	48.70	28.93	0.28	1.33	3%	0.17	0.79	3%	0.09	0.04	0	0	1.21			0.28	0.17
NC	1000	1019	Duct Insulation (CAC)	Single Family	2014	2053	48.65	28.90	0.05	1.39	3%	0.03	0.82	3%	0.10	0.05	0	0	1.01			0.05	0.03
NC	1000	1004	Proper Refrigerant Charging and Air Flow (CAC)	Single Family	2014	2053	45.16	26.83	3.49	4.88	10%	2.07	2.90	10%	0.09	0.08	0	0	0.90			0.00	0.00
NC	1000	1025	Door Weatherization (CAC)	Single Family	2014	2053	44.29	26.31	0.87	5.75	11%	0.51	3.41	11%	0.08	0.08	0	0	0.81			0.00	0.00
NC	1000	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	41.60	24.71	2.69	8.43	17%	1.60	5.01	17%	0.15	0.10	0	0	0.66			0.00	0.00
NC	1000	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	39.25	23.32	2.35	10.79	22%	1.40	6.41	22%	0.18	0.12	0	0	0.56			0.00	0.00
NC	1000	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	35.29	20.97	3.95	14.74	29%	2.35	8.76	29%	0.24	0.15	0	0	0.43			0.00	0.00
NC	1000	1005	Proper Sizing and Quality Install (CAC)	Single Family	2014	2053	31.87	18.93	3.43	18.17	36%	2.04	10.79	36%	0.27	0.17	0	0	0.37			0.00	0.00
NC	1000	1014	Crawlspace insulation (CAC)	Single Family	2014	2053	31.56	18.75	0.30	18.47	37%	0.18	10.97	37%	0.33	0.18	1	0	0.32			0.00	0.00
NC	1000	1008	Ceiling R-0 to R-38 Insulation (CAC)	Single Family	2014	2053	30.95	18.39	0.62	19.09	38%	0.37	11.34	38%	0.37	0.18	1	0	0.28			0.00	0.00
NC	1000	1029	WINDOWS - Default With Sunscreen (CAC)	Single Family	2014	2053	27.92	16.58	3.03	22.12	44%	1.80	13.14	44%	0.35	0.21	1	0	0.23			0.00	0.00
NC	1000	1009	Ceiling R-0 to R-49 Insulation (CAC)	Single Family	2014	2053	27.91	16.58	0.01	22.13	44%	0.00	13.15	44%	4.46	0.21	8	0	0.02			0.00	0.00
NC	1000	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Single Family	2014	2053	26.64	15.82	1.27	23.40	47%	0.75	13.90	47%	0.43	0.22	1	0	0.19			0.00	0.00
NC	1000	1026	Ceiling Fans (CAC)	Single Family	2014	2053	26.38	15.67	0.25	23.65	47%	0.15	14.05	47%	0.56	0.22	1	0	0.17			0.00	0.00
NC	1000	1010	Ceiling R-11 to R-38 Insulaton (CAC)	Single Family	2014	2053	25.69	15.26	0.69	24.34	49%	0.41	14.46	49%	0.99	0.24	2	0	0.11			0.00	0.00
NC	1000	1011	Ceiling R-11 to R-49 Insulation (CAC)	Single Family	2014	2053	25.67	15.25	0.03	24.37	49%	0.02	14.48	49%	4.84	0.25	8	0	0.02			0.00	0.00
NC	1000	1020	Duct Testing and Sealing (CAC)	Single Family	2014	2053	25.56	15.18	0.11	24.48	49%	0.06	14.54	49%	1.23	0.25	2	0	0.08			0.00	0.00
NC	1000	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Single Family	2014	2053	25.43	15.11	0.12	24.60	49%	0.07	14.62	49%	1.32	0.26	2	0	0.08			0.00	0.00
NC	1000	1012	Ceiling R-19 to R-38 Insulation (CAC)	Single Family	2014	2053	25.35	15.06	0.08	24.68	49%	0.05	14.66	49%	1.70	0.26	3	0	0.06			0.00	0.00
NC	1000	1018	Cool Roof (CAC)	Single Family	2014	2053	24.92	14.81	0.43	25.11	50%	0.26	14.92	50%	1.80	0.29	3	0	0.05			0.00	0.00
NC	1000	1013	Ceiling R-19 to R-49 Insulation (CAC)	Single Family	2014	2053	24.91	14.80	0.01	25.12	50%	0.00	14.92	50%	4.99	0.29	8	0	0.02			0.00	0.00
NC	1000	1028	Window Film (CAC)	Single Family	2014	2053	24.07	14.30	0.84	25.96	52%	0.50	15.42	52%	1.72	0.34	3	1	0.05			0.00	0.00
NC	1000	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	Single Family	2014	2053	24.03	14.28	0.04	26.01	52%	0.03	15.45	52%	2.47	0.34	4	1	0.04			0.00	0.00
NC	1000	1027	Whole House Fans (CAC)	Single Family	2014	2053	23.39	13.89	0.64	26.65	53%	0.38	15.83	53%	2.51	0.39	4	1	0.04			0.00	0.00
NC	1000	1015	Basement insulation R-13 (CAC)	Single Family	2014	2053	23.37	13.88	0.02	26.67	53%	0.01	15.84	53%	4.51	0.40	8	1	0.02			0.00	0.00
NC	1000	1007	AC Filter Changes (CAC)	Single Family	2014	2053	23.27	13.82	0.10	26.77	53%	0.06	15.90	53%	2.63	0.41	4	1	0.02			0.00	0.00
NC	1000	1006	AC Maintenance and/or tune-up (CAC)	Single Family	2014	2053	23.16	13.76	0.10	26.87	54%	0.06	15.96	54%	3.01	0.42	5	1	0.02			0.00	0.00
NC	1000	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	Single Family	2014	2053	23.14	13.75	0.03	26.90	54%	0.02	15.98	54%	5.60	0.42	9	1	0.02			0.00	0.00

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY

Vintage Sgmt	Base Number	Existing Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	1100	1100	Base Split-System Air Conditioner - Early Replacement (11 SEI	Single Family	2014	2053	8.38	4.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.38	4.98	0.00	0.00
NC	1100	1117	Duct Insulation (CAC early replacement)	Single Family	2014	2053	8.31	4.94	0.07	0.07	1%	0.04	0.04	1%	0.01	0.01	0	0	7.50			0.07	0.04
NC	1100	1122	Self Install Weatherization (CAC early replacement)	Single Family	2014	2053	8.20	4.87	0.11	0.18	2%	0.06	0.11	2%	0.02	0.02	0	0	4.90			0.11	0.06
NC	1100	1120	Programmable Thermostat (CAC early replacement)	Single Family	2014	2053	8.14	4.84	0.07	0.24	3%	0.04	0.14	3%	0.06	0.03	0	0	1.43			0.07	0.04
NC	1100	1119	Return Duct Modification (CAC early replacement)	Single Family	2014	2053	8.09	4.81	0.05	0.29	3%	0.03	0.17	3%	0.09	0.04	0	0	1.14			0.05	0.03
NC	1100	1102	Proper Refrigerant Charging and Air Flow (CAC early replacem	Single Family	2014	2053	7.42	4.41	0.67	0.96	11%	0.40	0.57	11%	0.10	0.08	0	0	0.84			0.00	0.00
NC	1100	1123	Door Weatherization (CAC early replacement)	Single Family	2014	2053	7.26	4.31	0.17	1.13	13%	0.10	0.67	13%	0.08	0.08	0	0	0.87			0.00	0.00
NC	1100	1116	Cool Roof (CAC early replacement)	Single Family	2014	2053	6.50	3.86	0.76	1.88	22%	0.45	1.12	22%	0.18	0.12	0	0	0.53			0.00	0.00
NC	1100	1125	Whole House Fans (CAC early replacement)	Single Family	2014	2053	5.29	3.14	1.21	3.09	37%	0.72	1.84	37%	0.24	0.16	0	0	0.41			0.00	0.00
NC	1100	1103	Proper Sizing and Quality Install (CAC early replacement)	Single Family	2014	2053	4.70	2.79	0.59	3.68	44%	0.35	2.19	44%	0.33	0.19	1	0	0.31			0.00	0.00
NC	1100	1112	Crawlspace insulation (CAC early replacement)	Single Family	2014	2053	4.66	2.77	0.04	3.73	44%	0.03	2.21	44%	0.39	0.19	1	0	0.27			0.00	0.00
NC	1100	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early r	Single Family	2014	2053	4.59	2.73	0.07	3.80	45%	0.04	2.25	45%	0.42	0.20	1	0	0.25			0.00	0.00
NC	1100	1113	Basement insulation R-13 (CAC early replacement)	Single Family	2014	2053	4.55	2.70	0.04	3.83	46%	0.02	2.28	46%	0.45	0.20	1	0	0.23			0.00	0.00
NC	1100	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Single Family	2014	2053	4.46	2.65	0.09	3.92	47%	0.05	2.33	47%	0.45	0.21	1	0	0.23			0.00	0.00
NC	1100	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	4.46	2.65	0.00	3.92	47%	0.00	2.33	47%	4.92	0.21	8	0	0.02			0.00	0.00
NC	1100	1118	Duct Testing and Sealing (CAC early replacement)	Single Family	2014	2053	4.42	2.63	0.04	3.96	47%	0.02	2.35	47%	0.57	0.21	1	0	0.18			0.00	0.00
NC	1100	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early re	Single Family	2014	2053	4.22	2.51	0.20	4.16	50%	0.12	2.47	50%	0.47	0.22	1	0	0.17			0.00	0.00
NC	1100	1124	Ceiling Fans (CAC early replacement)	Single Family	2014	2053	4.18	2.49	0.03	4.20	50%	0.02	2.49	50%	0.76	0.23	1	0	0.13			0.00	0.00
NC	1100	1126	Window Film (CAC early replacement)	Single Family	2014	2053	3.87	2.30	0.31	4.51	54%	0.19	2.68	54%	0.81	0.27	1	0	0.10			0.00	0.00
NC	1100	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Single Family	2014	2053	3.77	2.24	0.10	4.61	55%	0.06	2.74	55%	1.19	0.29	2	0	0.09			0.00	0.00
NC	1100	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	Single Family	2014	2053	3.59	2.13	0.18	4.79	57%	0.11	2.85	57%	1.05	0.32	2	1	0.08			0.00	0.00
NC	1100	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	3.59	2.13	0.00	4.80	57%	0.00	2.85	57%	6.12	0.32	10	1	0.02			0.00	0.00
NC	1100	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Single Family	2014	2053	3.57	2.12	0.01	4.81	57%	0.01	2.86	57%	2.13	0.33	4	1	0.05			0.00	0.00
NC	1100	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	3.57	2.12	0.00	4.81	57%	0.00	2.86	57%	6.14	0.33	10	1	0.02			0.00	0.00
NC	1100	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Single Family	2014	2053	3.57	2.12	0.01	4.82	57%	0.00	2.86	57%	2.93	0.33	5	1	0.04			0.00	0.00
NC	1100	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality I	Single Family	2014	2053	3.48	2.06	0.09	4.91	59%	0.05	2.92	59%	2.86	0.38	5	1	0.03			0.00	0.00
NC	1100	1105	AC Filter Changes (CAC early replacement)	Single Family	2014	2053	3.46	2.06	0.01	4.92	59%	0.01	2.92	59%	3.12	0.39	5	1	0.02			0.00	0.00
NC	1100	1104	AC Maintenance and/or tune-up (CAC early replacement)	Single Family	2014	2053	3.44	2.05	0.02	4.94	59%	0.01	2.93	59%	3.57	0.40	6	1	0.02			0.00	0.00
NC	1100	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Single Family	2014	2053	3.44	2.04	0.00	4.94	59%	0.00	2.94	59%	6.64	0.40	11	1	0.02			0.00	0.00
NC	1200	1200	Base Heat Pump Cooling (13 SEER)	Single Family	2014	2053	126.33	75.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	126.33	75.05	0.00	0.00
NC	1200	1219	Duct Insulation (HP cooling)	Single Family	2014	2053	125.30	74.44	1.03	1.03	1%	0.61	0.61	1%	0.01	0.01	0	0	9.09			1.03	0.61
NC	1200	1223	Self Install Weatherization (HP cooling)	Single Family	2014	2053	123.65	73.46	1.65	2.68	2%	0.98	1.59	2%	0.04	0.03	0	0	2.27			1.65	0.98
NC	1200	1221	Programmable Thermostat (HP cooling)	Single Family	2014	2053	121.15	71.97	2.50	5.18	4%	1.49	3.08	4%	0.07	0.05	0	0	1.27			2.50	1.49
NC	1200	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Single Family	2014	2053	100.62	59.78	20.53	25.71	20%	12.19	15.27	20%	0.08	0.07	0	0	1.22			20.53	12.19
NC	1200	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	Single Family	2014	2053	93.40	55.49	7.22	32.93	26%	4.29	19.57	26%	0.10	0.08	0	0	0.85			0.00	0.00
NC	1200	1224	Door Weatherization (HP cooling)	Single Family	2014	2053	91.61	54.42	1.79	34.73	27%	1.06	20.63	27%	0.09	0.08	0	0	0.76			0.00	0.00
NC	1200	1218	Cool Roof (HP cooling)	Single Family	2014	2053	82.04	48.74	9.57	44.29	35%	5.68	26.31	35%	0.18	0.10	0	0	0.54			0.00	0.00
NC	1200	1205	Proper Sizing and Quality Install (HP cooling)	Single Family	2014	2053	74.07	44.00	7.97	52.26	41%	4.73	31.05	41%	0.22	0.12	0	0	0.46			0.00	0.00
NC	1200	1226	Whole House Fans (HP cooling)	Single Family	2014	2053	60.29	35.82	13.78	66.04	52%	8.19	39.24	52%	0.26	0.15	0	0	0.37			0.00	0.00
NC	1200	1214	Crawlspace insulation (HP cooling)	Single Family	2014	2053	59.71	35.47	0.58	66.62	53%	0.34	39.58	53%	0.38	0.15	1	0	0.28			0.00	0.00
NC	1200	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	Single Family	2014	2053	58.53	34.77	1.18	67.80	54%	0.70	40.28	54%	0.43	0.15	1	0	0.25			0.00	0.00
NC	1200	1215	Basement insulation R-13 (HP cooling)	Single Family	2014	2053	58.05	34.49	0.48	68.28	54%	0.29	40.56	54%	0.44	0.16	1	0	0.24			0.00	0.00
NC	1200	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	Single Family	2014	2053	58.02	34.47	0.04	68.32	54%	0.02	40.59	54%	2.11	0.16	4	0	0.05			0.00	0.00
NC	1200	1220	Duct Testing and Sealing (HP cooling)	Single Family	2014	2053	57.47	34.14	0.54	68.86	55%	0.32	40.91	55%	0.55	0.16	1	0	0.19			0.00	0.00
NC	1200	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Single Family	2014	2053	54.86	32.59	2.62	71.47	57%	1.55	42.46	57%	0.45	0.17	1	0	0.18			0.00	0.00
NC	1200	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Single Family	2014	2053	54.05	32.11	0.81	72.28	57%	0.48	42.94	57%	0.69	0.18	1	0	0.15			0.00	0.00
NC	1200	1225	Ceiling Fans (HP cooling)	Single Family	2014	2053	53.62	31.86	0.43	72.71	58%	0.25	43.20	58%	0.73	0.18	1	0	0.13			0.00	0.00
NC	1200	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	Single Family	2014	2053	52.19	31.00	1.44	74.15	59%	0.85	44.05	59%	1.04	0.20	2	0	0.10			0.00	0.00
NC	1200	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	Single Family	2014	2053	52.05	30.92	0.13	74.28	59%	0.08	44.13	59%	2.35	0.20	4	0	0.04			0.00	0.00
NC	1200	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Single Family	2014	2053	51.83	30.79	0.22	74.50	59%	0.13	44.26	59%	1.47	0.20	2	0	0.07			0.00	0.00
NC	1200	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	Single Family	2014	2053	51.67	30.70	0.16	74.66	59%	0.09	44.35	59%	1.89	0.21	3	0	0.06			0.00	0.00
NC	1200	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	Single Family	2014	2053	51.64	30.68	0.03	74.69	59%	0.02	44.37	59%	2.37	0.21	4	0	0.04			0.00	0.00
NC	1200	1207	Heat Pump Filter Replacement	Single Family	2014	2053	51.42	30.55	0.22	74.91	59%	0.13	44.50	59%	2.22	0.21	4	0	0.03			0.00	0.00
NC	1200	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Single Family	2014	2053	51.26	30.45	0.16	75.07	59%	0.10	44.60	59%	4.83	0.22	8	0	0.02			0.00	0.00
NC	1200	1206	Heat pump tune up	Single Family	2014	2053	51.03	30.32	0.23	75.30	60%	0.14	44.74	60%	3.59	0.23	6	0	0.02			0.00	0.00
NC	1300	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	Single Family	2014	2053	21.98	13.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	21.98	13.06	0.00	0.00
NC	1300	1319	Duct Insulation (HP cooling Early Replacement)	Single Family	2014	2053	21.81	12.95	0.18	0.18	1%	0.11	0.11	1%	0.01	0.01	0	0	8.96			0.18	0.11
NC	1300	1323	Self Install Weatherization (HP cooling Early Replacement)	Single Family	2014	2053	21.52	12.78	0.29	0.47	2%	0.17	0.28	2%	0.04	0.03	0	0	2.24			0.29	0.17
NC	1300	1321	Programmable Thermostat (HP cooling Early Replacement)	Single Family	2014	2053	21.08	12.52	0.44	0.90	4%	0.26	0.54	4%	0.07	0.05	0	0	1.25			0.44	0.26
NC	1300	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Ea	Single Family	2014	2053	17.51	10.40	3.57	4.47	20%	2.12	2.66	20%	0.08	0.07	0	0	1.20			3.57	2.12
NC	1300	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Re	Single Family	2014	2053	16.25	9.66	1.26	5.73	26%	0.75	3.40	26%	0.10	0.08	0	0	0.84			0.00	0.00
NC	1300	1324	Door Weatherization (HP cooling Early Replacement)	Single Family	2014	2053	15.89	9.44	0.36	6.09	28%	0.22	3.62	28%	0.08	0.08	0	0	0.87			0.00	0.00
NC	1300	1318	Cool Roof (HP cooling Early Replacement)	Single Family	2014	2053	14.23	8.45	1.66	7.75	35%	0.99	4.61	35%	0.18	0.10	0	0	0.53			0.00	0.00
NC	1300	1305	Proper Sizing and Quality Install (HP cooling Early Replacemer	Single Family	2014	2053	12.85	7.63	1.38	9.14	42%	0.82	5.43	42%	0.22	0.12	0	0	0.46			0.00	0.00
NC	1300	1326	Whole House Fans (HP cooling early replacement)	Single Family	2014	2053	10.46	6.21	2.39	11.53	52%	1.42	6.85	52%	0.26	0.15	0	0	0.37			0.00	0.00
NC	1300	1314	Crawlspace insulation (HP cooling Early Replacement)	Single Family	2014	2053	10.36	6.15	0.10	11.63	53%	0.06	6.91	53%	0.39	0.15	1	0	0.27			0.00	0.00
NC	1300	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Single Family	2014	2053	10.15	6.03	0.20	11.83	54%	0.12	7.03	54%	0.43	0.16	1	0	0.24			0.00	0.00
NC	1300	1315	Basement insulation R-13 (HP cooling Early Replacement)	Single Family	2014	2053	10.07	5.98	0.08	11.91	54%	0.05	7.08	54%	0.44	0.16	1	0	0.24			0.00	0.00
NC	1300	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Single Family	2014	2053	10.06	5.98	0.01	11.92	54%	0.00	7.08	54%	2.15	0.16	4	0	0.05			0.00	0.00
NC	1300	1320	Duct Testing and Sealing (HP cooling Early Replacement)	Single Family	2014	2053	9.97	5.92	0.09	12.01	55%	0.06	7.14	55%	0.56	0.16	1	0	0.18			0.00	0.00
NC	1300	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling E	Single Family	2014	2053	9.52	5.65	0.45	12.47	57%	0.27	7.41	57%	0.46	0.17	1	0	0.18			0.00	0.00
NC	1300	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling I	Single Family	2014	2053	9.38	5.57	0.14	12.61	57%	0.08	7.49	57%	0.70	0.18	1	0	0.15			0.00	0.00
NC	1300	1325	Ceiling Fans (HP cooling early replacement)	Single Family	2014	2053	9.30	5.53	0.07	12.68	58%	0.04	7.53	58%	0.75	0.18	1	0	0.13			0.00	0.00
NC	1300	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Single Family	2014	2053	9.05	5.38	0.25	12.93	59%	0.15	7.68	59%	1.06	0.20	2	0	0.10			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY

Vintage Sgmt	Base Number	Existing Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	1300	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement	Single Family	2014	2053	9.03	5.36	0.02	12.95	59%	0.01	7.70	59%	2.39	0.20	4	0	0.04			0.00	0.00
NC	1300	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacem	Single Family	2014	2053	8.99	5.34	0.04	12.99	59%	0.02	7.72	59%	1.50	0.21	3	0	0.07			0.00	0.00
NC	1300	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement	Single Family	2014	2053	8.96	5.33	0.03	13.02	59%	0.02	7.74	59%	1.92	0.21	3	0	0.05			0.00	0.00
NC	1300	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement	Single Family	2014	2053	8.96	5.32	0.01	13.03	59%	0.00	7.74	59%	2.42	0.21	4	0	0.04			0.00	0.00
NC	1300	1307	Heat Pump Filter Replacement	Single Family	2014	2053	8.92	5.30	0.04	13.07	59%	0.02	7.76	59%	2.26	0.22	4	0	0.03			0.00	0.00
NC	1300	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacer	Single Family	2014	2053	8.89	5.28	0.03	13.09	60%	0.02	7.78	60%	4.91	0.23	8	0	0.02			0.00	0.00
NC	1300	1306	Heat pump tune up	Single Family	2014	2053	8.85	5.26	0.04	13.13	60%	0.02	7.80	60%	3.65	0.24	6	0	0.02			0.00	0.00
NC	1400	1400	Base Room Air Conditioner - EER 10.6	Single Family	2014	2053	6.82	4.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.82	4.05	0.00	0.00
NC	1400	1413	Self Install Weatherization (RAC)	Single Family	2014	2053	6.73	4.00	0.09	0.09	1%	0.05	0.05	1%	0.05	0.05	0	0	1.77			0.09	0.05
NC	1400	1414	Door Weatherization (RAC)	Single Family	2014	2053	6.60	3.92	0.13	0.22	3%	0.08	0.13	3%	0.23	0.15	0	0	0.30			0.00	0.00
NC	1400	1411	Cool Roof (RAC)	Single Family	2014	2053	5.91	3.51	0.69	0.91	13%	0.41	0.54	13%	0.45	0.38	1	1	0.21			0.00	0.00
NC	1400	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Single Family	2014	2053	5.58	3.31	0.33	1.24	18%	0.20	0.74	18%	0.43	0.39	1	1	0.18			0.00	0.00
NC	1400	1417	Window Film (RAC)	Single Family	2014	2053	4.41	2.62	1.17	2.41	35%	0.70	1.43	35%	0.49	0.44	1	1	0.17			0.00	0.00
NC	1400	1416	Whole House Fans (RAC)	Single Family	2014	2053	3.59	2.13	0.82	3.23	47%	0.49	1.92	47%	0.79	0.53	1	1	0.12			0.00	0.00
NC	1400	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Single Family	2014	2053	3.53	2.10	0.05	3.28	48%	0.03	1.95	48%	1.24	0.54	2	1	0.08			0.00	0.00
NC	1400	1404	Ceiling R-0 to R-38 Insulation (RAC)	Single Family	2014	2053	3.47	2.06	0.07	3.35	49%	0.04	1.99	49%	1.41	0.56	2	1	0.07			0.00	0.00
NC	1400	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Single Family	2014	2053	3.28	1.95	0.19	3.54	52%	0.11	2.10	52%	1.15	0.59	2	1	0.07			0.00	0.00
NC	1400	1405	Ceiling R-0 to R-49 Insulation (RAC)	Single Family	2014	2053	3.28	1.95	0.00	3.54	52%	0.00	2.10	52%	8.33	0.59	14	1	0.01			0.00	0.00
NC	1400	1415	Ceiling Fans (RAC)	Single Family	2014	2053	3.25	1.93	0.03	3.56	52%	0.02	2.12	52%	2.21	0.60	4	1	0.04			0.00	0.00
NC	1400	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	Single Family	2014	2053	3.24	1.92	0.01	3.58	52%	0.01	2.13	52%	3.53	0.61	6	1	0.03			0.00	0.00
NC	1400	1406	Ceiling R-11 to R-38 Insulaton (RAC)	Single Family	2014	2053	3.16	1.88	0.08	3.65	54%	0.05	2.17	54%	3.55	0.68	6	1	0.03			0.00	0.00
NC	1400	1418	WINDOWS - Default With Sunscreen (RAC)	Single Family	2014	2053	3.01	1.79	0.15	3.81	56%	0.09	2.26	56%	2.85	0.76	5	1	0.03			0.00	0.00
NC	1400	1407	Ceiling R-11 to R-49 Insulation (RAC)	Single Family	2014	2053	3.01	1.79	0.01	3.81	56%	0.00	2.26	56%	9.07	0.78	15	1	0.01			0.00	0.00
NC	1400	1408	Ceiling R-19 to R-38 Insulation (RAC)	Single Family	2014	2053	3.00	1.78	0.01	3.82	56%	0.01	2.27	56%	6.31	0.79	11	1	0.02			0.00	0.00
NC	1400	1409	Ceiling R-19 to R-49 Insulation (RAC)	Single Family	2014	2053	3.00	1.78	0.00	3.82	56%	0.00	2.27	56%	9.12	0.79	15	1	0.01			0.00	0.00
NC	1400	1403	Room AC Filter Replacement	Single Family	2014	2053	2.98	1.77	0.01	3.83	56%	0.01	2.28	56%	6.97	0.81	12	1	0.01			0.00	0.00
NC	1500	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	Single Family	2014	2053	2.03	1.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.03	1.21	0.00	0.00
NC	1500	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early	Single Family	2014	2053	1.76	1.05	0.27	0.27	13%	0.16	0.16	13%	0.73	0.73	1	1	0.11			0.00	0.00
NC	1600	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	Single Family	2014	2053	1.49	0.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.49	0.88	0.00	0.00
NC	1600	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/da	Single Family	2014	2053	1.26	0.75	0.23	0.23	15%	0.13	0.13	15%	0.18	0.18	0	0	0.48			0.00	0.00
NC	1700	1700	Base Furnace Fan - Furnace & CAC	Single Family	2014	2053	85.65	43.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	85.65	43.93	0.00	0.00
NC	1700	1701	ECM Furnace Fan (variable speed motor) - Cooling	Single Family	2014	2053	47.58	24.41	38.07	38.07	44%	19.53	19.53	44%	0.03	0.03	0	0	3.47			38.07	19.53
NC	2000	2000	Base Heat Pump Space Heating (7.7 HSPF)	Single Family	2014	2053	167.75	19.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	167.75	19.90	0.00	0.00
NC	2000	2016	Duct Insulation (HP heating)	Single Family	2014	2053	166.38	19.74	1.37	1.37	1%	0.16	0.16	1%	0.01	0.01	0	0	7.49			1.37	0.16
NC	2000	2021	Self Install Weatherization (HP heating)	Single Family	2014	2053	164.19	19.48	2.19	3.56	2%	0.26	0.42	2%	0.03	0.02	0	0	2.01			2.19	0.26
NC	2000	2019	Programmable Thermostat (HP heating)	Single Family	2014	2053	160.87	19.09	3.33	6.88	4%	0.39	0.82	4%	0.05	0.04	0	0	1.09			3.33	0.39
NC	2000	2022	Door Weatherization (HP heating)	Single Family	2014	2053	158.99	18.86	1.88	8.76	5%	0.22	1.04	5%	0.09	0.05	1	0	0.57			0.00	0.00
NC	2000	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Single Family	2014	2053	144.34	17.13	14.65	23.41	14%	1.74	2.78	14%	0.11	0.08	1	1	0.60			0.00	0.00
NC	2000	2018	Heat Recovery Ventilators (HP heating)	Single Family	2014	2053	113.02	13.41	31.32	54.73	33%	3.72	6.49	33%	0.16	0.13	1	1	0.42			0.00	0.00
NC	2000	2012	Crawlspace insulation (HP heating)	Single Family	2014	2053	112.55	13.35	0.47	55.20	33%	0.06	6.55	33%	0.21	0.13	2	1	0.32			0.00	0.00
NC	2000	2006	Ceiling R-0 to R-38 Insulation (HP heating)	Single Family	2014	2053	110.33	13.09	2.22	57.42	34%	0.26	6.81	34%	0.23	0.13	2	1	0.29			0.00	0.00
NC	2000	2013	Basement insulation R-13 (HP heating)	Single Family	2014	2053	109.94	13.04	0.39	57.81	34%	0.05	6.86	34%	0.24	0.13	2	1	0.28			0.00	0.00
NC	2000	2007	Ceiling R-0 to R-49 Insulation (HP heating)	Single Family	2014	2053	109.87	13.04	0.07	57.88	35%	0.01	6.87	35%	1.16	0.14	10	1	0.06			0.00	0.00
NC	2000	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Single Family	2014	2053	104.87	12.44	5.00	62.88	37%	0.59	7.46	37%	0.25	0.14	2	1	0.23			0.00	0.00
NC	2000	2017	Duct Testing and Sealing (HP heating)	Single Family	2014	2053	103.89	12.33	0.98	63.86	38%	0.12	7.58	38%	0.31	0.15	3	1	0.21			0.00	0.00
NC	2000	2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Single Family	2014	2053	102.40	12.15	1.49	65.35	39%	0.18	7.75	39%	0.39	0.15	3	1	0.17			0.00	0.00
NC	2000	2008	Ceiling R-11 to R-38 Insulaton (HP heating)	Single Family	2014	2053	99.66	11.82	2.74	68.09	41%	0.33	8.08	41%	0.57	0.17	5	1	0.12			0.00	0.00
NC	2000	2009	Ceiling R-11 to R-49 Insulation (HP heating)	Single Family	2014	2053	99.40	11.79	0.25	68.34	41%	0.03	8.11	41%	1.28	0.17	11	1	0.05			0.00	0.00
NC	2000	2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	Single Family	2014	2053	99.22	11.77	0.19	68.53	41%	0.02	8.13	41%	0.80	0.18	7	1	0.08			0.00	0.00
NC	2000	2010	Ceiling R-19 to R-38 Insulation (HP heating)	Single Family	2014	2053	98.92	11.74	0.30	68.83	41%	0.04	8.17	41%	1.02	0.18	9	2	0.07			0.00	0.00
NC	2000	2003	Ground Source Heat Pump with Desuperheater (HP heating)	Single Family	2014	2053	90.17	10.70	8.75	77.58	46%	1.04	9.20	46%	2.07	0.39	17	3	0.03			0.00	0.00
NC	2000	2011	Ceiling R-19 to R-49 Insulation (HP heating)	Single Family	2014	2053	90.11	10.69	0.06	77.64	46%	0.01	9.21	46%	1.41	0.39	12	3	0.05			0.00	0.00
NC	2000	2005	Heat Pump Filter Replacement	Single Family	2014	2053	89.72	10.65	0.38	78.02	47%	0.05	9.26	47%	1.32	0.40	11	3	0.04			0.00	0.00
NC	2000	2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Single Family	2014	2053	89.44	10.61	0.28	78.31	47%	0.03	9.29	47%	2.88	0.41	24	3	0.02			0.00	0.00
NC	2000	2004	Heat pump tune up	Single Family	2014	2053	89.04	10.56	0.40	78.70	47%	0.05	9.34	47%	2.14	0.42	18	4	0.02			0.00	0.00
NC	2100	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSP	Single Family	2014	2053	32.77	3.89	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	32.77	3.89	0.00	0.00
NC	2100	2116	Duct Insulation (HP heating early replacement)	Single Family	2014	2053	32.50	3.86	0.27	0.27	1%	0.03	0.03	1%	0.01	0.01	0	0	8.29			0.27	0.03
NC	2100	2121	Self Install Weatherization (HP heating early replacement)	Single Family	2014	2053	32.07	3.81	0.43	0.69	2%	0.05	0.08	2%	0.03	0.02	0	0	2.23			0.43	0.05
NC	2100	2119	Programmable Thermostat (HP heating early replacement)	Single Family	2014	2053	31.42	3.73	0.65	1.34	4%	0.08	0.16	4%	0.05	0.03	0	0	1.21			0.65	0.08
NC	2100	2122	Door Weatherization (HP heating early replacement)	Single Family	2014	2053	31.04	3.68	0.38	1.73	5%	0.05	0.21	5%	0.08	0.04	1	0	0.66			0.00	0.00
NC	2100	2102	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early	Single Family	2014	2053	28.18	3.34	2.86	4.59	14%	0.34	0.54	14%	0.10	0.08	1	1	0.66			0.00	0.00
NC	2100	2118	Heat Recovery Ventilators (HP heating early replacement)	Single Family	2014	2053	22.06	2.62	6.11	10.70	33%	0.73	1.27	33%	0.15	0.12	1	1	0.46			0.00	0.00
NC	2100	2112	Crawlspace insulation (HP heating early replacement)	Single Family	2014	2053	21.54	2.56	0.52	11.22	34%	0.06	1.33	34%	0.19	0.12	2	1	0.36			0.00	0.00
NC	2100	2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Single Family	2014	2053	21.12	2.51	0.42	11.65	36%	0.05	1.38	36%	0.22	0.12	2	1	0.31			0.00	0.00
NC	2100	2113	Basement insulation R-13 (HP heating early replacement)	Single Family	2014	2053	20.69	2.46	0.43	12.07	37%	0.05	1.43	37%	0.22	0.13	2	1	0.31			0.00	0.00
NC	2100	2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	20.68	2.45	0.01	12.09	37%	0.00	1.43	37%	1.09	0.13	9	1	0.06			0.00	0.00
NC	2100	2120	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating e	Single Family	2014	2053	19.74	2.34	0.94	13.03	40%	0.11	1.55	40%	0.23	0.14	2	1	0.24			0.00	0.00
NC	2100	2117	Duct Testing and Sealing (HP heating early replacement)	Single Family	2014	2053	19.55	2.32	0.18	13.21	40%	0.02	1.57	40%	0.29	0.14	2	1	0.22			0.00	0.00
NC	2100	2123	WINDOWS - Double-Glazed Clear to Energy Star (HP heating	Single Family	2014	2053	19.27	2.29	0.28	13.49	41%	0.03	1.60	41%	0.37	0.14	3	1	0.18			0.00	0.00
NC	2100	2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Single Family	2014	2053	18.76	2.23	0.52	14.01	43%	0.06	1.66	43%	0.53	0.16	4	1	0.13			0.00	0.00
NC	2100	2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	18.71	2.22	0.05	14.06	43%	0.01	1.67	43%	1.20	0.16	10	1	0.06			0.00	0.00
NC	2100	2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replaceme	Single Family	2014	2053	18.51	2.20	0.20	14.26	44%	0.02	1.69	44%	0.75	0.17	6	1	0.09			0.00	0.00
NC	2100	2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Single Family	2014	2053	18.46	2.19	0.06	14.31	44%	0.01	1.70	44%	0.97	0.17	8	1	0.07			0.00	0.00
NC	2100	2103	Ground Source Heat Pump with Desuperheater (HP heating ea	Single Family	2014	2053	16.82	2.00	1.63	15.94	49%	0.19	1.89	49%	1.96	0.35	17	3	0.03			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY

Vintage Sgmt	Base Number	Existing Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	2100	2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	16.81	1.99	0.01	15.96	49%	0.00	1.89	49%	1.34	0.36	11	3	0.05			0.00	0.00
NC	2100	2105	Heat Pump Filter Replacement (heating)	Single Family	2014	2053	16.74	1.99	0.07	16.03	49%	0.01	1.90	49%	1.25	0.36	11	3	0.04			0.00	0.00
NC	2100	2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacem	Single Family	2014	2053	16.69	1.98	0.05	16.08	49%	0.01	1.91	49%	2.72	0.37	23	3	0.02			0.00	0.00
NC	2100	2104	Heat pump tune up (heating)	Single Family	2014	2053	16.61	1.97	0.07	16.15	49%	0.01	1.92	49%	2.02	0.37	17	3	0.03			0.00	0.00
NC	2200	2200	Base Resistance Space Heating (Primary)	Single Family	2014	2053	78.22	9.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	78.22	9.28	0.00	0.00
NC	2200	2201	Air Source Heat Pump (resistance heating)	Single Family	2014	2053	62.31	7.39	15.91	15.91	20%	1.89	1.89	20%	0.02	0.02	0	0	3.45			15.91	1.89
NC	2200	2216	Self Install Weatherization	Single Family	2014	2053	61.49	7.30	0.82	16.73	21%	0.10	1.99	21%	0.03	0.02	0	0	1.80			0.82	0.10
NC	2200	2214	Programmable Thermostat (resistance heating)	Single Family	2014	2053	60.24	7.15	1.25	17.98	23%	0.15	2.13	23%	0.05	0.02	0	0	1.26			1.25	0.15
NC	2200	2217	Door Weatherization (resistance heating)	Single Family	2014	2053	59.04	7.00	1.21	19.19	25%	0.14	2.28	25%	0.06	0.02	0	0	0.87			0.00	0.00
NC	2200	2213	Heat Recovery Ventilators (resistance heating)	Single Family	2014	2053	46.23	5.48	12.81	32.00	41%	1.52	3.80	41%	0.17	0.08	1	1	0.41			0.00	0.00
NC	2200	2203	Ceiling R-0 to R-38 Insulation (resistance heating)	Single Family	2014	2053	45.24	5.37	0.98	32.98	42%	0.12	3.91	42%	0.22	0.09	2	1	0.31			0.00	0.00
NC	2200	2209	Crawlspace insulation (resistance heating)	Single Family	2014	2053	44.83	5.32	0.41	33.39	43%	0.05	3.96	43%	0.24	0.09	2	1	0.28			0.00	0.00
NC	2200	2210	Basement insulation R-13 (resistance heating)	Single Family	2014	2053	44.24	5.25	0.59	33.98	43%	0.07	4.03	43%	0.25	0.09	2	1	0.27			0.00	0.00
NC	2200	2204	Ceiling R-0 to R-49 Insulation (resistance heating)	Single Family	2014	2053	44.22	5.25	0.02	34.00	43%	0.00	4.03	43%	1.42	0.09	12	1	0.05			0.00	0.00
NC	2200	2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance he	Single Family	2014	2053	42.21	5.01	2.01	36.02	46%	0.24	4.27	46%	0.26	0.10	2	1	0.22			0.00	0.00
NC	2200	2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance h	Single Family	2014	2053	41.52	4.93	0.69	36.71	47%	0.08	4.36	47%	0.35	0.10	3	1	0.19			0.00	0.00
NC	2200	2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	Single Family	2014	2053	40.31	4.78	1.21	37.91	48%	0.14	4.50	48%	0.54	0.12	5	1	0.13			0.00	0.00
NC	2200	2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Single Family	2014	2053	40.06	4.75	0.25	38.16	49%	0.03	4.53	49%	0.59	0.12	5	1	0.12			0.00	0.00
NC	2200	2206	Ceiling R-11 to R-49 Insulation (resistance heating)	Single Family	2014	2053	39.97	4.74	0.09	38.25	49%	0.01	4.54	49%	1.56	0.12	13	1	0.04			0.00	0.00
NC	2200	2207	Ceiling R-19 to R-38 Insulation (resistance heating)	Single Family	2014	2053	39.83	4.73	0.14	38.39	49%	0.02	4.55	49%	0.93	0.13	8	1	0.07			0.00	0.00
NC	2200	2208	Ceiling R-19 to R-49 Insulation (resistance heating)	Single Family	2014	2053	39.81	4.72	0.02	38.41	49%	0.00	4.56	49%	1.57	0.13	13	1	0.04			0.00	0.00
NC	2200	2202	Ground Source Heat Pump with Desuperheater (resistance hea	Single Family	2014	2053	39.48	4.68	0.33	38.74	50%	0.04	4.60	50%	26.32	0.35	222	3	0.00			0.00	0.00
NC	2200	2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Single Family	2014	2053	39.31	4.66	0.17	38.91	50%	0.02	4.62	50%	1.97	0.36	17	3	0.03			0.00	0.00
NC	3030	3030	Base Halogen Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	4.06	0.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.06	0.45	0.00	0.00
NC	3030	3032	LEDs (base Halogen 0.5 hrs/day) 2020	Single Family	2020	2053	1.30	0.15	2.76	2.76	68%	0.31	0.31	68%	0.04	0.04	0	0	2.16			2.76	0.31
NC	3130	3130	Base Halogen Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	16.58	1.86	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.58	1.86	0.00	0.00
NC	3130	3132	LEDs (base Halogen 2.5 hrs/day) 2020	Single Family	2020	2053	4.34	0.49	12.24	12.24	74%	1.37	1.37	74%	0.01	0.01	0	0	11.68			12.24	1.37
NC	3230	3230	Base Halogen Lighting - 6 hrs/day 2020	Single Family	2020	2053	10.97	1.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.97	1.23	0.00	0.00
NC	3230	3232	LEDs (base Halogen 6 hrs/day) 2020	Single Family	2020	2053	3.51	0.39	7.47	7.47	68%	0.84	0.84	68%	0.00	0.00	0	0	16.02			7.47	0.84
NC	3330	3330	Base CFL Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	1.87	0.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.87	0.21	0.00	0.00
NC	3330	3331	LEDs (base CFL 0.5 hrs/day) 2020	Single Family	2020	2053	1.37	0.15	0.51	0.51	27%	0.06	0.06	27%	0.20	0.20	2	2	0.38			0.00	0.00
NC	3430	3430	Base CFL Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	7.58	0.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.58	0.85	0.00	0.00
NC	3430	3431	LEDs (base CFL 2.5 hrs/day) 2020	Single Family	2020	2053	5.54	0.62	2.05	2.05	27%	0.23	0.23	27%	0.04	0.04	0	0	1.87			2.05	0.23
NC	3530	3530	Base CFL Lighting - 6 hrs/day 2020	Single Family	2020	2053	4.94	0.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.94	0.55	0.00	0.00
NC	3530	3531	LEDs (base CFL 6 hrs/day) 2020	Single Family	2020	2053	3.61	0.40	1.33	1.33	27%	0.15	0.15	27%	0.02	0.02	0	0	2.76			1.33	0.15
NC	3630	3630	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	8.78	0.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.78	0.98	0.00	0.00
NC	3630	3632	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Single Family	2020	2053	3.47	0.39	5.31	5.31	60%	0.59	0.59	60%	0.01	0.01	0	0	6.46			5.31	0.59
NC	3730	3730	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	36.55	4.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	36.55	4.09	0.00	0.00
NC	3730	3732	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Single Family	2020	2053	14.44	1.62	22.11	22.11	60%	2.47	2.47	60%	0.00	0.00	0	0	32.48			22.11	2.47
NC	3830	3830	Base Halogen (Specialty) Lighting - 6 hrs/day 2020	Single Family	2020	2053	24.20	2.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.20	2.71	0.00	0.00
NC	3830	3832	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Single Family	2020	2053	9.56	1.07	14.63	14.63	60%	1.64	1.64	60%	0.00	0.00	0	0	48.22			14.63	1.64
NC	3900	3900	Base Fluorescent Fixture 1.8 hrs/day	Single Family	2014	2053	54.27	6.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	54.27	6.08	0.00	0.00
NC	3900	3902	ROB 2L4'T8, 1EB	Single Family	2014	2053	39.63	4.44	14.64	14.64	27%	1.64	1.64	27%	0.04	0.04	0	0	2.16			14.64	1.64
NC	4000	4000	Base Refrigerator	Single Family	2014	2053	47.87	7.76	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	47.87	7.76	0.00	0.00
NC	4000	4001	Refrigerator (Energy Star)	Single Family	2014	2053	40.33	6.54	7.53	7.53	16%	1.22	1.22	16%	0.04	0.04	0	0	1.70			7.53	1.22
NC	4100	4100	Base Refrigerator--Early Replacement	Single Family	2014	2053	6.82	1.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.82	1.11	0.00	0.00
NC	4100	4101	Refrigerator - Early Replacement (Energy Star)	Single Family	2014	2053	3.77	0.61	3.05	3.05	45%	0.49	0.49	45%	0.09	0.09	1	1	0.56			0.00	0.00
NC	4200	4200	Base 2nd Refrigerator - Recycling	Single Family	2014	2053	23.56	3.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	23.56	3.82	0.00	0.00
NC	4200	4201	2nd Refrigerator Recycling	Single Family	2014	2053	6.07	0.98	17.49	17.49	74%	2.84	2.84	74%	0.03	0.03	0	0	2.10			17.49	2.84
NC	4500	4500	Base Freezer	Single Family	2014	2053	31.46	5.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	31.46	5.10	0.00	0.00
NC	4500	4501	Freezer (Energy Star)	Single Family	2014	2053	28.69	4.65	2.77	2.77	9%	0.45	0.45	9%	0.05	0.05	0	0	1.31			2.77	0.45
NC	4600	4600	Base Early Replacement Freezer	Single Family	2014	2053	6.58	1.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.58	1.04	0.00	0.00
NC	4600	4601	Freezer - Early Replacement (Energy Star)	Single Family	2014	2053	3.02	0.48	3.56	3.56	54%	0.56	0.56	54%	0.04	0.04	0	0	1.34			3.56	0.56
NC	4700	4700	Base 2nd Freezer Recycling	Single Family	2014	2053	7.09	1.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.09	1.12	0.00	0.00
NC	4700	4701	2nd Freezer Recycling	Single Family	2014	2053	3.58	0.57	3.51	3.51	50%	0.56	0.56	50%	0.02	0.02	0	0	3.29			3.51	0.56
NC	5000	5000	Base Water Heating (40 gal, EF=0.88)	Single Family	2014	2053	189.05	23.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	189.05	23.28	0.00	0.00
NC	5000	5006	Pipe Wrap	Single Family	2014	2053	183.24	22.57	5.81	5.81	3%	0.72	0.72	3%	0.02	0.02	0	0	3.19			5.81	0.72
NC	5000	5007	Hot water turndown 5 degrees	Single Family	2014	2053	182.60	22.49	0.64	6.45	3%	0.08	0.79	3%	0.02	0.02	0	0	2.37			0.64	0.08
NC	5000	5009	Hot water turndown 15 degrees	Single Family	2014	2053	182.40	22.46	0.20	6.65	4%	0.03	0.82	4%	0.02	0.02	0	0	2.36			0.20	0.03
NC	5000	5010	Hot water turndown 20 degrees	Single Family	2014	2053	182.32	22.46	0.08	6.73	4%	0.01	0.83	4%	0.02	0.02	0	0	2.36			0.08	0.01
NC	5000	5008	Hot water turndown 10 degrees	Single Family	2014	2053	181.46	22.35	0.86	7.59	4%	0.11	0.94	4%	0.02	0.02	0	0	2.36			0.86	0.11
NC	5000	5015	Low Flow Showerhead 1.5 Gal/Min	Single Family	2014	2053	176.03	21.68	5.42	13.02	7%	0.67	1.60	7%	0.03	0.02	0	0	2.01			5.42	0.67
NC	5000	5011	Drain Water Heat Recovery (GFX)	Single Family	2014	2053	169.42	20.87	6.62	19.63	10%	0.81	2.42	10%	0.06	0.03	0	0	1.16			6.62	0.81
NC	5000	5014	Faucent Aerators	Single Family	2014	2053	165.83	20.42	3.59	23.22	12%	0.44	2.86	12%	0.05	0.04	0	0	0.99			0.00	0.00
NC	5000	5005	DHW Tank Wrap	Single Family	2014	2053	156.73	19.30	9.10	32.32	17%	1.12	3.98	17%	0.05	0.04	0	0	0.91			0.00	0.00
NC	5000	5003	Heat Pump Water Heater - Energy Star	Single Family	2014	2053	133.71	16.47	23.02	55.34	29%	2.84	6.82	29%	0.08	0.06	1	0	0.80			0.00	0.00
NC	5000	5004	Solar Domestic Water Heating	Single Family	2014	2053	71.07	8.75	62.64	117.99	62%	7.72	14.53	62%	0.19	0.13	2	1	0.36			0.00	0.00
NC	5000	5012	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	2014	2053	70.88	8.73	0.19	118.17	63%	0.02	14.55	63%	4.86	0.13	39	1	0.01			0.00	0.00
NC	5000	5013	Energy Star Dishwasher (EF=0.72)	Single Family	2014	2053	70.72	8.71	0.15	118.33	63%	0.02	14.57	63%	4.54	0.14	37	1	0.01			0.00	0.00
NC	5100	5100	Base Water Heating Early Replacement to Heat Pump Water H	Single Family	2014	2053	33.36	4.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	33.36	4.11	0.00	0.00
NC	5100	5101	Heat Pump Water Heater - Energy Star - Early Replacement	Single Family	2014	2053	28.60	3.52	4.76	4.76	14%	0.59	0.59	14%	0.08	0.08	1	1	0.81			0.00	0.00
NC	5500	5500	Base Clotheswasher (MEF=1.26)	Single Family	2014	2053	3.38	0.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.38	0.61	0.00	0.00
NC	5500	5501	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	2014	2053	2.56	0.46	0.81	0.81	24%	0.15	0.15	24%	1.33	1.33	7	7	0.05			0.00	0.00
NC	5600	5600	Base Clothes Dryer (EF=3.01)	Single Family	2014	2053	50.79	8.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	50.79	8.60	0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY

Vintage Sgmt	Base Number	Existing Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	5600	5602	High Efficiency CD (EF=3.01 w/moisture sensor)	Single Family	2014	2053	41.46	7.02	9.33	9.33	18%	1.58	1.58	18%	0.05	0.05	0	0	1.36			9.33	1.58
NC	5600	5601	Heat Pump Dryer	Single Family	2014	2053	20.73	3.51	20.73	30.06	59%	3.51	5.09	59%	0.75	0.53	4	3	0.08			0.00	0.00
NC	5700	5700	Base Dishwasher (EF=0.65)	Single Family	2014	2053	6.77	1.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.77	1.11	0.00	0.00
NC	5700	5701	Energy Star Dishwasher (EF=0.72)	Single Family	2014	2053	6.53	1.07	0.24	0.24	4%	0.04	0.04	4%	1.70	1.70	10	10	0.04			0.00	0.00
NC	6000	6000	Base Single Speed Pool Pump (RET)	Single Family	2014	2053	13.47	1.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.47	1.60	0.00	0.00
NC	6000	6002	Variable-Speed Pool Pump (<1 hp)	Single Family	2014	2053	3.73	0.44	9.74	9.74	72%	1.16	1.16	72%	0.03	0.03	0	0	1.79			9.74	1.16
NC	6000	6001	PV-Powered Pool Pumps	Single Family	2014	2053	0.15	0.02	3.58	13.32	99%	0.43	1.58	99%	1.02	0.30	9	2	0.06			0.00	0.00
NC	7000	7000	Base Plasma TV	Single Family	2014	2053	9.20	1.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.20	1.33	0.00	0.00
NC	7000	7001	Energy Star Plasma TV	Single Family	2014	2053	8.40	1.21	0.80	0.80	9%	0.12	0.12	9%	0.01	0.01	0	0	6.16			0.80	0.12
NC	7000	7002	Plug Load Controls - Smart Power Strip (base plasma TV)	Single Family	2014	2053	8.34	1.20	0.06	0.86	9%	0.01	0.12	9%	4.37	0.33	30	2	0.01			0.00	0.00
NC	7100	7100	Base LCD TV	Single Family	2014	2053	10.93	1.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.93	1.58	0.00	0.00
NC	7100	7101	Energy Star LCD TV	Single Family	2014	2053	7.16	1.03	3.77	3.77	34%	0.54	0.54	34%	0.00	0.00	0	0	13.61			3.77	0.54
NC	7100	7102	Plug Load Controls - Smart Power Strip (base LCD TV)	Single Family	2014	2053	7.01	1.01	0.15	3.92	36%	0.02	0.57	36%	4.68	0.18	32	1	0.01			0.00	0.00
NC	7200	7200	Base CRT TV	Single Family	2014	2053	5.33	0.77	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.33	0.77	0.00	0.00
NC	7200	7202	Plug Load Controls - Smart Power Strip (base CRT TV)	Single Family	2014	2053	5.02	0.72	0.31	0.31	6%	0.04	0.04	6%	1.29	1.29	9	9	0.04			0.00	0.00
NC	7300	7300	Base Set-Top Box	Single Family	2014	2053	15.22	2.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.22	2.20	0.00	0.00
NC	7400	7400	Base DVD Player	Single Family	2014	2053	1.66	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.66	0.24	0.00	0.00
NC	7400	7401	Energy Star DVD Player	Single Family	2014	2053	0.78	0.11	0.88	0.88	53%	0.13	0.13	53%	0.02	0.02	0	0	3.40			0.88	0.13
NC	7400	7402	Plug Load Controls - Smart Power Strip (base DVD player)	Single Family	2014	2053	0.08	0.01	0.70	1.57	95%	0.10	0.23	95%	0.80	0.36	6	3	0.06			0.00	0.00
NC	7500	7500	Base Desktop PC	Single Family	2014	2053	17.75	2.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.75	2.34	0.00	0.00
NC	7500	7501	Energy Star Desktop PC	Single Family	2014	2053	15.66	2.06	2.09	2.09	12%	0.28	0.28	12%	0.00	0.00	0	0	13.68			2.09	0.28
NC	7500	7502	Plug Load Controls - Smart Power Strip (base Desktop PC)	Single Family	2014	2053	11.27	1.48	4.39	6.48	37%	0.58	0.85	37%	0.08	0.06	1	0	0.62			0.00	0.00
NC	7600	7600	Base Laptop PC	Single Family	2014	2053	2.54	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.54	0.33	0.00	0.00
NC	7600	7601	Energy Star Laptop PC	Single Family	2014	2053	2.13	0.28	0.40	0.40	16%	0.05	0.05	16%	0.03	0.03	0	0	2.05			0.40	0.05
NC	8000	8000	Base Cooking	Single Family	2014	2053	47.21	15.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	47.21	15.07	0.00	0.00
NC	9000	9000	Base Miscellaneous	Single Family	2014	2053	67.94	8.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	67.94	8.95	0.00	0.00
NC	9900	9900	Base House Use	Single Family	2014	2053	1,379.15	341.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,379.15	341.51	0.00	0.00
NC	9900	9901	Indirect Feedback	Single Family	2014	2053	1,358.66	336.44	20.48	20.48	1%	5.07	5.07	1%	0.02	0.02	0	0	2.68			20.48	5.07
NC	9900	9902	Direct Feedback	Single Family	2014	2053	1,294.61	320.58	64.05	84.53	6%	15.86	20.93	6%	0.05	0.04	0	0	1.05			64.05	15.86
NC	1000	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	Multi-Family	2014	2053	7.75	4.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.75	4.60	0.00	0.00
NC	1000	1024	Self Install Weatherization (CAC)	Multi-Family	2014	2053	7.63	4.53	0.12	0.12	2%	0.07	0.07	2%	0.02	0.02	0	0	3.90			0.12	0.07
NC	1000	1025	Door Weatherization (CAC)	Multi-Family	2014	2053	7.26	4.31	0.37	0.49	6%	0.22	0.29	6%	0.07	0.06	0	0	0.94			0.00	0.00
NC	1000	1004	Proper Refrigerant Charging and Air Flow (CAC)	Multi-Family	2014	2053	6.74	4.00	0.52	1.01	13%	0.31	0.60	13%	0.12	0.09	0	0	0.65			0.00	0.00
NC	1000	1019	Duct Insulation (CAC)	Multi-Family	2014	2053	6.72	3.99	0.01	1.03	13%	0.01	0.61	13%	0.18	0.09	0	0	0.59			0.00	0.00
NC	1000	1022	Programmable Thermostat (CAC)	Multi-Family	2014	2053	6.67	3.96	0.05	1.08	14%	0.03	0.64	14%	0.15	0.10	0	0	0.58			0.00	0.00
NC	1000	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	6.24	3.71	0.43	1.51	19%	0.25	0.90	19%	0.21	0.13	0	0	0.48			0.00	0.00
NC	1000	1021	Return Duct Modification (CAC)	Multi-Family	2014	2053	6.21	3.69	0.04	1.54	20%	0.02	0.92	20%	0.24	0.13	0	0	0.43			0.00	0.00
NC	1000	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	5.84	3.47	0.37	1.91	25%	0.22	1.14	25%	0.25	0.16	0	0	0.40			0.00	0.00
NC	1000	1026	Ceiling Fans (CAC)	Multi-Family	2014	2053	5.53	3.28	0.31	2.23	29%	0.18	1.32	29%	0.28	0.17	0	0	0.34			0.00	0.00
NC	1000	1014	Crawlspace insulation (CAC)	Multi-Family	2014	2053	5.51	3.27	0.02	2.25	29%	0.01	1.33	29%	0.33	0.17	1	0	0.32			0.00	0.00
NC	1000	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	4.92	2.92	0.58	2.83	37%	0.35	1.68	37%	0.35	0.21	1	0	0.29			0.00	0.00
NC	1000	1008	Ceiling R-0 to R-38 Insulation (CAC)	Multi-Family	2014	2053	4.51	2.68	0.41	3.24	42%	0.24	1.93	42%	0.63	0.26	1	0	0.17			0.00	0.00
NC	1000	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Multi-Family	2014	2053	4.31	2.56	0.21	3.45	44%	0.12	2.05	44%	0.54	0.28	1	0	0.15			0.00	0.00
NC	1000	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Multi-Family	2014	2053	4.21	2.50	0.10	3.54	46%	0.06	2.10	46%	0.74	0.29	1	0	0.14			0.00	0.00
NC	1000	1005	Proper Sizing and Quality Install (CAC)	Multi-Family	2014	2053	3.80	2.26	0.41	3.95	51%	0.24	2.35	51%	0.82	0.35	1	1	0.12			0.00	0.00
NC	1000	1020	Duct Testing and Sealing (CAC)	Multi-Family	2014	2053	3.70	2.20	0.10	4.05	52%	0.06	2.41	52%	0.92	0.36	2	1	0.11			0.00	0.00
NC	1000	1009	Ceiling R-0 to R-49 Insulation (CAC)	Multi-Family	2014	2053	3.70	2.20	0.00	4.05	52%	0.00	2.41	52%	8.89	0.37	15	1	0.01			0.00	0.00
NC	1000	1029	WINDOWS - Default With Sunscreen (CAC)	Multi-Family	2014	2053	3.44	2.04	0.26	4.31	56%	0.15	2.56	56%	1.06	0.41	2	1	0.08			0.00	0.00
NC	1000	1010	Ceiling R-11 to R-38 Insulaton (CAC)	Multi-Family	2014	2053	3.39	2.01	0.05	4.36	56%	0.03	2.59	56%	2.00	0.43	3	1	0.05			0.00	0.00
NC	1000	1018	Cool Roof (CAC)	Multi-Family	2014	2053	3.28	1.95	0.11	4.47	58%	0.06	2.65	58%	1.90	0.47	3	1	0.05			0.00	0.00
NC	1000	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	Multi-Family	2014	2053	3.25	1.93	0.03	4.50	58%	0.02	2.67	58%	2.44	0.48	4	1	0.04			0.00	0.00
NC	1000	1028	Window Film (CAC)	Multi-Family	2014	2053	3.06	1.82	0.19	4.69	61%	0.11	2.79	61%	1.91	0.54	3	1	0.04			0.00	0.00
NC	1000	1027	Whole House Fans (CAC)	Multi-Family	2014	2053	2.88	1.71	0.18	4.87	63%	0.11	2.89	63%	2.40	0.61	4	1	0.04			0.00	0.00
NC	1000	1011	Ceiling R-11 to R-49 Insulation (CAC)	Multi-Family	2014	2053	2.88	1.71	0.00	4.87	63%	0.00	2.89	63%	11.43	0.61	19	1	0.01			0.00	0.00
NC	1000	1012	Ceiling R-19 to R-38 Insulation (CAC)	Multi-Family	2014	2053	2.87	1.71	0.01	4.88	63%	0.00	2.90	63%	3.98	0.61	7	1	0.03			0.00	0.00
NC	1000	1013	Ceiling R-19 to R-49 Insulation (CAC)	Multi-Family	2014	2053	2.87	1.71	0.00	4.88	63%	0.00	2.90	63%	11.46	0.62	19	1	0.01			0.00	0.00
NC	1000	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	Multi-Family	2014	2053	2.86	1.70	0.02	4.89	63%	0.01	2.91	63%	6.36	0.63	11	1	0.02			0.00	0.00
NC	1000	1015	Basement insulation R-13 (CAC)	Multi-Family	2014	2053	2.85	1.69	0.01	4.90	63%	0.00	2.91	63%	6.44	0.64	11	1	0.02			0.00	0.00
NC	1000	1007	AC Filter Changes (CAC)	Multi-Family	2014	2053	2.84	1.69	0.01	4.91	63%	0.01	2.92	63%	7.74	0.65	13	1	0.01			0.00	0.00
NC	1000	1006	AC Maintenance and/or tune-up (CAC)	Multi-Family	2014	2053	2.83	1.68	0.01	4.92	63%	0.01	2.92	63%	8.85	0.67	15	1	0.01			0.00	0.00
NC	1100	1100	Base Split-System Air Conditioner - Early Replacement (11 SEI	Multi-Family	2014	2053	2.32	1.38	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.32	1.38	0.00	0.00
NC	1100	1122	Self Install Weatherization (CAC early replacement)	Multi-Family	2014	2053	2.28	1.36	0.04	0.04	2%	0.02	0.02	2%	0.01	0.01	0	0	6.61			0.04	0.02
NC	1100	1117	Duct Insulation (CAC early replacement)	Multi-Family	2014	2053	2.26	1.35	0.02	0.06	2%	0.01	0.03	2%	0.02	0.02	0	0	4.58			0.02	0.01
NC	1100	1123	Door Weatherization (CAC early replacement)	Multi-Family	2014	2053	2.16	1.28	0.11	0.16	7%	0.06	0.10	7%	0.04	0.03	0	0	1.54			0.11	0.06
NC	1100	1102	Proper Refrigerant Charging and Air Flow (CAC early replacem	Multi-Family	2014	2053	1.97	1.17	0.19	0.35	15%	0.11	0.21	15%	0.08	0.06	0	0	1.08			0.19	0.11
NC	1100	1120	Programmable Thermostat (CAC early replacement)	Multi-Family	2014	2053	1.95	1.16	0.02	0.37	16%	0.01	0.22	16%	0.09	0.06	0	0	0.96			0.00	0.00
NC	1100	1119	Return Duct Modification (CAC early replacement)	Multi-Family	2014	2053	1.94	1.15	0.01	0.38	16%	0.01	0.22	16%	0.14	0.06	0	0	0.76			0.00	0.00
NC	1100	1112	Crawlspace insulation (CAC early replacement)	Multi-Family	2014	2053	1.93	1.15	0.01	0.38	17%	0.00	0.23	17%	0.17	0.06	0	0	0.64			0.00	0.00
NC	1100	1116	Cool Roof (CAC early replacement)	Multi-Family	2014	2053	1.72	1.02	0.22	0.60	26%	0.13	0.36	26%	0.17	0.10	0	0	0.57			0.00	0.00
NC	1100	1125	Whole House Fans (CAC early replacement)	Multi-Family	2014	2053	1.38	0.82	0.34	0.94	40%	0.20	0.56	40%	0.23	0.15	0	0	0.42			0.00	0.00
NC	1100	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early r	Multi-Family	2014	2053	1.35	0.80	0.03	0.97	42%	0.02	0.58	42%	0.36	0.15	1	0	0.29			0.00	0.00
NC	1100	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Multi-Family	2014	2053	1.24	0.73	0.11	1.08	47%	0.07	0.64	47%	0.41	0.18	1	0	0.26			0.00	0.00
NC	1100	1118	Duct Testing and Sealing (CAC early replacement)	Multi-Family	2014	2053	1.20	0.71	0.04	1.12	48%	0.02	0.67	48%	0.43	0.19	1	0	0.23			0.00	0.00
NC	1100	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early re	Multi-Family	2014	2053	1.14	0.68	0.05	1.17	51%	0.03	0.70	51%	0.36	0.20	1	0	0.23			0.00	0.00

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS Year 2014
Vintage Existing

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	1100	1103	Proper Sizing and Quality Install (CAC early replacement)	Multi-Family	2014	2053	1.01	0.60	0.13	1.31	56%	0.08	0.78	56%	0.55	0.23	1	0	0.19			0.00	0.00
NC	1100	1124	Ceiling Fans (CAC early replacement)	Multi-Family	2014	2053	0.98	0.58	0.03	1.34	58%	0.02	0.79	58%	0.58	0.24	1	0	0.16			0.00	0.00
NC	1100	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	0.98	0.58	0.00	1.34	58%	0.00	0.79	58%	5.90	0.24	10	0	0.02			0.00	0.00
NC	1100	1113	Basement insulation R-13 (CAC early replacement)	Multi-Family	2014	2053	0.97	0.58	0.01	1.35	58%	0.01	0.80	58%	0.68	0.25	1	0	0.15			0.00	0.00
NC	1100	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Multi-Family	2014	2053	0.96	0.57	0.01	1.36	59%	0.01	0.81	59%	1.25	0.26	2	0	0.08			0.00	0.00
NC	1100	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	Multi-Family	2014	2053	0.91	0.54	0.05	1.41	61%	0.03	0.84	61%	1.05	0.28	2	0	0.08			0.00	0.00
NC	1100	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Multi-Family	2014	2053	0.90	0.54	0.01	1.42	61%	0.01	0.84	61%	1.55	0.29	3	0	0.07			0.00	0.00
NC	1100	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	0.90	0.54	0.00	1.42	61%	0.00	0.84	61%	6.44	0.29	11	0	0.02			0.00	0.00
NC	1100	1126	Window Film (CAC early replacement)	Multi-Family	2014	2053	0.86	0.51	0.04	1.46	63%	0.02	0.87	63%	1.56	0.33	3	1	0.05			0.00	0.00
NC	1100	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Multi-Family	2014	2053	0.86	0.51	0.00	1.46	63%	0.00	0.87	63%	2.35	0.33	4	1	0.04			0.00	0.00
NC	1100	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	0.86	0.51	0.00	1.46	63%	0.00	0.87	63%	6.76	0.33	11	1	0.02			0.00	0.00
NC	1100	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality I	Multi-Family	2014	2053	0.82	0.48	0.04	1.50	65%	0.03	0.89	65%	2.56	0.40	4	1	0.03			0.00	0.00
NC	1100	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Multi-Family	2014	2053	0.81	0.48	0.00	1.51	65%	0.00	0.90	65%	3.96	0.41	7	1	0.03			0.00	0.00
NC	1100	1105	AC Filter Changes (CAC early replacement)	Multi-Family	2014	2053	0.81	0.48	0.00	1.51	65%	0.00	0.90	65%	4.80	0.42	8	1	0.01			0.00	0.00
NC	1100	1104	AC Maintenance and/or tune-up (CAC early replacement)	Multi-Family	2014	2053	0.81	0.48	0.00	1.51	65%	0.00	0.90	65%	5.49	0.42	9	1	0.01			0.00	0.00
NC	1200	1200	Base Heat Pump Cooling (13 SEER)	Multi-Family	2014	2053	11.87	7.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.87	7.05	0.00	0.00
NC	1200	1219	Duct Insulation (HP cooling)	Multi-Family	2014	2053	11.77	6.99	0.10	0.10	1%	0.06	0.06	1%	0.03	0.03	0	0	3.83			0.10	0.06
NC	1200	1223	Self Install Weatherization (HP cooling)	Multi-Family	2014	2053	11.58	6.88	0.19	0.28	2%	0.11	0.17	2%	0.04	0.04	0	0	2.06			0.19	0.11
NC	1200	1224	Door Weatherization (HP cooling)	Multi-Family	2014	2053	11.02	6.55	0.56	0.85	7%	0.33	0.50	7%	0.05	0.05	0	0	1.29			0.56	0.33
NC	1200	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Multi-Family	2014	2053	9.15	5.44	1.87	2.71	23%	1.11	1.61	23%	0.09	0.08	0	0	1.08			1.87	1.11
NC	1200	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	Multi-Family	2014	2053	8.50	5.05	0.66	3.37	28%	0.39	2.00	28%	0.11	0.08	0	0	0.75			0.00	0.00
NC	1200	1214	Crawlspace insulation (HP cooling)	Multi-Family	2014	2053	8.47	5.03	0.03	3.40	29%	0.02	2.02	29%	0.23	0.08	0	0	0.45			0.00	0.00
NC	1200	1221	Programmable Thermostat (HP cooling)	Multi-Family	2014	2053	8.30	4.93	0.17	3.57	30%	0.10	2.12	30%	0.21	0.09	0	0	0.42			0.00	0.00
NC	1200	1218	Cool Roof (HP cooling)	Multi-Family	2014	2053	7.37	4.38	0.93	4.49	38%	0.55	2.67	38%	0.24	0.12	0	0	0.39			0.00	0.00
NC	1200	1226	Whole House Fans (HP cooling)	Multi-Family	2014	2053	5.93	3.53	1.44	5.93	50%	0.85	3.52	50%	0.33	0.17	1	0	0.29			0.00	0.00
NC	1200	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	Multi-Family	2014	2053	5.43	3.23	0.50	6.43	54%	0.30	3.82	54%	0.57	0.20	1	0	0.19			0.00	0.00
NC	1200	1220	Duct Testing and Sealing (HP cooling)	Multi-Family	2014	2053	5.27	3.13	0.16	6.59	56%	0.10	3.92	56%	0.61	0.21	1	0	0.17			0.00	0.00
NC	1200	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Multi-Family	2014	2053	5.03	2.99	0.24	6.83	58%	0.14	4.06	58%	0.51	0.22	1	0	0.16			0.00	0.00
NC	1200	1205	Proper Sizing and Quality Install (HP cooling)	Multi-Family	2014	2053	4.54	2.70	0.49	7.32	62%	0.29	4.35	62%	0.74	0.26	1	0	0.14			0.00	0.00
NC	1200	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	4.53	2.69	0.01	7.34	62%	0.01	4.36	62%	3.57	0.26	6	0	0.03			0.00	0.00
NC	1200	1225	Ceiling Fans (HP cooling)	Multi-Family	2014	2053	4.41	2.62	0.12	7.45	63%	0.07	4.43	63%	0.81	0.27	1	0	0.12			0.00	0.00
NC	1200	1215	Basement insulation R-13 (HP cooling)	Multi-Family	2014	2053	4.36	2.59	0.05	7.50	63%	0.03	4.46	63%	0.95	0.28	2	0	0.11			0.00	0.00
NC	1200	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Multi-Family	2014	2053	4.26	2.53	0.11	7.61	64%	0.06	4.52	64%	1.11	0.29	2	0	0.09			0.00	0.00
NC	1200	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	Multi-Family	2014	2053	4.19	2.49	0.07	7.68	65%	0.04	4.56	65%	1.74	0.30	3	1	0.06			0.00	0.00
NC	1200	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	4.18	2.49	0.01	7.68	65%	0.00	4.56	65%	3.87	0.30	7	1	0.03			0.00	0.00
NC	1200	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Multi-Family	2014	2053	4.14	2.46	0.04	7.72	65%	0.03	4.59	65%	2.42	0.31	4	1	0.04			0.00	0.00
NC	1200	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	Multi-Family	2014	2053	4.13	2.46	0.01	7.73	65%	0.00	4.59	65%	3.12	0.32	5	1	0.03			0.00	0.00
NC	1200	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	4.13	2.46	0.00	7.73	65%	0.00	4.59	65%	3.93	0.32	7	1	0.03			0.00	0.00
NC	1200	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Multi-Family	2014	2053	4.10	2.43	0.03	7.77	65%	0.02	4.61	65%	7.69	0.35	13	1	0.01			0.00	0.00
NC	1200	1207	Heat Pump Filter Replacement	Multi-Family	2014	2053	4.09	2.43	0.01	7.78	66%	0.01	4.62	66%	5.82	0.36	10	1	0.01			0.00	0.00
NC	1200	1206	Heat pump tune up	Multi-Family	2014	2053	4.07	2.42	0.01	7.79	66%	0.01	4.63	66%	9.38	0.37	16	1	0.01			0.00	0.00
NC	1300	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	Multi-Family	2014	2053	2.14	1.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.14	1.27	0.00	0.00
NC	1300	1319	Duct Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	2.13	1.26	0.02	0.02	1%	0.01	0.01	1%	0.03	0.03	0	0	3.92			0.02	0.01
NC	1300	1323	Self Install Weatherization (HP cooling Early Replacement)	Multi-Family	2014	2053	2.09	1.24	0.03	0.05	2%	0.02	0.03	2%	0.04	0.03	0	0	2.11			0.03	0.02
NC	1300	1324	Door Weatherization (HP cooling Early Replacement)	Multi-Family	2014	2053	1.99	1.18	0.10	0.15	7%	0.06	0.09	7%	0.05	0.05	0	0	1.30			0.10	0.06
NC	1300	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Ea	Multi-Family	2014	2053	1.66	0.98	0.34	0.49	23%	0.20	0.29	23%	0.09	0.07	0	0	1.10			0.34	0.20
NC	1300	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Re	Multi-Family	2014	2053	1.54	0.91	0.12	0.61	28%	0.07	0.36	28%	0.11	0.08	0	0	0.77			0.00	0.00
NC	1300	1314	Crawlspace insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	1.53	0.91	0.01	0.61	29%	0.00	0.36	29%	0.23	0.08	0	0	0.46			0.00	0.00
NC	1300	1321	Programmable Thermostat (HP cooling Early Replacement)	Multi-Family	2014	2053	1.50	0.89	0.03	0.64	30%	0.02	0.38	30%	0.21	0.09	0	0	0.43			0.00	0.00
NC	1300	1318	Cool Roof (HP cooling Early Replacement)	Multi-Family	2014	2053	1.33	0.79	0.17	0.81	38%	0.10	0.48	38%	0.24	0.12	0	0	0.40			0.00	0.00
NC	1300	1326	Whole House Fans (HP cooling early replacement)	Multi-Family	2014	2053	1.07	0.64	0.26	1.07	50%	0.15	0.64	50%	0.32	0.17	1	0	0.30			0.00	0.00
NC	1300	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	0.98	0.58	0.09	1.16	54%	0.05	0.69	54%	0.55	0.20	1	0	0.19			0.00	0.00
NC	1300	1320	Duct Testing and Sealing (HP cooling Early Replacement)	Multi-Family	2014	2053	0.95	0.57	0.03	1.19	56%	0.02	0.71	56%	0.60	0.21	1	0	0.17			0.00	0.00
NC	1300	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling E	Multi-Family	2014	2053	0.91	0.54	0.04	1.23	58%	0.03	0.73	58%	0.50	0.22	1	0	0.16			0.00	0.00
NC	1300	1305	Proper Sizing and Quality Install (HP cooling Early Replacemer	Multi-Family	2014	2053	0.82	0.49	0.09	1.32	62%	0.05	0.79	62%	0.72	0.25	1	0	0.14			0.00	0.00
NC	1300	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	0.82	0.49	0.00	1.32	62%	0.00	0.79	62%	3.49	0.26	6	0	0.03			0.00	0.00
NC	1300	1325	Ceiling Fans (HP cooling early replacement)	Multi-Family	2014	2053	0.80	0.47	0.02	1.35	63%	0.01	0.80	63%	0.79	0.27	1	0	0.12			0.00	0.00
NC	1300	1315	Basement insulation R-13 (HP cooling Early Replacement)	Multi-Family	2014	2053	0.79	0.47	0.01	1.35	63%	0.01	0.80	63%	0.92	0.27	2	0	0.11			0.00	0.00
NC	1300	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling I	Multi-Family	2014	2053	0.77	0.46	0.02	1.37	64%	0.01	0.82	64%	1.09	0.28	2	0	0.10			0.00	0.00
NC	1300	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Multi-Family	2014	2053	0.76	0.45	0.01	1.39	65%	0.01	0.82	65%	1.69	0.29	3	0	0.06			0.00	0.00
NC	1300	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	0.76	0.45	0.00	1.39	65%	0.00	0.82	65%	3.78	0.30	6	0	0.03			0.00	0.00
NC	1300	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacem	Multi-Family	2014	2053	0.75	0.45	0.01	1.39	65%	0.00	0.83	65%	2.36	0.31	4	1	0.04			0.00	0.00
NC	1300	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	0.75	0.44	0.00	1.40	65%	0.00	0.83	65%	3.05	0.31	5	1	0.03			0.00	0.00
NC	1300	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	0.75	0.44	0.00	1.40	65%	0.00	0.83	65%	3.83	0.31	6	1	0.03			0.00	0.00
NC	1300	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacer	Multi-Family	2014	2053	0.74	0.44	0.01	1.40	65%	0.00	0.83	65%	7.49	0.34	13	1	0.01			0.00	0.00
NC	1300	1307	Heat Pump Filter Replacement	Multi-Family	2014	2053	0.74	0.44	0.00	1.40	65%	0.00	0.83	65%	5.67	0.35	10	1	0.01			0.00	0.00
NC	1300	1306	Heat pump tune up	Multi-Family	2014	2053	0.74	0.44	0.00	1.41	66%	0.00	0.84	66%	9.15	0.36	15	1	0.01			0.00	0.00
NC	1400	1400	Base Room Air Conditioner - EER 10.6	Multi-Family	2014	2053	0.67	0.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.67	0.40	0.00	0.00
NC	1400	1413	Self Install Weatherization (RAC)	Multi-Family	2014	2053	0.66	0.39	0.01	0.01	2%	0.01	0.01	2%	0.01	0.01	0	0	7.80			0.01	0.01
NC	1400	1414	Door Weatherization (RAC)	Multi-Family	2014	2053	0.63	0.37	0.03	0.04	6%	0.02	0.03	6%	0.04	0.03	0	0	1.87			0.03	0.02
NC	1400	1411	Cool Roof (RAC)	Multi-Family	2014	2053	0.56	0.33	0.07	0.11	17%	0.04	0.07	17%	0.13	0.09	0	0	0.76			0.00	0.00
NC	1400	1416	Whole House Fans (RAC)	Multi-Family	2014	2053	0.45	0.27	0.11	0.22	33%	0.06	0.13	33%	0.17	0.13	0	0	0.56			0.00	0.00
NC	1400	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Multi-Family	2014	2053	0.42	0.25	0.02	0.25	37%	0.01	0.15	37%	0.20	0.14	0	0	0.41			0.00	0.00
NC	1400	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Multi-Family	2014	2053	0.40	0.24	0.03	0.27	40%	0.01	0.16	40%	0.20	0.14	0	0	0.38			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY

Vintage Sgmt	Base Number	Existing Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	1400	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Multi-Family	2014	2053	0.39	0.23	0.01	0.28	42%	0.01	0.17	42%	0.31	0.15	1	0	0.34			0.00	0.00
NC	1400	1404	Ceiling R-0 to R-38 Insulation (RAC)	Multi-Family	2014	2053	0.36	0.21	0.03	0.31	46%	0.02	0.18	46%	0.36	0.17	1	0	0.29			0.00	0.00
NC	1400	1415	Ceiling Fans (RAC)	Multi-Family	2014	2053	0.35	0.21	0.01	0.32	48%	0.01	0.19	48%	0.40	0.18	1	0	0.24			0.00	0.00
NC	1400	1405	Ceiling R-0 to R-49 Insulation (RAC)	Multi-Family	2014	2053	0.35	0.21	0.00	0.32	48%	0.00	0.19	48%	2.23	0.18	4	0	0.05			0.00	0.00
NC	1400	1417	Window Film (RAC)	Multi-Family	2014	2053	0.32	0.19	0.03	0.35	53%	0.02	0.21	53%	0.51	0.21	1	0	0.16			0.00	0.00
NC	1400	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	Multi-Family	2014	2053	0.31	0.19	0.00	0.36	53%	0.00	0.21	53%	1.00	0.22	2	0	0.11			0.00	0.00
NC	1400	1418	WINDOWS - Default With Sunscreen (RAC)	Multi-Family	2014	2053	0.30	0.18	0.01	0.37	55%	0.01	0.22	55%	0.79	0.24	1	0	0.10			0.00	0.00
NC	1400	1406	Ceiling R-11 to R-38 Insulaton (RAC)	Multi-Family	2014	2053	0.29	0.18	0.00	0.37	56%	0.00	0.22	56%	1.10	0.25	2	0	0.10			0.00	0.00
NC	1400	1407	Ceiling R-11 to R-49 Insulation (RAC)	Multi-Family	2014	2053	0.29	0.17	0.00	0.38	56%	0.00	0.22	56%	2.65	0.25	4	0	0.04			0.00	0.00
NC	1400	1408	Ceiling R-19 to R-38 Insulation (RAC)	Multi-Family	2014	2053	0.29	0.17	0.00	0.38	56%	0.00	0.22	56%	1.84	0.25	3	0	0.06			0.00	0.00
NC	1400	1409	Ceiling R-19 to R-49 Insulation (RAC)	Multi-Family	2014	2053	0.29	0.17	0.00	0.38	56%	0.00	0.22	56%	2.65	0.25	4	0	0.04			0.00	0.00
NC	1400	1403	Room AC Filter Replacement	Multi-Family	2014	2053	0.29	0.17	0.00	0.38	56%	0.00	0.22	56%	2.40	0.26	4	0	0.03			0.00	0.00
NC	1500	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	Multi-Family	2014	2053	0.05	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.03	0.00	0.00
NC	1500	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early	Multi-Family	2014	2053	0.05	0.03	0.01	0.01	13%	0.00	0.00	13%	0.96	0.96	2	2	0.08			0.00	0.00
NC	1600	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	Multi-Family	2014	2053	0.19	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.11	0.00	0.00
NC	1600	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/da	Multi-Family	2014	2053	0.16	0.09	0.03	0.03	15%	0.02	0.02	15%	0.19	0.19	0	0	0.48			0.00	0.00
NC	1700	1700	Base Furnace Fan - Furnace & CAC	Multi-Family	2014	2053	11.33	5.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.33	5.81	0.00	0.00
NC	1700	1701	ECM Furnace Fan (variable speed motor) - Cooling	Multi-Family	2014	2053	6.30	3.23	5.04	5.04	44%	2.58	2.58	44%	0.03	0.03	0	0	3.47			5.04	2.58
NC	2000	2000	Base Heat Pump Space Heating (7.7 HSPF)	Multi-Family	2014	2053	17.55	2.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.55	2.08	0.00	0.00
NC	2000	2016	Duct Insulation (HP heating)	Multi-Family	2014	2053	17.41	2.07	0.14	0.14	1%	0.02	0.02	1%	0.02	0.02	0	0	3.15			0.14	0.02
NC	2000	2021	Self Install Weatherization (HP heating)	Multi-Family	2014	2053	17.13	2.03	0.28	0.42	2%	0.03	0.05	2%	0.03	0.03	0	0	1.83			0.28	0.03
NC	2000	2022	Door Weatherization (HP heating)	Multi-Family	2014	2053	16.49	1.96	0.65	1.07	6%	0.08	0.13	6%	0.05	0.04	0	0	0.96			0.00	0.00
NC	2000	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Multi-Family	2014	2053	14.97	1.78	1.52	2.59	15%	0.18	0.31	15%	0.12	0.09	1	1	0.54			0.00	0.00
NC	2000	2012	Crawlspace insulation (HP heating)	Multi-Family	2014	2053	14.93	1.77	0.04	2.63	15%	0.00	0.31	15%	0.15	0.09	1	1	0.44			0.00	0.00
NC	2000	2019	Programmable Thermostat (HP heating)	Multi-Family	2014	2053	14.63	1.74	0.30	2.92	17%	0.04	0.35	17%	0.14	0.09	1	1	0.43			0.00	0.00
NC	2000	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Multi-Family	2014	2053	13.96	1.66	0.67	3.59	20%	0.08	0.43	20%	0.21	0.11	2	1	0.27			0.00	0.00
NC	2000	2006	Ceiling R-0 to R-38 Insulation (HP heating)	Multi-Family	2014	2053	12.79	1.52	1.18	4.77	27%	0.14	0.57	27%	0.28	0.16	2	1	0.24			0.00	0.00
NC	2000	2017	Duct Testing and Sealing (HP heating)	Multi-Family	2014	2053	12.41	1.47	0.38	5.15	29%	0.05	0.61	29%	0.30	0.17	3	1	0.22			0.00	0.00
NC	2000	2007	Ceiling R-0 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	12.37	1.47	0.03	5.18	30%	0.00	0.61	30%	1.52	0.18	13	1	0.04			0.00	0.00
NC	2000	2013	Basement insulation R-13 (HP heating)	Multi-Family	2014	2053	12.26	1.46	0.11	5.29	30%	0.01	0.63	30%	0.39	0.18	3	2	0.17			0.00	0.00
NC	2000	2018	Heat Recovery Ventilators (HP heating)	Multi-Family	2014	2053	9.60	1.14	2.66	7.95	45%	0.32	0.94	45%	0.43	0.26	4	2	0.16			0.00	0.00
NC	2000	2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Multi-Family	2014	2053	9.37	1.11	0.23	8.18	47%	0.03	0.97	47%	0.61	0.27	5	2	0.11			0.00	0.00
NC	2000	2008	Ceiling R-11 to R-38 Insulaton (HP heating)	Multi-Family	2014	2053	9.23	1.09	0.14	8.33	47%	0.02	0.99	47%	0.91	0.29	8	2	0.07			0.00	0.00
NC	2000	2009	Ceiling R-11 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	9.21	1.09	0.01	8.34	48%	0.00	0.99	48%	2.04	0.29	17	2	0.03			0.00	0.00
NC	2000	2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	Multi-Family	2014	2053	9.14	1.08	0.08	8.42	48%	0.01	1.00	48%	1.28	0.30	11	3	0.05			0.00	0.00
NC	2000	2003	Ground Source Heat Pump with Desuperheater (HP heating)	Multi-Family	2014	2053	8.30	0.98	0.84	9.26	53%	0.10	1.10	53%	2.59	0.51	22	4	0.02			0.00	0.00
NC	2000	2010	Ceiling R-19 to R-38 Insulation (HP heating)	Multi-Family	2014	2053	8.28	0.98	0.01	9.27	53%	0.00	1.10	53%	1.81	0.51	15	4	0.04			0.00	0.00
NC	2000	2011	Ceiling R-19 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	8.28	0.98	0.00	9.28	53%	0.00	1.10	53%	2.27	0.51	19	4	0.03			0.00	0.00
NC	2000	2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Multi-Family	2014	2053	8.21	0.97	0.07	9.34	53%	0.01	1.11	53%	4.44	0.54	37	5	0.02			0.00	0.00
NC	2000	2005	Heat Pump Filter Replacement	Multi-Family	2014	2053	8.19	0.97	0.02	9.37	53%	0.00	1.11	53%	3.36	0.54	28	5	0.01			0.00	0.00
NC	2000	2004	Heat pump tune up	Multi-Family	2014	2053	8.16	0.97	0.03	9.39	54%	0.00	1.11	54%	5.43	0.56	46	5	0.01			0.00	0.00
NC	2100	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSP	Multi-Family	2014	2053	4.23	0.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.23	0.50	0.00	0.00
NC	2100	2116	Duct Insulation (HP heating early replacement)	Multi-Family	2014	2053	4.19	0.50	0.03	0.03	1%	0.00	0.00	1%	0.02	0.02	0	0	4.30			0.03	0.00
NC	2100	2121	Self Install Weatherization (HP heating early replacement)	Multi-Family	2014	2053	4.13	0.49	0.07	0.10	2%	0.01	0.01	2%	0.02	0.02	0	0	2.49			0.07	0.01
NC	2100	2122	Door Weatherization (HP heating early replacement)	Multi-Family	2014	2053	4.01	0.48	0.11	0.22	5%	0.01	0.03	5%	0.05	0.04	0	0	0.96			0.00	0.00
NC	2100	2102	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early	Multi-Family	2014	2053	3.64	0.43	0.37	0.59	14%	0.04	0.07	14%	0.08	0.07	1	1	0.74			0.00	0.00
NC	2100	2112	Crawlspace insulation (HP heating early replacement)	Multi-Family	2014	2053	3.59	0.43	0.06	0.64	15%	0.01	0.08	15%	0.11	0.07	1	1	0.61			0.00	0.00
NC	2100	2119	Programmable Thermostat (HP heating early replacement)	Multi-Family	2014	2053	3.51	0.42	0.07	0.71	17%	0.01	0.08	17%	0.10	0.07	1	1	0.58			0.00	0.00
NC	2100	2120	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating e	Multi-Family	2014	2053	3.35	0.40	0.16	0.87	21%	0.02	0.10	21%	0.16	0.09	1	1	0.36			0.00	0.00
NC	2100	2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Multi-Family	2014	2053	3.07	0.36	0.28	1.16	27%	0.03	0.14	27%	0.21	0.12	2	1	0.33			0.00	0.00
NC	2100	2117	Duct Testing and Sealing (HP heating early replacement)	Multi-Family	2014	2053	2.98	0.35	0.09	1.25	30%	0.01	0.15	30%	0.22	0.13	2	1	0.30			0.00	0.00
NC	2100	2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Multi-Family	2014	2053	2.97	0.35	0.01	1.26	30%	0.00	0.15	30%	1.11	0.13	9	1	0.06			0.00	0.00
NC	2100	2113	Basement insulation R-13 (HP heating early replacement)	Multi-Family	2014	2053	2.82	0.34	0.15	1.40	33%	0.02	0.17	33%	0.29	0.15	2	1	0.24			0.00	0.00
NC	2100	2118	Heat Recovery Ventilators (HP heating early replacement)	Multi-Family	2014	2053	2.21	0.26	0.61	2.02	48%	0.07	0.24	48%	0.33	0.20	3	2	0.20			0.00	0.00
NC	2100	2123	WINDOWS - Double-Glazed Clear to Energy Star (HP heating	Multi-Family	2014	2053	2.16	0.26	0.05	2.07	49%	0.01	0.25	49%	0.46	0.21	4	2	0.15			0.00	0.00
NC	2100	2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Multi-Family	2014	2053	2.13	0.25	0.03	2.10	50%	0.00	0.25	50%	0.70	0.22	6	2	0.10			0.00	0.00
NC	2100	2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Multi-Family	2014	2053	2.12	0.25	0.00	2.11	50%	0.00	0.25	50%	1.56	0.22	13	2	0.04			0.00	0.00
NC	2100	2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replaceme	Multi-Family	2014	2053	2.02	0.24	0.10	2.20	52%	0.01	0.26	52%	0.98	0.25	8	2	0.07			0.00	0.00
NC	2100	2103	Ground Source Heat Pump with Desuperheater (HP heating ea	Multi-Family	2014	2053	1.84	0.22	0.19	2.39	57%	0.02	0.28	57%	2.07	0.40	17	3	0.03			0.00	0.00
NC	2100	2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Multi-Family	2014	2053	1.83	0.22	0.00	2.39	57%	0.00	0.28	57%	1.44	0.40	12	3	0.05			0.00	0.00
NC	2100	2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Multi-Family	2014	2053	1.83	0.22	0.00	2.40	57%	0.00	0.28	57%	1.81	0.40	15	3	0.04			0.00	0.00
NC	2100	2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacem	Multi-Family	2014	2053	1.82	0.22	0.02	2.41	57%	0.00	0.29	57%	3.54	0.42	30	4	0.02			0.00	0.00
NC	2100	2105	Heat Pump Filter Replacement (heating)	Multi-Family	2014	2053	1.81	0.22	0.01	2.42	57%	0.00	0.29	57%	2.68	0.42	23	4	0.02			0.00	0.00
NC	2100	2104	Heat pump tune up (heating)	Multi-Family	2014	2053	1.81	0.21	0.01	2.42	57%	0.00	0.29	57%	4.32	0.43	36	4	0.01			0.00	0.00
NC	2200	2200	Base Resistance Space Heating (Primary)	Multi-Family	2014	2053	17.86	2.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.86	2.12	0.00	0.00
NC	2200	2201	Air Source Heat Pump (resistance heating)	Multi-Family	2014	2053	14.10	1.67	3.77	3.77	21%	0.45	0.45	21%	0.01	0.01	0	0	4.87			3.77	0.45
NC	2200	2216	Self Install Weatherization	Multi-Family	2014	2053	13.87	1.65	0.22	3.99	22%	0.03	0.47	22%	0.02	0.01	0	0	2.42			0.22	0.03
NC	2200	2217	Door Weatherization (resistance heating)	Multi-Family	2014	2053	13.24	1.57	0.63	4.62	26%	0.08	0.55	26%	0.03	0.02	0	0	1.53			0.63	0.08
NC	2200	2214	Programmable Thermostat (resistance heating)	Multi-Family	2014	2053	12.98	1.54	0.26	4.89	27%	0.03	0.58	27%	0.07	0.02	1	0	0.82			0.00	0.00
NC	2200	2209	Crawlspace insulation (resistance heating)	Multi-Family	2014	2053	12.91	1.53	0.07	4.95	28%	0.01	0.59	28%	0.10	0.02	1	0	0.70			0.00	0.00
NC	2200	2203	Ceiling R-0 to R-38 Insulation (resistance heating)	Multi-Family	2014	2053	11.73	1.39	1.18	6.13	34%	0.14	0.73	34%	0.17	0.05	1	0	0.40			0.00	0.00
NC	2200	2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance he	Multi-Family	2014	2053	11.20	1.33	0.53	6.66	37%	0.06	0.79	37%	0.16	0.06	1	0	0.35			0.00	0.00
NC	2200	2204	Ceiling R-0 to R-49 Insulation (resistance heating)	Multi-Family	2014	2053	11.17	1.33	0.03	6.69	37%	0.00	0.79	37%	1.20	0.06	10	1	0.06			0.00	0.00
NC	2200	2210	Basement insulation R-13 (resistance heating)	Multi-Family	2014	2053	10.93	1.30	0.25	6.94	39%	0.03	0.82	39%	0.27	0.07	2	1	0.26			0.00	0.00

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY

Vintage Sgmt	Base Number	Existing Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	2200	2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance h	Multi-Family	2014	2053	10.63	1.26	0.30	7.24	41%	0.04	0.86	41%	0.29	0.08	2	1	0.24			0.00	0.00
NC	2200	2213	Heat Recovery Ventilators (resistance heating)	Multi-Family	2014	2053	8.32	0.99	2.31	9.54	53%	0.27	1.13	53%	0.31	0.13	3	1	0.22			0.00	0.00
NC	2200	2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	Multi-Family	2014	2053	8.18	0.97	0.14	9.68	54%	0.02	1.15	54%	0.58	0.14	5	1	0.12			0.00	0.00
NC	2200	2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Multi-Family	2014	2053	8.03	0.95	0.16	9.84	55%	0.02	1.17	55%	0.62	0.15	5	1	0.11			0.00	0.00
NC	2200	2206	Ceiling R-11 to R-49 Insulation (resistance heating)	Multi-Family	2014	2053	8.02	0.95	0.01	9.85	55%	0.00	1.17	55%	1.68	0.15	14	1	0.04			0.00	0.00
NC	2200	2202	Ground Source Heat Pump with Desuperheater (resistance hea	Multi-Family	2014	2053	8.03	0.95	-0.01	9.84	55%	0.00	1.17	55%	-165.85	0.30	-1,398	2	0.00			0.00	0.00
NC	2200	2207	Ceiling R-19 to R-38 Insulation (resistance heating)	Multi-Family	2014	2053	8.01	0.95	0.02	9.85	55%	0.00	1.17	55%	1.00	0.30	8	3	0.07			0.00	0.00
NC	2200	2208	Ceiling R-19 to R-49 Insulation (resistance heating)	Multi-Family	2014	2053	8.01	0.95	0.00	9.86	55%	0.00	1.17	55%	1.68	0.30	14	3	0.04			0.00	0.00
NC	2200	2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Multi-Family	2014	2053	7.92	0.94	0.09	9.95	56%	0.01	1.18	56%	2.03	0.31	17	3	0.03			0.00	0.00
NC	3030	3030	Base Halogen Lighting - 0.5 hrs/day 2020	Multi-Family	2020	2053	0.70	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.70	0.08	0.00	0.00
NC	3030	3032	LEDs (base Halogen 0.5 hrs/day) 2020	Multi-Family	2020	2053	0.18	0.02	0.52	0.52	74%	0.06	0.06	74%	0.03	0.03	0	0	2.36			0.52	0.06
NC	3130	3130	Base Halogen Lighting - 2.5 hrs/day 2020	Multi-Family	2020	2053	2.90	0.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.90	0.32	0.00	0.00
NC	3130	3132	LEDs (base Halogen 2.5 hrs/day) 2020	Multi-Family	2020	2053	0.76	0.09	2.14	2.14	74%	0.24	0.24	74%	0.01	0.01	0	0	11.68			2.14	0.24
NC	3230	3230	Base Halogen Lighting - 6 hrs/day 2020	Multi-Family	2020	2053	1.81	0.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.81	0.20	0.00	0.00
NC	3230	3232	LEDs (base Halogen 6 hrs/day) 2020	Multi-Family	2020	2053	0.58	0.06	1.23	1.23	68%	0.14	0.14	68%	0.00	0.00	0	0	15.98			1.23	0.14
NC	3330	3330	Base CFL Lighting - 0.5 hrs/day 2020	Multi-Family	2020	2053	0.19	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.02	0.00	0.00
NC	3330	3331	LEDs (base CFL 0.5 hrs/day) 2020	Multi-Family	2020	2053	0.14	0.02	0.05	0.05	27%	0.01	0.01	27%	0.21	0.21	2	2	0.37			0.00	0.00
NC	3430	3430	Base CFL Lighting - 2.5 hrs/day 2020	Multi-Family	2020	2053	0.79	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.79	0.09	0.00	0.00
NC	3430	3431	LEDs (base CFL 2.5 hrs/day) 2020	Multi-Family	2020	2053	0.58	0.06	0.21	0.21	27%	0.02	0.02	27%	0.04	0.04	0	0	1.84			0.21	0.02
NC	3530	3530	Base CFL Lighting - 6 hrs/day 2020	Multi-Family	2020	2053	0.53	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.53	0.06	0.00	0.00
NC	3530	3531	LEDs (base CFL 6 hrs/day) 2020	Multi-Family	2020	2053	0.39	0.04	0.14	0.14	27%	0.02	0.02	27%	0.02	0.02	0	0	2.80			0.14	0.02
NC	3630	3630	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2020	Multi-Family	2020	2053	0.92	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.92	0.10	0.00	0.00
NC	3630	3632	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Multi-Family	2020	2053	0.36	0.04	0.56	0.56	60%	0.06	0.06	60%	0.01	0.01	0	0	6.50			0.56	0.06
NC	3730	3730	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2020	Multi-Family	2020	2053	3.70	0.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.70	0.41	0.00	0.00
NC	3730	3732	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Multi-Family	2020	2053	1.46	0.16	2.24	2.24	60%	0.25	0.25	60%	0.00	0.00	0	0	32.39			2.24	0.25
NC	3830	3830	Base Halogen (Specialty) Lighting - 6 hrs/day 2020	Multi-Family	2020	2053	2.54	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.54	0.28	0.00	0.00
NC	3830	3832	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Multi-Family	2020	2053	1.00	0.11	1.54	1.54	60%	0.17	0.17	60%	0.00	0.00	0	0	48.26			1.54	0.17
NC	3900	3900	Base Fluorescent Fixture 1.8 hrs/day	Multi-Family	2014	2053	2.88	0.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.88	0.32	0.00	0.00
NC	3900	3902	ROB 2L4'T8, 1EB	Multi-Family	2014	2053	2.11	0.24	0.78	0.78	27%	0.09	0.09	27%	0.04	0.04	0	0	2.17			0.78	0.09
NC	4000	4000	Base Refrigerator	Multi-Family	2014	2053	10.53	1.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.53	1.71	0.00	0.00
NC	4000	4001	Refrigerator (Energy Star)	Multi-Family	2014	2053	8.36	1.36	2.17	2.17	21%	0.35	0.35	21%	0.05	0.05	0	0	1.41			2.17	0.35
NC	4100	4100	Base Refrigerator--Early Replacement	Multi-Family	2014	2053	1.43	0.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.43	0.23	0.00	0.00
NC	4100	4101	Refrigerator - Early Replacement (Energy Star)	Multi-Family	2014	2053	0.67	0.11	0.76	0.76	53%	0.12	0.12	53%	0.13	0.13	1	1	0.40			0.00	0.00
NC	4200	4200	Base 2nd Refrigerator - Recycling	Multi-Family	2014	2053	0.17	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.17	0.03	0.00	0.00
NC	4200	4201	2nd Refrigerator Recycling	Multi-Family	2014	2053	0.04	0.01	0.12	0.12	74%	0.02	0.02	74%	0.05	0.05	0	0	1.04			0.12	0.02
NC	4500	4500	Base Freezer	Multi-Family	2014	2053	0.98	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.98	0.16	0.00	0.00
NC	4500	4501	Freezer (Energy Star)	Multi-Family	2014	2053	0.89	0.14	0.09	0.09	9%	0.01	0.01	9%	0.06	0.06	0	0	1.04			0.09	0.01
NC	4600	4600	Base Early Replacement Freezer	Multi-Family	2014	2053	0.24	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.24	0.04	0.00	0.00
NC	4600	4601	Freezer - Early Replacement (Energy Star)	Multi-Family	2014	2053	0.11	0.02	0.14	0.14	56%	0.02	0.02	56%	0.04	0.04	0	0	1.23			0.14	0.02
NC	4700	4700	Base 2nd Freezer Recycling	Multi-Family	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5000	5000	Base Water Heating (40 gal, EF=0.88)	Multi-Family	2014	2053	37.17	4.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	37.17	4.58	0.00	0.00
NC	5000	5006	Pipe Wrap	Multi-Family	2014	2053	36.03	4.44	1.14	1.14	3%	0.14	0.14	3%	0.02	0.02	0	0	2.89			1.14	0.14
NC	5000	5015	Low Flow Showerhead 1.5 Gal/Min	Multi-Family	2014	2053	34.84	4.29	1.19	2.33	6%	0.15	0.29	6%	0.02	0.02	0	0	2.66			1.19	0.15
NC	5000	5007	Hot water turndown 5 degrees	Multi-Family	2014	2053	34.65	4.27	0.19	2.52	7%	0.02	0.31	7%	0.02	0.02	0	0	2.04			0.19	0.02
NC	5000	5008	Hot water turndown 10 degrees	Multi-Family	2014	2053	34.39	4.24	0.26	2.78	7%	0.03	0.34	7%	0.02	0.02	0	0	2.03			0.26	0.03
NC	5000	5009	Hot water turndown 15 degrees	Multi-Family	2014	2053	34.33	4.23	0.06	2.84	8%	0.01	0.35	8%	0.02	0.02	0	0	2.02			0.06	0.01
NC	5000	5010	Hot water turndown 20 degrees	Multi-Family	2014	2053	34.30	4.23	0.02	2.86	8%	0.00	0.35	8%	0.02	0.02	0	0	2.01			0.02	0.00
NC	5000	5014	Faucent Aerators	Multi-Family	2014	2053	33.59	4.14	0.72	3.58	10%	0.09	0.44	10%	0.04	0.02	0	0	1.50			0.72	0.09
NC	5000	5011	Drain Water Heat Recovery (GFX)	Multi-Family	2014	2053	32.33	3.98	1.26	4.84	13%	0.16	0.60	13%	0.07	0.04	1	0	1.02			1.26	0.16
NC	5000	5005	DHW Tank Wrap	Multi-Family	2014	2053	30.51	3.76	1.81	6.66	18%	0.22	0.82	18%	0.06	0.04	0	0	0.82			0.00	0.00
NC	5000	5003	Heat Pump Water Heater - Energy Star	Multi-Family	2014	2053	26.31	3.24	4.20	10.86	29%	0.52	1.34	29%	0.08	0.06	1	0	0.78			0.00	0.00
NC	5000	5004	Solar Domestic Water Heating	Multi-Family	2014	2053	22.20	2.73	4.11	14.97	40%	0.51	1.84	40%	0.20	0.10	2	1	0.33			0.00	0.00
NC	5000	5012	Energy Star CW CEE Tier 2 (MEF=2.0)	Multi-Family	2014	2053	22.11	2.72	0.09	15.06	41%	0.01	1.85	41%	2.28	0.11	19	1	0.03			0.00	0.00
NC	5000	5013	Energy Star Dishwasher (EF=0.72)	Multi-Family	2014	2053	22.06	2.72	0.05	15.11	41%	0.01	1.86	41%	2.75	0.12	22	1	0.02			0.00	0.00
NC	5100	5100	Base Water Heating Early Replacement to Heat Pump Water H	Multi-Family	2014	2053	6.56	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.56	0.81	0.00	0.00
NC	5100	5101	Heat Pump Water Heater - Energy Star - Early Replacement	Multi-Family	2014	2053	5.66	0.70	0.90	0.90	14%	0.11	0.11	14%	0.08	0.08	1	1	0.77			0.00	0.00
NC	5500	5500	Base Clotheswasher (MEF=1.26)	Multi-Family	2014	2053	0.67	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.67	0.12	0.00	0.00
NC	5500	5501	Energy Star CW CEE Tier 2 (MEF=2.0)	Multi-Family	2014	2053	0.48	0.09	0.19	0.19	28%	0.03	0.03	28%	1.21	1.21	7	7	0.05			0.00	0.00
NC	5600	5600	Base Clothes Dryer (EF=3.01)	Multi-Family	2014	2053	12.52	2.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.52	2.12	0.00	0.00
NC	5600	5602	High Efficiency CD (EF=3.01 w/moisture sensor)	Multi-Family	2014	2053	10.22	1.73	2.30	2.30	18%	0.39	0.39	18%	0.03	0.03	0	0	1.99			2.30	0.39
NC	5600	5601	Heat Pump Dryer	Multi-Family	2014	2053	5.11	0.86	5.11	7.41	59%	0.86	1.25	59%	0.51	0.36	3	2	0.12			0.00	0.00
NC	5700	5700	Base Dishwasher (EF=0.65)	Multi-Family	2014	2053	2.92	0.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.92	0.48	0.00	0.00
NC	5700	5701	Energy Star Dishwasher (EF=0.72)	Multi-Family	2014	2053	2.82	0.46	0.10	0.10	4%	0.02	0.02	4%	1.48	1.48	9	9	0.04			0.00	0.00
NC	6000	6000	Base Single Speed Pool Pump (RET)	Multi-Family	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7000	7000	Base Plasma TV	Multi-Family	2014	2053	0.70	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.70	0.10	0.00	0.00
NC	7000	7001	Energy Star Plasma TV	Multi-Family	2014	2053	0.64	0.09	0.06	0.06	9%	0.01	0.01	9%	0.01	0.01	0	0	5.29			0.06	0.01
NC	7000	7002	Plug Load Controls - Smart Power Strip (base plasma TV)	Multi-Family	2014	2053	0.63	0.09	0.01	0.07	10%	0.00	0.01	10%	2.90	0.36	20	2	0.02			0.00	0.00
NC	7100	7100	Base LCD TV	Multi-Family	2014	2053	2.10	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.10	0.30	0.00	0.00
NC	7100	7101	Energy Star LCD TV	Multi-Family	2014	2053	1.34	0.19	0.77	0.77	36%	0.11	0.11	36%	0.00	0.00	0	0	11.35			0.77	0.11
NC	7100	7102	Plug Load Controls - Smart Power Strip (base LCD TV)	Multi-Family	2014	2053	1.29	0.19	0.05	0.82	39%	0.01	0.12	39%	3.08	0.20	21	1	0.02			0.00	0.00
NC	7200	7200	Base CRT TV	Multi-Family	2014	2053	0.63	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.63	0.09	0.00	0.00
NC	7200	7202	Plug Load Controls - Smart Power Strip (base CRT TV)	Multi-Family	2014	2053	0.57	0.08	0.06	0.06	10%	0.01	0.01	10%	0.85	0.85	6	6	0.06			0.00	0.00
NC	7300	7300	Base Set-Top Box	Multi-Family	2014	2053	2.10	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.10	0.30	0.00	0.00
NC	7400	7400	Base DVD Player	Multi-Family	2014	2053	0.35	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.35	0.05	0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage: Existing

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	7400	7401	Energy Star DVD Player	Multi-Family	2014	2053	0.17	0.02	0.19	0.19	53%	0.03	0.03	53%	0.02	0.02	0	0	2.90			0.19	0.03
NC	7400	7402	Plug Load Controls - Smart Power Strip (base DVD player)	Multi-Family	2014	2053	0.01	0.00	0.15	0.34	96%	0.02	0.05	96%	0.91	0.42	6	3	0.06			0.00	0.00
NC	7500	7500	Base Desktop PC	Multi-Family	2014	2053	3.42	0.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.42	0.45	0.00	0.00
NC	7500	7501	Energy Star Desktop PC	Multi-Family	2014	2053	2.98	0.39	0.44	0.44	13%	0.06	0.06	13%	0.00	0.00	0	0	13.50			0.44	0.06
NC	7500	7502	Plug Load Controls - Smart Power Strip (base Desktop PC)	Multi-Family	2014	2053	1.56	0.21	1.42	1.86	54%	0.19	0.25	54%	0.05	0.04	0	0	1.05			1.42	0.19
NC	7600	7600	Base Laptop PC	Multi-Family	2014	2053	0.69	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.69	0.09	0.00	0.00
NC	7600	7601	Energy Star Laptop PC	Multi-Family	2014	2053	0.58	0.08	0.12	0.12	17%	0.02	0.02	17%	0.03	0.03	0	0	2.03			0.12	0.02
NC	8000	8000	Base Cooking	Multi-Family	2014	2053	9.65	3.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.65	3.08	0.00	0.00
NC	9000	9000	Base Miscellaneous	Multi-Family	2014	2053	15.81	2.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.81	2.08	0.00	0.00
NC	9900	9900	Base House Use	Multi-Family	2014	2053	205.57	50.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	205.57	50.90	0.00	0.00
NC	9900	9901	Indirect Feedback	Multi-Family	2014	2053	202.51	50.15	3.05	3.05	1%	0.76	0.76	1%	0.03	0.03	0	0	1.59			3.05	0.76
NC	9900	9902	Direct Feedback	Multi-Family	2014	2053	193.36	47.88	9.16	12.21	6%	2.27	3.02	6%	0.09	0.07	0	0	0.63			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage New Construction

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	100	100	Base Code Home - IECC 2006	Single Family	2013	2054	242.08	59.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	242.1	59.94	0.00	0.00
VA	100	101	Energy Star Home	Single Family	2013	2054	188.72	55.15	53.35	53.35	22%	4.80	4.80	8%	0.06	0.06	1	1	1.00			53.35	4.80
VA	100	100	Base Code Home - IECC 2006	Multi-Family	2013	2054	39.65	9.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	39.6	9.82	0.00	0.00
VA	100	101	Energy Star Home	Multi-Family	2013	2054	30.91	9.03	8.74	8.74	22%	0.79	0.79	8%	0.06	0.06	1	1	1.17			8.74	0.79
NC	100	100	Base Code Home - IECC 2006	Single Family	2013	2054	13.31	3.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.3	3.30	0.00	0.00
NC	100	101	Energy Star Home	Single Family	2013	2054	10.38	3.03	2.93	2.93	22%	0.26	0.26	8%	0.06	0.06	1	1	1.14			2.93	0.26
NC	100	100	Base Code Home - IECC 2006	Multi-Family	2013	2054	1.98	0.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.0	0.49	0.00	0.00
NC	100	101	Energy Star Home	Multi-Family	2013	2054	1.55	0.45	0.44	0.44	22%	0.04	0.04	8%	0.05	0.05	1	1	1.21			0.44	0.04

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Office	2020	2054	1,085.70	202.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,085.70	202.10	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Office	2020	2054	1,077.27	201.32	8.43	8.43	1%	0.78	0.78	0%	0.01	0.01	0	0	6.08			8.43	0.78
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	2020	2054	996.47	189.29	80.81	89.24	8%	12.03	12.82	6%	0.01	0.01	0	0	5.43			80.81	12.03
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Office	2020	2054	894.97	170.39	101.49	190.73	18%	18.89	31.71	16%	0.02	0.02	0	0	3.07			101.49	18.89
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	2020	2054	781.10	149.20	113.87	304.60	28%	21.20	52.91	26%	0.04	0.02	0	0	1.47			113.87	21.20
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Office	2020	2054	723.19	146.50	57.91	362.51	33%	2.70	55.60	28%	0.05	0.03	1	0	0.94			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Office	2020	2054	606.67	124.81	116.53	479.03	44%	21.69	77.29	38%	0.24	0.08	1	0	0.27			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Office	2020	2054	554.88	115.17	51.79	530.82	49%	9.64	86.93	43%	0.20	0.09	1	1	0.33			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Office	2020	2054	18.36	3.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.36	3.42	0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Office	2020	2054	18.21	3.40	0.15	0.15	1%	0.01	0.01	0%	0.01	0.01	0	0	3.53			0.15	0.01
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Office	2020	2054	16.84	3.20	1.37	1.51	8%	0.20	0.22	6%	0.02	0.02	0	0	3.16			1.37	0.20
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Office	2020	2054	15.09	2.87	1.75	3.26	18%	0.33	0.54	16%	0.02	0.02	0	0	2.42			1.75	0.33
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Office	2020	2054	13.17	2.52	1.92	5.18	28%	0.36	0.90	26%	0.05	0.03	0	0	1.16			1.92	0.36
VA	1130	1134	ROB 2L4' LED Tube, 2020	Office	2020	2054	12.54	2.40	0.64	5.82	32%	0.12	1.02	30%	0.18	0.05	1	0	0.36			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Office	2020	2054	11.61	2.35	0.93	6.75	37%	0.04	1.06	31%	0.10	0.06	2	0	0.50			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Office	2020	2054	10.62	2.17	0.99	7.74	42%	0.18	1.25	36%	0.25	0.08	1	0	0.27			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Office	2014	2054	39.84	7.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	39.84	7.42	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Office	2014	2054	37.93	7.24	1.90	1.90	5%	0.18	0.18	2%	0.00	0.00	0	0	17.09			1.90	0.18
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Office	2014	2054	35.09	6.81	2.85	4.75	12%	0.42	0.60	8%	0.03	0.02	0	0	2.44			2.85	0.42
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Office	2014	2054	31.44	6.14	3.65	8.40	21%	0.68	1.28	17%	0.08	0.04	0	0	0.73			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	2014	2054	27.24	5.94	4.19	12.59	32%	0.20	1.48	20%	0.09	0.06	2	1	0.52			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Office	2014	2054	23.78	5.30	3.47	16.06	40%	0.65	2.12	29%	0.19	0.09	1	1	0.30			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Office	2020	2054	368.56	68.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	368.56	68.61	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Office	2020	2054	88.80	16.53	279.76	279.76	76%	52.08	52.08	76%	0.00	0.00	0	0	15.29			279.76	52.08
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Office	2020	2054	132.68	24.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	132.68	24.70	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Office	2020	2054	34.53	6.43	98.15	98.15	74%	18.27	18.27	74%	0.00	0.00	0	0	12.82			98.15	18.27
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Office	2020	2054	97.67	18.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	97.67	18.18	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Office	2020	2054	33.85	6.30	63.82	63.82	65%	11.88	11.88	65%	0.01	0.01	0	0	9.23			63.82	11.88
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Office	2020	2054	24.08	4.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.08	4.48	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Office	2020	2054	17.41	3.24	6.67	6.67	28%	1.24	1.24	28%	0.05	0.05	0	0	1.11			6.67	1.24
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Office	2020	2054	30.77	5.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	30.77	5.73	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Office	2020	2054	22.77	4.24	8.00	8.00	26%	1.49	1.49	26%	0.04	0.04	0	0	1.47			8.00	1.49
VA	1800	1800	BaseMetal Halide, 465W	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1850	1850	Base CFL Exit Sign	Office	2014	2054	12.87	2.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.87	2.40	0.00	0.00
VA	1850	1851	LED Exit Sign	Office	2014	2054	7.23	1.35	5.64	5.64	44%	1.05	1.05	44%	0.02	0.02	0	0	2.36			5.64	1.05
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Office	2014	2054	88.06	1.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	88.06	1.21	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Office	2014	2054	77.56	0.73	10.50	10.50	12%	0.48	0.48	39%	0.04	0.04	1	1	1.59			10.50	0.48
VA	1900	1902	LED Outdoor Area Lighting	Office	2014	2054	37.32	0.18	40.24	50.74	58%	0.55	1.03	85%	0.08	0.07	6	4	0.67			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Office	2014	2054	26.35	0.04	10.97	61.71	70%	0.14	1.17	96%	0.54	0.16	44	8	0.10			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Office	2014	2054	136.14	95.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	136.14	95.24	0.00	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	Office	2014	2054	135.53	94.82	0.61	0.61	0%	0.42	0.42	0%	0.01	0.01	0	0	18.40			0.61	0.42
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	2014	2054	123.96	86.72	11.57	12.18	9%	8.09	8.52	9%	0.03	0.03	0	0	4.19			11.57	8.09
VA	2000	2005	Chiller Tune Up/Diagnostics	Office	2014	2054	123.59	86.60	0.37	12.55	9%	0.13	8.65	9%	0.02	0.03	0	0	3.34			0.37	0.13
VA	2000	2013	High Efficiency Chiller Motors	Office	2014	2054	123.37	86.44	0.22	12.77	9%	0.16	8.80	9%	0.04	0.03	0	0	2.73			0.22	0.16
VA	2000	2006	VSD for Chiller Pumps and Towers	Office	2014	2054	122.56	86.16	0.81	13.58	10%	0.28	9.09	10%	0.03	0.03	0	0	2.45			0.81	0.28
VA	2000	2003	EMS - Chiller	Office	2014	2054	113.99	84.66	8.56	22.14	16%	1.50	10.58	11%	0.05	0.03	0	0	1.37			8.56	1.50
VA	2000	2008	New Economizer - Chiller	Office	2014	2054	106.64	83.37	7.36	29.50	22%	1.29	11.87	12%	0.05	0.04	0	0	1.04			7.36	1.29
VA	2000	2002	Window Film (Standard) - Chiller	Office	2014	2054	106.60	83.35	0.03	29.53	22%	0.02	11.89	12%	0.09	0.04	0	0	0.98			0.00	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	Office	2014	2054	86.35	69.18	20.25	49.79	37%	14.17	26.06	27%	0.15	0.08	0	0	0.73			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	Office	2014	2054	86.08	68.99	0.27	50.05	37%	0.19	26.25	28%	0.22	0.09	0	0	0.39			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Office	2014	2054	85.82	68.81	0.27	50.32	37%	0.19	26.44	28%	1.87	0.09	3	0	0.05			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Office	2014	2054	617.70	432.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	617.70	432.16	0.00	0.00
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Office	2014	2054	475.63	332.76	142.07	142.07	23%	99.40	99.40	23%	0.02	0.02	0	0	4.41			142.07	99.40
VA	2100	2111	Economizer Repair - DX	Office	2014	2054	454.22	310.29	21.40	163.48	26%	22.47	121.87	28%	0.05	0.03	0	0	1.61			21.40	22.47
VA	2100	2108	Optimize Controls - DX	Office	2014	2054	446.47	308.93	7.76	171.23	28%	1.36	123.23	29%	0.06	0.03	0	0	0.90			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	Office	2014	2054	437.24	302.47	9.23	180.46	29%	6.46	129.68	30%	0.10	0.03	0	0	0.88			0.00	0.00
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Office	2014	2054	436.45	302.20	0.79	181.25	29%	0.28	129.96	30%	0.09	0.03	0	0	0.79			0.00	0.00
VA	2100	2109	Economizer - DX	Office	2014	2054	388.46	293.81	47.98	229.24	37%	8.39	138.35	32%	0.07	0.04	0	0	0.77			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Office	2014	2054	364.84	277.28	23.62	252.86	41%	16.52	154.87	36%	0.19	0.05	0	0	0.59			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Office	2014	2054	357.09	275.93	7.76	260.61	42%	1.36	156.23	36%	0.10	0.06	1	0	0.53			0.00	0.00
VA	2100	2107	Cool Roof - DX	Office	2014	2054	354.04	273.80	3.05	263.66	43%	2.13	158.36	37%	0.25	0.06	0	0	0.35			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Office	2014	2054	353.96	273.78	0.08	263.74	43%	0.01	158.38	37%	0.20	0.06	1	0	0.29			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Office	2014	2054	351.66	272.18	2.29	266.04	43%	1.60	159.98	37%	2.07	0.08	3	0	0.04			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Office	2014	2054	421.72	295.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	421.72	295.04	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014	2054	369.56	258.55	52.16	52.16	12%	36.49	36.49	12%	0.02	0.02	0	0	6.17			52.16	36.49
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Office	2014	2054	67.57	47.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	67.57	47.28	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Office	2014	2054	334.29	100.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	334.29	100.92	0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	Office	2014	2054	268.04	95.92	66.25	66.25	20%	5.00	5.00	5%	0.01	0.01	0	0	4.29			66.25	5.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Office	2014	2054	263.67	94.60	4.36	70.62	21%	1.32	6.32	6%	0.02	0.01	0	0	3.42			4.36	1.32
VA	3000	3003	Demand Controlled Ventilation	Office	2014	2054	249.34	86.38	14.34	84.95	25%	8.22	14.54	14%	0.60	0.11	1	1	0.16			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Office	2014	2054	57.92	17.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	57.92	17.49	0.00	0.00
VA	3100	3102	Variable Speed Drive Control, 15 HP	Office	2014	2054	46.44	16.62	11.48	11.48	20%	0.87	0.87	5%	0.00	0.00	0	0	15.54			11.48	0.87
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Office	2014	2054	46.16	16.53	0.28	11.76	20%	0.08	0.95	5%	0.01	0.00	0	0	7.53			0.28	0.08
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Office	2014	2054	43.11	15.70	3.06	14.81	26%	0.83	1.78	10%	0.02	0.01	0	0	3.33			3.06	0.83

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	3100	3103	Air Handler Optimization, 15 HP	Office	2014	2054	38.98	15.39	4.12	18.94	33%	0.31	2.09	12%	0.02	0.01	0	0	2.51			4.12	0.31
VA	3100	3105	Energy Recovery Ventilation (ERV)	Office	2014	2054	38.07	14.87	0.91	19.85	34%	0.52	2.61	15%	0.23	0.02	0	0	0.46			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	Office	2014	2054	36.00	13.69	2.07	21.92	38%	1.19	3.80	22%	0.72	0.09	1	0	0.14			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Office	2014	2054	36.51	11.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	36.51	11.02	0.00	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	Office	2014	2054	33.02	10.76	3.49	3.49	10%	0.26	0.26	2%	0.01	0.01	0	0	3.38			3.49	0.26
VA	3200	3202	Variable Speed Drive Control, 40 HP	Office	2014	2054	26.48	10.27	6.54	10.04	27%	0.49	0.76	7%	0.02	0.02	0	0	2.79			6.54	0.49
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Office	2014	2054	26.36	10.23	0.12	10.15	28%	0.04	0.79	7%	0.10	0.02	0	0	0.85			0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	Office	2014	2054	24.93	9.41	1.43	11.59	32%	0.82	1.61	15%	0.65	0.10	1	1	0.15			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Office	2014	2054	98.08	13.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	98.08	13.75	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Office	2014	2054	97.41	13.66	0.66	0.66	1%	0.09	0.09	1%	0.00	0.00	0	0	50.26			0.66	0.09
VA	4100	4109	Energy-Star Freezer, glass door	Office	2014	2054	97.25	13.64	0.16	0.82	1%	0.02	0.12	1%	0.00	0.00	0	0	25.01			0.16	0.02
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Office	2014	2054	95.47	13.39	1.78	2.61	3%	0.25	0.37	3%	0.00	0.00	0	0	23.99			1.78	0.25
VA	4100	4107	Energy-Star Freezer, solid door	Office	2014	2054	95.40	13.38	0.07	2.67	3%	0.01	0.37	3%	0.01	0.00	0	0	10.01			0.07	0.01
VA	4100	4108	Energy-Star Refrigerator, glass door	Office	2014	2054	94.86	13.30	0.55	3.22	3%	0.08	0.45	3%	0.01	0.00	0	0	8.42			0.55	0.08
VA	4100	4106	Energy-Star Refrigerator, solid door	Office	2014	2054	94.61	13.27	0.24	3.46	4%	0.03	0.49	4%	0.01	0.00	0	0	8.03			0.24	0.03
VA	4100	4110	Energy Star Ice Machines	Office	2014	2054	94.28	13.22	0.34	3.80	4%	0.05	0.53	4%	0.02	0.00	0	0	2.97			0.34	0.05
VA	4100	4112	Reach-in unit occupancy sensors	Office	2014	2054	94.27	13.22	0.01	3.81	4%	0.00	0.53	4%	0.27	0.01	2	0	0.21			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Office	2014	2054	94.25	13.22	0.02	3.83	4%	0.00	0.54	4%	0.31	0.01	2	0	0.17			0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Office	2014	2054	94.19	13.21	0.06	3.89	4%	0.01	0.55	4%	6.64	0.11	47	1	0.01			0.00	0.00
VA	5000	5000	Base Desktop PC	Office	2014	2054	40.10	5.56	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	40.10	5.56	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Office	2014	2054	21.62	4.28	18.48	18.48	46%	1.28	1.28	23%	0.01	0.01	0	0	4.47			18.48	1.28
VA	5000	5002	Energy Star or Better PC	Office	2014	2054	16.81	3.61	4.81	23.29	58%	0.67	1.95	35%	0.02	0.01	0	0	2.22			4.81	0.67
VA	5100	5100	Base Laptop PC	Office	2014	2054	3.65	0.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.65	0.51	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Office	2014	2054	2.96	0.41	0.69	0.69	19%	0.10	0.10	19%	0.01	0.01	0	0	6.06			0.69	0.10
VA	5100	5101	Laptop Network Power Management Enabling	Office	2014	2054	2.90	0.40	0.06	0.75	21%	0.01	0.10	21%	0.99	0.09	7	1	0.05			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Office	2014	2054	8.50	1.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.50	1.18	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Office	2014	2054	4.89	0.68	3.62	3.62	43%	0.50	0.50	43%	0.00	0.00	0	0	63.11			3.62	0.50
VA	5200	5202	Monitor Power Management Enabling - CRT	Office	2014	2054	4.23	0.63	0.65	4.27	50%	0.05	0.55	46%	0.01	0.00	0	0	5.32			0.65	0.05
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Office	2014	2054	3.90	0.59	0.33	4.60	54%	0.05	0.59	50%	0.11	0.01	1	0	0.45			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Office	2014	2054	7.61	1.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.61	1.06	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Office	2014	2054	6.61	0.92	0.99	0.99	13%	0.14	0.14	13%	0.01	0.01	0	0	7.50			0.99	0.14
VA	5300	5302	Monitor Power Management Enabling - LCD	Office	2014	2054	6.12	0.88	0.49	1.49	20%	0.03	0.17	16%	0.06	0.03	1	0	0.72			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Office	2014	2054	5.64	0.87	0.48	1.97	26%	0.02	0.19	18%	0.18	0.06	5	1	0.24			0.00	0.00
VA	5400	5400	Base Copier	Office	2014	2054	13.93	1.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.93	1.93	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Office	2014	2054	12.54	1.74	1.38	1.38	10%	0.19	0.19	10%	0.00	0.00	0	0	36.97			1.38	0.19
VA	5400	5402	Copier Power Management Enabling	Office	2014	2054	12.00	1.70	0.54	1.93	14%	0.04	0.23	12%	0.07	0.02	1	0	0.67			0.00	0.00
VA	5500	5500	Base Multifunction	Office	2014	2054	2.37	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.37	0.33	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Office	2014	2054	1.77	0.25	0.59	0.59	25%	0.08	0.08	25%	0.01	0.01	0	0	10.13			0.59	0.08
VA	5500	5501	Multifunction Power Management Enabling	Office	2014	2054	1.45	0.22	0.32	0.92	39%	0.02	0.10	32%	0.21	0.08	3	1	0.23			0.00	0.00
VA	5600	5600	Base Printer	Office	2014	2054	13.79	1.91	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.79	1.91	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Office	2014	2054	9.00	1.25	4.80	4.80	35%	0.67	0.67	35%	0.00	0.00	0	0	46.55			4.80	0.67
VA	5600	5601	Printer Power Management Enabling	Office	2014	2054	7.36	1.13	1.64	6.44	47%	0.11	0.78	41%	0.04	0.01	1	0	1.05			1.64	0.11
VA	5700	5700	Base Data Center/Server Room	Office	2014	2054	72.12	10.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	72.12	10.01	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Office	2014	2054	64.91	9.01	7.21	7.21	10%	1.00	1.00	10%	0.00	0.00	0	0	128.71			7.21	1.00
VA	5700	5702	Data Center Best Practices	Office	2014	2054	56.65	7.86	8.26	15.47	21%	1.15	2.15	21%	0.00	0.00	0	0	52.40			8.26	1.15
VA	5700	5703	Data Center State of the Art practices	Office	2014	2054	53.48	7.42	3.17	18.64	26%	0.44	2.59	26%	0.00	0.00	0	0	27.18			3.17	0.44
VA	6000	6000	Base Water Heating	Office	2014	2054	82.67	11.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	82.67	11.17	0.00	0.00
VA	6000	6007	Heat Trap	Office	2014	2054	78.39	10.59	4.28	4.28	5%	0.58	0.58	5%	0.01	0.01	0	0	4.24			4.28	0.58
VA	6000	6002	High Efficiency Water Heater (electric)	Office	2014	2054	76.82	10.38	1.57	5.85	7%	0.21	0.79	7%	0.03	0.02	0	0	2.26			1.57	0.21
VA	6000	6004	Tankless Water Heater	Office	2014	2054	71.06	9.60	5.76	11.61	14%	0.78	1.57	14%	0.04	0.03	0	0	1.61			5.76	0.78
VA	6000	6008	Solar Water Heater	Office	2014	2054	33.25	4.49	37.80	49.41	60%	5.11	6.67	60%	0.05	0.05	0	0	1.38			37.80	5.11
VA	6000	6003	Hot Water Pipe Insulation	Office	2014	2054	32.90	4.44	0.35	49.77	60%	0.05	6.72	60%	0.11	0.05	1	0	0.58			0.00	0.00
VA	6000	6006	Heat Recovery Unit	Office	2014	2054	30.76	4.16	2.14	51.90	63%	0.29	7.01	63%	0.11	0.05	1	0	0.51			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	Office	2014	2054	29.84	4.03	0.92	52.83	64%	0.12	7.14	64%	0.33	0.05	2	0	0.19			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Office	2014	2054	15.06	2.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.06	2.19	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Office	2014	2054	12.80	2.03	2.26	2.26	15%	0.16	0.16	8%	0.02	0.02	0	0	1.92			2.26	0.16
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Office	2014	2054	11.57	1.94	1.23	3.49	23%	0.09	0.25	12%	0.05	0.03	1	0	1.04			1.23	0.09
VA	7100	7100	Base Non-Refrigerated Vending Machines	Office	2014	2054	0.39	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.06	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Office	2014	2054	0.22	0.04	0.17	0.17	43%	0.01	0.01	21%	0.41	0.41	6	6	0.11			0.00	0.00
VA	7200	7200	Base Oven	Office	2014	2054	4.43	0.66	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.43	0.66	0.00	0.00
VA	7300	7300	Base Fryer	Office	2014	2054	2.80	0.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.80	0.42	0.00	0.00
VA	7400	7400	Base Steamer	Office	2014	2054	5.82	0.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.82	0.87	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Office	2014	2054	61.27	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	61.27	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014	2054	57.82	0.00	3.46	3.46	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	3.24			3.46	0.00
VA	8100	8100	Base Heating, Other Electric	Office	2014	2054	61.90	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	61.90	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Office	2014	2054	531.51	77.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	531.51	77.37	0.00	0.00
VA	9500	9501	Xmisc	Office	2014	2054	531.51	77.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Restaurant	2020	2054	14.87	2.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.87	2.94	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Restaurant	2020	2054	14.85	2.93	0.02	0.02	0%	0.00	0.00	0%	0.01	0.01	0	0	6.10			0.02	0.00
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Restaurant	2020	2054	13.73	2.76	1.12	1.15	8%	0.18	0.18	6%	0.01	0.01	0	0	5.43			1.12	0.18
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Restaurant	2020	2054	12.30	2.48	1.43	2.57	17%	0.28	0.46	16%	0.03	0.02	0	0	1.71			1.43	0.28
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	2020	2054	10.73	2.17	1.56	4.14	28%	0.31	0.77	26%	0.07	0.04	0	0	0.82			0.00	0.00
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Restaurant	2020	2054	10.58	2.16	0.15	4.29	29%	0.01	0.78	26%	0.13	0.04	3	0	0.39			0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1030	1034	ROB 4L4' LED Tube, 2020	Restaurant	2020	2054	8.88	1.82	1.71	5.99	40%	0.34	1.11	38%	0.40	0.14	2	1	0.16			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Restaurant	2020	2054	8.12	1.67	0.76	6.75	45%	0.15	1.26	43%	0.33	0.16	2	1	0.19			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Restaurant	2020	2054	88.32	17.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	88.32	17.43	0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Restaurant	2020	2054	88.18	17.42	0.14	0.14	0%	0.01	0.01	0%	0.02	0.02	0	0	2.91			0.14	0.01
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Restaurant	2020	2054	81.51	16.38	6.67	6.81	8%	1.04	1.06	6%	0.02	0.02	0	0	2.60			6.67	1.04
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Restaurant	2020	2054	73.03	14.70	8.48	15.29	17%	1.67	2.73	16%	0.04	0.03	0	0	1.35			8.48	1.67
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	2020	2054	63.74	12.87	9.29	24.58	28%	1.83	4.57	26%	0.09	0.05	0	0	0.65			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Restaurant	2020	2054	60.66	12.26	3.08	27.66	31%	0.61	5.17	30%	0.32	0.08	2	0	0.20			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Restaurant	2020	2054	55.48	11.24	5.18	32.84	37%	1.02	6.20	36%	0.40	0.13	2	1	0.16			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Restaurant	2020	2054	54.70	11.20	0.78	33.62	38%	0.04	6.23	36%	0.26	0.14	5	1	0.19			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Restaurant	2020	2054	73.49	14.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	73.49	14.51	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Restaurant	2020	2054	15.60	3.08	57.89	57.89	79%	11.43	11.43	79%	0.01	0.01	0	0	7.93			57.89	11.43
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Restaurant	2020	2054	26.46	5.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	26.46	5.22	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Restaurant	2020	2054	6.09	1.20	20.37	20.37	77%	4.02	4.02	77%	0.01	0.01	0	0	6.67			20.37	4.02
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Restaurant	2020	2054	19.48	3.84	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.48	3.84	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Restaurant	2020	2054	6.05	1.19	13.43	13.43	69%	2.65	2.65	69%	0.01	0.01	0	0	4.87			13.43	2.65
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Restaurant	2020	2054	12.55	2.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.55	2.48	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Restaurant	2020	2054	9.07	1.79	3.48	3.48	28%	0.69	0.69	28%	0.08	0.08	0	0	0.65			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Restaurant	2020	2054	16.04	3.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.04	3.17	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Restaurant	2020	2054	11.87	2.34	4.17	4.17	26%	0.82	0.82	26%	0.06	0.06	0	0	0.87			0.00	0.00
VA	1800	1800	BaseMetal Halide, 465W	Restaurant	2014	2054	0.34	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.34	0.07	0.00	0.00
VA	1800	1801	T5 (240W) (base metal halide)	Restaurant	2014	2054	0.22	0.04	0.11	0.11	34%	0.02	0.02	34%	0.02	0.02	0	0	4.74			0.11	0.02
VA	1800	1806	Occupancy Sensor, High Bay T5	Restaurant	2014	2054	0.21	0.04	0.01	0.12	36%	0.00	0.02	34%	0.04	0.02	1	0	1.23			0.01	0.00
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Restaurant	2014	2054	0.20	0.04	0.02	0.14	41%	0.00	0.03	38%	1.06	0.14	7	1	0.06			0.00	0.00
VA	1850	1850	Base CFL Exit Sign	Restaurant	2014	2054	4.21	0.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.21	0.83	0.00	0.00
VA	1850	1851	LED Exit Sign	Restaurant	2014	2054	1.75	0.35	2.46	2.46	58%	0.49	0.49	58%	0.06	0.06	0	0	0.98			0.00	0.00
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Restaurant	2014	2054	102.87	6.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	102.87	6.81	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Restaurant	2014	2054	85.98	3.48	16.89	16.89	16%	3.34	3.34	49%	0.07	0.07	0	0	1.14			16.89	3.34
VA	1900	1902	LED Outdoor Area Lighting	Restaurant	2014	2054	41.37	0.52	44.61	61.50	60%	2.96	6.29	92%	0.16	0.13	2	1	0.39			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Restaurant	2014	2054	29.27	-0.20	12.11	73.60	72%	0.73	7.02	103%	1.02	0.28	17	3	0.06			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Restaurant	2014	2054	84.79	53.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	84.79	53.08	0.00	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	Restaurant	2014	2054	78.62	49.22	6.17	6.17	7%	3.86	3.86	7%	0.02	0.02	0	0	7.13			6.17	3.86
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Restaurant	2014	2054	71.91	45.02	6.71	12.88	15%	4.20	8.07	15%	0.02	0.02	0	0	4.81			6.71	4.20
VA	2000	2005	Chiller Tune Up/Diagnostics	Restaurant	2014	2054	71.78	44.98	0.13	13.02	15%	0.04	8.11	15%	0.02	0.02	0	0	3.97			0.13	0.04
VA	2000	2003	EMS - Chiller	Restaurant	2014	2054	65.68	44.04	6.09	19.11	23%	0.93	9.04	17%	0.04	0.02	0	0	1.65			6.09	0.93
VA	2000	2012	Duct Testing/Sealing - Chiller	Restaurant	2014	2054	54.07	36.77	11.62	30.73	36%	7.27	16.31	31%	0.11	0.06	0	0	0.91			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Restaurant	2014	2054	449.34	281.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	449.34	281.30	0.00	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	Restaurant	2014	2054	449.20	281.22	0.13	0.13	0%	0.08	0.08	0%	0.01	0.01	0	0	7.68			0.13	0.08
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Restaurant	2014	2054	345.89	216.54	103.32	103.45	23%	64.68	64.76	23%	0.02	0.02	0	0	5.44			103.32	64.68
VA	2100	2115	Window Film (Standard) - DX	Restaurant	2014	2054	320.80	200.83	25.09	128.53	29%	15.70	80.47	29%	0.02	0.02	0	0	3.77			25.09	15.70
VA	2100	2108	Optimize Controls - DX	Restaurant	2014	2054	315.20	199.98	5.60	134.14	30%	0.86	81.33	29%	0.04	0.02	0	0	1.14			5.60	0.86
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Restaurant	2014	2054	314.84	199.87	0.36	134.49	30%	0.11	81.44	29%	0.07	0.02	0	0	0.99			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Restaurant	2014	2054	307.83	198.79	7.01	141.50	31%	1.07	82.51	29%	0.06	0.02	0	0	0.82			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Restaurant	2014	2054	290.41	187.88	17.42	158.93	35%	10.91	93.42	33%	0.13	0.03	0	0	0.80			0.00	0.00
VA	2100	2111	Economizer Repair - DX	Restaurant	2014	2054	276.94	175.36	13.46	172.39	38%	12.52	105.94	38%	0.12	0.04	0	0	0.68			0.00	0.00
VA	2100	2107	Cool Roof - DX	Restaurant	2014	2054	268.19	169.88	8.76	181.15	40%	5.48	111.42	40%	0.14	0.05	0	0	0.60			0.00	0.00
VA	2100	2109	Economizer - DX	Restaurant	2014	2054	262.70	169.04	5.48	186.63	42%	0.84	112.26	40%	0.15	0.05	1	0	0.36			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Restaurant	2014	2054	262.55	169.01	0.15	186.78	42%	0.02	112.29	40%	0.16	0.05	1	0	0.36			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Restaurant	2014	2054	259.35	167.01	3.20	189.99	42%	2.00	114.29	41%	1.57	0.07	3	0	0.05			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Restaurant	2014	2054	140.83	88.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	140.83	88.17	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	2014	2054	123.41	77.26	17.42	17.42	12%	10.90	10.90	12%	0.01	0.01	0	0	7.63			17.42	10.90
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Restaurant	2014	2054	16.99	10.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.99	10.64	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Restaurant	2014	2054	150.38	38.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	150.38	38.78	0.00	0.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Restaurant	2014	2054	147.78	38.11	2.59	2.59	2%	0.67	0.67	2%	0.11	0.11	0	0	0.70			0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	Restaurant	2014	2054	103.43	35.29	44.35	46.94	31%	2.82	3.49	9%	0.08	0.09	1	1	0.67			0.00	0.00
VA	3000	3003	Demand Controlled Ventilation	Restaurant	2014	2054	89.51	28.28	13.92	60.86	40%	7.01	10.50	27%	0.85	0.26	2	2	0.11			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Restaurant	2014	2054	637.81	95.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	637.81	95.50	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Restaurant	2014	2054	609.06	91.20	28.75	28.75	5%	4.31	4.31	5%	0.00	0.00	0	0	12.67			28.75	4.31
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Restaurant	2014	2054	600.41	89.90	8.65	37.40	6%	1.29	5.60	6%	0.01	0.00	0	0	8.02			8.65	1.29
VA	4100	4109	Energy-Star Freezer, glass door	Restaurant	2014	2054	590.83	88.47	9.58	46.98	7%	1.43	7.03	7%	0.01	0.01	0	0	6.78			9.58	1.43
VA	4100	4107	Energy-Star Freezer, solid door	Restaurant	2014	2054	586.86	87.87	3.97	50.95	8%	0.60	7.63	8%	0.02	0.01	0	0	2.73			3.97	0.60
VA	4100	4108	Energy-Star Refrigerator, glass door	Restaurant	2014	2054	582.47	87.22	4.39	55.34	9%	0.66	8.29	9%	0.03	0.01	0	0	2.22			4.39	0.66
VA	4100	4106	Energy-Star Refrigerator, solid door	Restaurant	2014	2054	573.01	85.80	9.46	64.80	10%	1.42	9.70	10%	0.03	0.01	0	0	2.17			9.46	1.42
VA	4100	4110	Energy Star Ice Machines	Restaurant	2014	2054	564.41	84.51	8.60	73.40	12%	1.29	10.99	12%	0.07	0.02	0	0	0.79			0.00	0.00
VA	4100	4112	Reach-in unit occupancy sensors	Restaurant	2014	2054	564.16	84.48	0.25	73.65	12%	0.04	11.03	12%	0.29	0.02	2	0	0.19			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Restaurant	2014	2054	563.06	84.31	1.10	74.74	12%	0.16	11.19	12%	0.34	0.02	2	0	0.16			0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Restaurant	2014	2054	560.87	83.98	2.19	76.93	12%	0.33	11.52	12%	0.38	0.03	3	0	0.13			0.00	0.00
VA	5000	5000	Base Desktop PC	Restaurant	2014	2054	5.69	1.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.69	1.11	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Restaurant	2014	2054	3.14	0.86	2.55	2.55	45%	0.25	0.25	23%	0.02	0.02	0	0	2.51			2.55	0.25
VA	5000	5002	Energy Star or Better PC	Restaurant	2014	2054	2.11	0.65	1.03	3.58	63%	0.20	0.46	41%	0.04	0.03	0	0	1.28			1.03	0.20

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	5100	5100	Base Laptop PC	Restaurant	2014	2054	0.23	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.23	0.05	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Restaurant	2014	2054	0.19	0.04	0.04	0.04	19%	0.01	0.01	19%	0.01	0.01	0	0	3.57			0.04	0.01
VA	5100	5101	Laptop Network Power Management Enabling	Restaurant	2014	2054	0.19	0.04	0.00	0.05	21%	0.00	0.01	21%	1.77	0.16	9	1	0.03			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Restaurant	2014	2054	3.04	0.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.04	0.59	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Restaurant	2014	2054	1.33	0.26	1.71	1.71	56%	0.33	0.33	56%	0.00	0.00	0	0	28.38			1.71	0.33
VA	5200	5202	Monitor Power Management Enabling - CRT	Restaurant	2014	2054	1.01	0.23	0.33	2.03	67%	0.03	0.37	62%	0.03	0.01	0	0	1.84			0.33	0.03
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Restaurant	2014	2054	0.93	0.21	0.08	2.11	69%	0.02	0.38	64%	0.30	0.02	2	0	0.18			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Restaurant	2014	2054	1.27	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.27	0.25	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Restaurant	2014	2054	1.02	0.20	0.25	0.25	20%	0.05	0.05	20%	0.01	0.01	0	0	4.06			0.25	0.05
VA	5300	5302	Monitor Power Management Enabling - LCD	Restaurant	2014	2054	0.93	0.19	0.09	0.34	27%	0.01	0.06	24%	0.13	0.04	1	0	0.37			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Restaurant	2014	2054	0.86	0.19	0.07	0.41	32%	0.00	0.06	25%	0.36	0.10	7	1	0.12			0.00	0.00
VA	5400	5400	Base Copier	Restaurant	2014	2054	2.37	0.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.37	0.46	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Restaurant	2014	2054	2.02	0.39	0.35	0.35	15%	0.07	0.07	15%	0.00	0.00	0	0	20.57			0.35	0.07
VA	5400	5402	Copier Power Management Enabling	Restaurant	2014	2054	1.83	0.38	0.19	0.54	23%	0.02	0.09	19%	0.15	0.05	1	0	0.33			0.00	0.00
VA	5500	5500	Base Multifunction	Restaurant	2014	2054	0.90	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.90	0.18	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Restaurant	2014	2054	0.68	0.13	0.23	0.23	25%	0.04	0.04	25%	0.01	0.01	0	0	5.95			0.23	0.04
VA	5500	5501	Multifunction Power Management Enabling	Restaurant	2014	2054	0.43	0.11	0.24	0.47	52%	0.02	0.07	39%	0.56	0.29	6	2	0.09			0.00	0.00
VA	5600	5600	Base Printer	Restaurant	2014	2054	1.03	0.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.03	0.20	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Restaurant	2014	2054	0.67	0.13	0.36	0.36	35%	0.07	0.07	35%	0.00	0.00	0	0	27.37			0.36	0.07
VA	5600	5601	Printer Power Management Enabling	Restaurant	2014	2054	0.43	0.11	0.24	0.60	58%	0.02	0.09	47%	0.12	0.05	1	0	0.40			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Restaurant	2014	2054	5.67	1.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.67	1.11	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Restaurant	2014	2054	5.10	0.99	0.57	0.57	10%	0.11	0.11	10%	0.00	0.00	0	0	95.51			0.57	0.11
VA	5700	5702	Data Center Best Practices	Restaurant	2014	2054	4.45	0.87	0.65	1.22	21%	0.13	0.24	21%	0.00	0.00	0	0	38.88			0.65	0.13
VA	5700	5703	Data Center State of the Art practices	Restaurant	2014	2054	4.20	0.82	0.25	1.46	26%	0.05	0.29	26%	0.00	0.00	0	0	20.17			0.25	0.05
VA	6000	6000	Base Water Heating	Restaurant	2014	2054	61.77	10.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	61.77	10.42	0.00	0.00
VA	6000	6007	Heat Trap	Restaurant	2014	2054	58.57	9.88	3.20	3.20	5%	0.54	0.54	5%	0.01	0.01	0	0	9.61			3.20	0.54
VA	6000	6002	High Efficiency Water Heater (electric)	Restaurant	2014	2054	57.40	9.69	1.17	4.37	7%	0.20	0.74	7%	0.01	0.01	0	0	5.15			1.17	0.20
VA	6000	6006	Heat Recovery Unit	Restaurant	2014	2054	27.55	4.65	29.85	34.22	55%	5.04	5.77	55%	0.01	0.01	0	0	5.04			29.85	5.04
VA	6000	6004	Tankless Water Heater	Restaurant	2014	2054	25.48	4.30	2.07	36.28	59%	0.35	6.12	59%	0.04	0.01	0	0	1.76			2.07	0.35
VA	6000	6008	Solar Water Heater	Restaurant	2014	2054	21.92	3.70	3.57	39.85	65%	0.60	6.72	65%	0.05	0.02	0	0	1.51			3.57	0.60
VA	6000	6003	Hot Water Pipe Insulation	Restaurant	2014	2054	21.58	3.64	0.33	40.18	65%	0.06	6.78	65%	0.06	0.02	0	0	1.18			0.33	0.06
VA	6000	6001	Demand controlled circulating systems	Restaurant	2014	2054	20.77	3.51	0.81	40.99	66%	0.14	6.92	66%	0.18	0.02	1	0	0.38			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Restaurant	2014	2054	4.13	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.13	0.81	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Restaurant	2014	2054	3.46	0.74	0.66	0.66	16%	0.07	0.07	8%	0.03	0.03	0	0	1.85			0.66	0.07
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Restaurant	2014	2054	3.10	0.71	0.36	1.03	25%	0.04	0.10	12%	0.05	0.03	0	0	1.01			0.36	0.04
VA	7100	7100	Base Non-Refrigerated Vending Machines	Restaurant	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Restaurant	2014	2054	0.03	0.01	0.03	0.03	46%	0.00	0.00	23%	0.43	0.43	4	4	0.11			0.00	0.00
VA	7200	7200	Base Oven	Restaurant	2014	2054	28.48	5.84	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	28.48	5.84	0.00	0.00
VA	7200	7201	Convection Oven	Restaurant	2014	2054	21.93	4.50	6.55	6.55	23%	1.34	1.34	23%	0.13	0.13	1	1	0.48			0.00	0.00
VA	7300	7300	Base Fryer	Restaurant	2014	2054	35.82	7.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	35.82	7.34	0.00	0.00
VA	7300	7301	Efficient Fryer	Restaurant	2014	2054	33.52	6.87	2.29	2.29	6%	0.47	0.47	6%	0.43	0.43	2	2	0.15			0.00	0.00
VA	7400	7400	Base Steamer	Restaurant	2014	2054	45.52	9.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	45.52	9.33	0.00	0.00
VA	7400	7401	Efficient Steamer	Restaurant	2014	2054	13.91	2.85	31.61	31.61	69%	6.48	6.48	69%	0.06	0.06	0	0	1.06			31.61	6.48
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Restaurant	2014	2054	1.84	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.84	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	2014	2054	1.74	0.00	0.10	0.10	6%	0.00	0.00	0%	0.05	0.05	N/A	N/A	1.05			0.10	0.00
VA	8100	8100	Base Heating, Other Electric	Restaurant	2014	2054	5.09	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.09	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Restaurant	2014	2054	263.18	51.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	263.18	51.65	0.00	0.00
VA	9500	9501	Xmisc	Restaurant	2014	2054	263.18	51.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Retail	2020	2054	894.58	161.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	894.58	161.88	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Retail	2020	2054	892.49	161.69	2.09	2.09	0%	0.18	0.18	0%	0.01	0.01	0	0	4.09			2.09	0.18
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Retail	2020	2054	824.86	152.00	67.63	69.72	8%	9.69	9.87	6%	0.02	0.02	0	0	3.61			67.63	9.69
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Retail	2020	2054	739.07	136.48	85.79	155.51	17%	15.52	25.40	16%	0.03	0.02	0	0	2.18			85.79	15.52
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Retail	2020	2054	645.04	119.46	94.03	249.54	28%	17.02	42.41	26%	0.05	0.03	0	0	1.05			94.03	17.02
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Retail	2020	2054	636.01	119.07	9.03	258.58	29%	0.39	42.81	26%	0.10	0.04	2	0	0.50			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Retail	2020	2054	533.53	100.53	102.48	361.05	40%	18.54	61.35	38%	0.31	0.11	2	1	0.20			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Retail	2020	2054	487.98	92.28	45.55	406.60	45%	8.24	69.59	43%	0.26	0.13	1	1	0.25			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Retail	2020	2054	178.68	32.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	178.68	32.33	0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Retail	2020	2054	178.26	32.30	0.42	0.42	0%	0.04	0.04	0%	0.02	0.02	0	0	2.40			0.42	0.04
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Retail	2020	2054	164.75	30.36	13.51	13.93	8%	1.94	1.97	6%	0.03	0.03	0	0	2.12			13.51	1.94
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Retail	2020	2054	147.62	27.26	17.13	31.06	17%	3.10	5.07	16%	0.03	0.03	0	0	1.72			17.13	3.10
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Retail	2020	2054	128.84	23.86	18.78	49.84	28%	3.40	8.47	26%	0.07	0.04	0	0	0.83			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Retail	2020	2054	122.61	22.73	6.23	56.07	31%	1.13	9.60	30%	0.25	0.07	1	0	0.26			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Retail	2020	2054	112.14	20.84	10.47	66.54	37%	1.89	11.49	36%	0.31	0.11	2	1	0.20			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Retail	2020	2054	110.57	20.77	1.57	68.11	38%	0.07	11.56	36%	0.20	0.11	5	1	0.25			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Retail	2014	2054	1.40	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.40	0.25	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Retail	2014	2054	1.38	0.25	0.02	0.02	1%	0.00	0.00	1%	0.01	0.01	0	0	7.41			0.02	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Retail	2014	2054	1.27	0.24	0.10	0.12	9%	0.01	0.02	7%	0.06	0.05	0	0	1.08			0.10	0.01
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Retail	2014	2054	1.14	0.21	0.13	0.26	18%	0.02	0.04	16%	0.10	0.08	1	0	0.53			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Retail	2014	2054	1.10	0.21	0.04	0.30	21%	0.00	0.04	17%	0.11	0.08	3	1	0.43			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Retail	2014	2054	0.96	0.18	0.14	0.44	31%	0.03	0.07	27%	0.22	0.13	1	1	0.25			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Retail	2020	2054	338.74	61.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	338.74	61.29	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Retail	2020	2054	59.32	10.73	279.42	279.42	82%	50.56	50.56	82%	0.01	0.01	0	0	8.61			279.42	50.56
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Retail	2020	2054	121.95	22.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	121.95	22.07	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Retail	2020	2054	23.23	4.20	98.72	98.72	81%	17.86	17.86	81%	0.01	0.01	0	0	7.27			98.72	17.86

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Retail	2020	2054	89.77	16.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	89.77	16.24	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Retail	2020	2054	23.51	4.25	66.26	66.26	74%	11.99	11.99	74%	0.01	0.01	0	0	5.40			66.26	11.99
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Retail	2020	2054	99.18	17.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	99.18	17.95	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Retail	2020	2054	71.71	12.98	27.47	27.47	28%	4.97	4.97	28%	0.06	0.06	0	0	0.86			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Retail	2020	2054	126.73	22.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	126.73	22.93	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Retail	2020	2054	93.78	16.97	32.95	32.95	26%	5.96	5.96	26%	0.05	0.05	0	0	1.14			32.95	5.96
VA	1800	1800	BaseMetal Halide, 465W	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1850	1850	Base CFL Exit Sign	Retail	2014	2054	11.37	2.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.37	2.06	0.00	0.00
VA	1850	1851	LED Exit Sign	Retail	2014	2054	4.99	0.90	6.37	6.37	56%	1.15	1.15	56%	0.04	0.04	0	0	1.31			6.37	1.15
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Retail	2014	2054	182.10	11.91	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	182.10	11.91	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Retail	2014	2054	164.09	8.46	18.02	18.02	10%	3.45	3.45	29%	0.05	0.05	0	0	1.62			18.02	3.45
VA	1900	1902	LED Outdoor Area Lighting	Retail	2014	2054	78.96	2.89	85.13	103.14	57%	5.57	9.02	76%	0.11	0.10	2	1	0.53			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Retail	2014	2054	55.87	1.52	23.09	126.23	69%	1.37	10.39	87%	0.74	0.22	12	3	0.08			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Retail	2014	2054	24.24	20.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.24	20.03	0.00	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	Retail	2014	2054	24.03	19.86	0.21	0.21	1%	0.17	0.17	1%	0.03	0.03	0	0	4.57			0.21	0.17
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Retail	2014	2054	21.98	18.16	2.05	2.26	9%	1.70	1.87	9%	0.04	0.04	0	0	2.80			2.05	1.70
VA	2000	2005	Chiller Tune Up/Diagnostics	Retail	2014	2054	21.83	18.10	0.15	2.41	10%	0.06	1.93	10%	0.03	0.04	0	0	2.10			0.15	0.06
VA	2000	2003	EMS - Chiller	Retail	2014	2054	20.01	17.71	1.82	4.23	17%	0.39	2.32	12%	0.08	0.06	0	0	0.83			0.00	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	Retail	2014	2054	16.21	14.57	3.80	8.03	33%	3.14	5.46	27%	0.23	0.14	0	0	0.52			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Retail	2014	2054	854.18	705.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	854.18	705.93	0.00	0.00
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Retail	2014	2054	657.71	543.56	196.46	196.46	23%	162.36	162.36	23%	0.04	0.04	0	0	2.95			196.46	162.36
VA	2100	2111	Economizer Repair - DX	Retail	2014	2054	611.76	489.86	45.95	242.41	28%	53.70	216.06	31%	0.08	0.05	0	0	1.08			45.95	53.70
VA	2100	2107	Cool Roof - DX	Retail	2014	2054	584.59	467.41	27.18	269.59	32%	22.46	238.52	34%	0.12	0.05	0	0	0.81			0.00	0.00
VA	2100	2108	Optimize Controls - DX	Retail	2014	2054	574.97	465.35	9.61	279.20	33%	2.06	240.58	34%	0.10	0.06	0	0	0.51			0.00	0.00
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Retail	2014	2054	572.65	464.36	2.33	281.53	33%	0.99	241.57	34%	0.15	0.06	0	0	0.47			0.00	0.00
VA	2100	2109	Economizer - DX	Retail	2014	2054	523.89	453.91	48.76	330.29	39%	10.45	252.01	36%	0.13	0.07	1	0	0.45			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Retail	2014	2054	492.03	427.59	31.85	362.14	42%	26.32	278.34	39%	0.31	0.09	0	0	0.39			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Retail	2014	2054	478.43	424.67	13.60	375.74	44%	2.91	281.25	40%	0.18	0.09	1	0	0.32			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	Retail	2014	2054	476.68	423.23	1.75	377.50	44%	1.45	282.70	40%	0.38	0.09	0	0	0.25			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Retail	2014	2054	476.48	423.18	0.20	377.70	44%	0.04	282.74	40%	0.29	0.09	1	0	0.21			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Retail	2014	2054	472.98	420.29	3.50	381.20	45%	2.89	285.64	40%	3.45	0.12	4	0	0.03			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Retail	2014	2054	317.23	262.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	317.23	262.17	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	2014	2054	278.00	229.75	39.23	39.23	12%	32.42	32.42	12%	0.03	0.03	0	0	4.14			39.23	32.42
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Retail	2014	2054	55.95	46.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	55.95	46.24	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Retail	2014	2054	578.78	162.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	578.78	162.16	0.00	0.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Retail	2014	2054	569.62	159.59	9.16	9.16	2%	2.57	2.57	2%	0.02	0.02	0	0	3.41			9.16	2.57
VA	3000	3002	Variable Speed Drive Control, 5 HP	Retail	2014	2054	403.89	147.97	165.73	174.89	30%	11.62	14.18	9%	0.02	0.02	0	0	3.19			165.73	11.62
VA	3000	3003	Demand Controlled Ventilation	Retail	2014	2054	361.48	125.40	42.41	217.30	38%	22.57	36.76	23%	1.14	0.24	2	1	0.08			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Retail	2014	2054	20.17	5.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	20.17	5.65	0.00	0.00
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Retail	2014	2054	17.26	4.92	2.91	2.91	14%	0.73	0.73	13%	0.03	0.03	0	0	2.44			2.91	0.73
VA	3100	3103	Air Handler Optimization, 15 HP	Retail	2014	2054	15.54	4.80	1.73	4.63	23%	0.12	0.85	15%	0.03	0.03	0	0	1.86			1.73	0.12
VA	3100	3102	Variable Speed Drive Control, 15 HP	Retail	2014	2054	11.02	4.48	4.52	9.15	45%	0.32	1.17	21%	0.07	0.05	1	0	0.86			0.00	0.00
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Retail	2014	2054	10.99	4.47	0.03	9.18	46%	0.01	1.18	21%	0.20	0.05	1	0	0.39			0.00	0.00
VA	3100	3105	Energy Recovery Ventilation (ERV)	Retail	2014	2054	10.23	4.07	0.75	9.94	49%	0.40	1.58	28%	0.45	0.08	1	0	0.23			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	Retail	2014	2054	9.16	3.50	1.07	11.01	55%	0.57	2.15	38%	1.57	0.22	3	1	0.06			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Retail	2014	2054	20.17	5.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	20.17	5.65	0.00	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	Retail	2014	2054	18.15	5.51	2.02	2.02	10%	0.14	0.14	3%	0.02	0.02	0	0	2.17			2.02	0.14
VA	3200	3202	Variable Speed Drive Control, 40 HP	Retail	2014	2054	12.87	5.14	5.28	7.30	36%	0.37	0.51	9%	0.06	0.05	1	1	1.03			5.28	0.37
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Retail	2014	2054	12.85	5.13	0.03	7.32	36%	0.01	0.52	9%	0.27	0.05	1	1	0.29			0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	Retail	2014	2054	11.50	4.41	1.35	8.67	43%	0.72	1.24	22%	1.25	0.23	2	2	0.08			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Retail	2014	2054	466.01	70.84	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	466.01	70.84	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Retail	2014	2054	457.33	69.52	8.69	8.69	2%	1.32	1.32	2%	0.01	0.01	0	0	5.38			8.69	1.32
VA	4100	4109	Energy-Star Freezer, glass door	Retail	2014	2054	455.44	69.23	1.88	10.57	2%	0.29	1.61	2%	0.04	0.01	0	0	1.54			1.88	0.29
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Retail	2014	2054	445.67	67.75	9.77	20.34	4%	1.49	3.09	4%	0.04	0.02	0	0	1.40			9.77	1.49
VA	4100	4107	Energy-Star Freezer, solid door	Retail	2014	2054	444.90	67.63	0.77	21.11	5%	0.12	3.21	5%	0.09	0.03	1	0	0.61			0.00	0.00
VA	4100	4108	Energy-Star Refrigerator, glass door	Retail	2014	2054	437.40	66.49	7.50	28.61	6%	1.14	4.35	6%	0.11	0.05	1	0	0.52			0.00	0.00
VA	4100	4106	Energy-Star Refrigerator, solid door	Retail	2014	2054	436.20	66.30	1.21	29.82	6%	0.18	4.53	6%	0.12	0.05	1	0	0.49			0.00	0.00
VA	4100	4112	Reach-in unit occupancy sensors	Retail	2014	2054	435.01	66.12	1.19	31.00	7%	0.18	4.71	7%	0.28	0.06	2	0	0.21			0.00	0.00
VA	4100	4110	Energy Star Ice Machines	Retail	2014	2054	434.20	66.00	0.81	31.81	7%	0.12	4.84	7%	0.32	0.07	2	0	0.18			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Retail	2014	2054	432.07	65.68	2.14	33.94	7%	0.32	5.16	7%	0.31	0.08	2	1	0.17			0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Retail	2014	2054	431.63	65.61	0.44	34.38	7%	0.07	5.23	7%	1.93	0.11	13	1	0.03			0.00	0.00
VA	5000	5000	Base Desktop PC	Retail	2014	2054	21.51	3.84	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	21.51	3.84	0.00	0.00
VA	5000	5002	Energy Star or Better PC	Retail	2014	2054	18.25	3.26	3.26	3.26	15%	0.58	0.58	15%	0.01	0.01	0	0	3.49			3.26	0.58
VA	5000	5001	PC Network Power Management Enabling	Retail	2014	2054	10.03	2.51	8.22	11.48	53%	0.75	1.33	35%	0.02	0.02	0	0	2.73			8.22	0.75
VA	5100	5100	Base Laptop PC	Retail	2014	2054	0.89	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.89	0.16	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Retail	2014	2054	0.72	0.13	0.17	0.17	19%	0.03	0.03	19%	0.01	0.01	0	0	4.53			0.17	0.03
VA	5100	5101	Laptop Network Power Management Enabling	Retail	2014	2054	0.71	0.13	0.01	0.18	21%	0.00	0.03	21%	1.38	0.12	8	1	0.04			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Retail	2014	2054	4.90	0.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.90	0.87	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Retail	2014	2054	2.15	0.38	2.75	2.75	56%	0.49	0.49	56%	0.00	0.00	0	0	36.02			2.75	0.49
VA	5200	5202	Monitor Power Management Enabling - CRT	Retail	2014	2054	1.80	0.35	0.35	3.10	63%	0.03	0.52	60%	0.02	0.00	0	0	2.75			0.35	0.03
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Retail	2014	2054	1.66	0.33	0.14	3.24	66%	0.03	0.55	63%	0.21	0.01	1	0	0.25			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Retail	2014	2054	3.06	0.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.06	0.55	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Retail	2014	2054	2.64	0.47	0.42	0.42	14%	0.08	0.08	14%	0.01	0.01	0	0	5.55			0.42	0.08

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	5300	5302	Monitor Power Management Enabling - LCD	Retail	2014	2054	2.54	0.46	0.10	0.53	17%	0.01	0.09	16%	0.09	0.02	1	0	0.54			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Retail	2014	2054	2.34	0.45	0.19	0.72	24%	0.01	0.09	17%	0.25	0.08	5	1	0.18			0.00	0.00
VA	5400	5400	Base Copier	Retail	2014	2054	10.62	1.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.62	1.90	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Retail	2014	2054	9.10	1.62	1.52	1.52	14%	0.27	0.27	14%	0.00	0.00	0	0	26.26			1.52	0.27
VA	5400	5402	Copier Power Management Enabling	Retail	2014	2054	8.67	1.58	0.43	1.95	18%	0.04	0.31	16%	0.11	0.03	1	0	0.45			0.00	0.00
VA	5500	5500	Base Multifunction	Retail	2014	2054	1.62	0.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.62	0.29	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Retail	2014	2054	1.22	0.22	0.41	0.41	25%	0.07	0.07	25%	0.01	0.01	0	0	7.56			0.41	0.07
VA	5500	5501	Multifunction Power Management Enabling	Retail	2014	2054	1.05	0.20	0.17	0.58	36%	0.02	0.09	30%	0.28	0.09	3	1	0.17			0.00	0.00
VA	5600	5600	Base Printer	Retail	2014	2054	4.65	0.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.65	0.83	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Retail	2014	2054	3.03	0.54	1.62	1.62	35%	0.29	0.29	35%	0.00	0.00	0	0	34.75			1.62	0.29
VA	5600	5601	Printer Power Management Enabling	Retail	2014	2054	2.60	0.50	0.43	2.04	44%	0.04	0.33	39%	0.06	0.01	1	0	0.80			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Retail	2014	2054	16.72	2.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.72	2.98	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Retail	2014	2054	15.05	2.69	1.67	1.67	10%	0.30	0.30	10%	0.00	0.00	0	0	107.49			1.67	0.30
VA	5700	5702	Data Center Best Practices	Retail	2014	2054	13.13	2.34	1.91	3.59	21%	0.34	0.64	21%	0.00	0.00	0	0	43.76			1.91	0.34
VA	5700	5703	Data Center State of the Art practices	Retail	2014	2054	12.40	2.21	0.74	4.32	26%	0.13	0.77	26%	0.00	0.00	0	0	22.70			0.74	0.13
VA	6000	6000	Base Water Heating	Retail	2014	2054	88.87	14.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	88.87	14.28	0.00	0.00
VA	6000	6007	Heat Trap	Retail	2014	2054	84.27	13.54	4.60	4.60	5%	0.74	0.74	5%	0.02	0.02	0	0	2.86			4.60	0.74
VA	6000	6002	High Efficiency Water Heater (electric)	Retail	2014	2054	82.61	13.27	1.66	6.26	7%	0.27	1.01	7%	0.04	0.03	0	0	1.53			1.66	0.27
VA	6000	6004	Tankless Water Heater	Retail	2014	2054	76.41	12.28	6.20	12.46	14%	1.00	2.00	14%	0.07	0.05	0	0	1.09			6.20	1.00
VA	6000	6008	Solar Water Heater	Retail	2014	2054	74.27	11.93	2.14	14.60	16%	0.34	2.35	16%	0.08	0.05	0	0	0.93			0.00	0.00
VA	6000	6003	Hot Water Pipe Insulation	Retail	2014	2054	73.05	11.74	1.22	15.82	18%	0.20	2.54	18%	0.08	0.05	0	0	0.82			0.00	0.00
VA	6000	6006	Heat Recovery Unit	Retail	2014	2054	70.68	11.35	2.37	18.19	20%	0.38	2.92	20%	0.09	0.06	1	0	0.64			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	Retail	2014	2054	69.59	11.18	1.09	19.28	22%	0.17	3.10	22%	0.13	0.06	1	0	0.50			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Retail	2014	2054	22.16	3.96	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	22.16	3.96	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Retail	2014	2054	19.04	3.68	3.13	3.13	14%	0.28	0.28	7%	0.02	0.02	0	0	2.01			3.13	0.28
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Retail	2014	2054	17.35	3.53	1.69	4.82	22%	0.15	0.43	11%	0.04	0.03	0	0	1.09			1.69	0.15
VA	7100	7100	Base Non-Refrigerated Vending Machines	Retail	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Retail	2014	2054	0.06	0.02	0.04	0.04	40%	0.00	0.00	20%	0.40	0.40	4	4	0.12			0.00	0.00
VA	7200	7200	Base Oven	Retail	2014	2054	14.10	2.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.10	2.55	0.00	0.00
VA	7200	7201	Convection Oven	Retail	2014	2054	10.86	1.96	3.24	3.24	23%	0.59	0.59	23%	0.13	0.13	1	1	0.47			0.00	0.00
VA	7300	7300	Base Fryer	Retail	2014	2054	2.58	0.47	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.58	0.47	0.00	0.00
VA	7300	7301	Efficient Fryer	Retail	2014	2054	2.41	0.44	0.16	0.16	6%	0.03	0.03	6%	0.43	0.43	2	2	0.15			0.00	0.00
VA	7400	7400	Base Steamer	Retail	2014	2054	10.12	1.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.12	1.83	0.00	0.00
VA	7400	7401	Efficient Steamer	Retail	2014	2054	3.61	0.65	6.51	6.51	64%	1.18	1.18	64%	0.05	0.05	0	0	1.21			6.51	1.18
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Retail	2014	2054	13.99	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.99	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	2014	2054	13.20	0.00	0.79	0.79	6%	0.00	0.00	0%	0.04	0.04	N/A	N/A	1.28			0.79	0.00
VA	8100	8100	Base Heating, Other Electric	Retail	2014	2054	51.10	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	51.10	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Retail	2014	2054	1,389.43	248.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,389.43	248.50	0.00	0.00
VA	9500	9501	Xmisc	Retail	2014	2054	1,389.43	248.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Grocery	2020	2054	144.92	22.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	144.92	22.11	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Grocery	2020	2054	144.77	22.10	0.15	0.15	0%	0.01	0.01	0%	0.01	0.01	0	0	5.32			0.15	0.01
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Grocery	2020	2054	133.68	20.77	11.09	11.24	8%	1.33	1.34	6%	0.01	0.01	0	0	4.56			11.09	1.33
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Grocery	2020	2054	119.99	18.69	13.69	24.93	17%	2.09	3.42	15%	0.03	0.02	0	0	1.52			13.69	2.09
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Grocery	2020	2054	104.72	16.36	15.27	40.20	28%	2.33	5.75	26%	0.07	0.04	0	0	0.73			0.00	0.00
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Grocery	2020	2054	103.17	16.30	1.56	41.76	29%	0.06	5.81	26%	0.10	0.04	3	0	0.51			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Grocery	2020	2054	86.54	13.77	16.62	58.38	40%	2.54	8.34	38%	0.42	0.15	3	1	0.13			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Grocery	2020	2054	79.16	12.64	7.39	65.77	45%	1.13	9.47	43%	0.35	0.17	2	1	0.16			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Grocery	2020	2054	0.51	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.51	0.08	0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Grocery	2020	2054	0.51	0.08	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	4.45			0.00	0.00
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Grocery	2020	2054	0.47	0.07	0.04	0.04	8%	0.00	0.00	6%	0.02	0.02	0	0	3.82			0.04	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Grocery	2020	2054	0.42	0.07	0.05	0.09	17%	0.01	0.01	15%	0.04	0.03	0	0	1.21			0.05	0.01
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Grocery	2020	2054	0.37	0.06	0.05	0.14	27%	0.01	0.02	26%	0.09	0.05	1	0	0.58			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Grocery	2020	2054	0.36	0.06	0.01	0.15	29%	0.00	0.02	26%	0.17	0.06	5	0	0.29			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Grocery	2020	2054	0.35	0.05	0.02	0.16	32%	0.00	0.02	29%	0.34	0.09	2	1	0.16			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Grocery	2020	2054	0.32	0.05	0.03	0.19	38%	0.00	0.03	35%	0.43	0.14	3	1	0.13			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Grocery	2020	2054	44.35	6.77	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	44.35	6.77	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Grocery	2020	2054	16.64	2.54	27.71	27.71	62%	4.23	4.23	62%	0.00	0.00	0	0	11.48			27.71	4.23
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Grocery	2020	2054	15.97	2.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.97	2.44	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Grocery	2020	2054	6.38	0.97	9.59	9.59	60%	1.46	1.46	60%	0.01	0.01	0	0	9.48			9.59	1.46
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Grocery	2020	2054	11.75	1.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.75	1.79	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Grocery	2020	2054	5.89	0.90	5.87	5.87	50%	0.90	0.90	50%	0.01	0.01	0	0	6.43			5.87	0.90
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Grocery	2020	2054	3.18	0.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.18	0.48	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Grocery	2020	2054	2.30	0.35	0.88	0.88	28%	0.13	0.13	28%	0.10	0.10	1	1	0.53			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Grocery	2020	2054	4.06	0.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.06	0.62	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Grocery	2020	2054	3.01	0.46	1.06	1.06	26%	0.16	0.16	26%	0.07	0.07	0	0	0.71			0.00	0.00
VA	1800	1800	BaseMetal Halide, 465W	Grocery	2014	2054	7.60	1.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.60	1.16	0.00	0.00
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Grocery	2014	2054	7.02	1.09	0.58	0.58	8%	0.07	0.07	6%	0.01	0.01	0	0	10.52			0.58	0.07
VA	1800	1801	T5 (240W) (base metal halide)	Grocery	2014	2054	4.64	0.73	2.37	2.95	39%	0.36	0.43	37%	0.01	0.01	0	0	5.22			2.37	0.36
VA	1800	1806	Occupancy Sensor, High Bay T5	Grocery	2014	2054	4.49	0.72	0.16	3.11	41%	0.01	0.44	38%	0.03	0.01	1	0	1.47			0.16	0.01
VA	1850	1850	Base CFL Exit Sign	Grocery	2014	2054	0.30	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.30	0.05	0.00	0.00
VA	1850	1851	LED Exit Sign	Grocery	2014	2054	0.29	0.04	0.01	0.01	2%	0.00	0.00	2%	0.03	0.03	0	0	1.89			0.01	0.00
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Grocery	2014	2054	2.31	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.31	0.06	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Grocery	2014	2054	2.05	0.04	0.26	0.26	11%	0.02	0.02	36%	0.08	0.08	1	1	0.82			0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1900	1902	LED Outdoor Area Lighting	Grocery	2014	2054	0.99	0.01	1.07	1.33	57%	0.03	0.05	82%	0.17	0.15	7	4	0.33			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Grocery	2014	2054	0.70	0.00	0.29	1.62	70%	0.01	0.05	94%	1.12	0.33	52	10	0.05			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Grocery	2014	2054	4.02	2.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.02	2.62	0.00	0.00
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Grocery	2014	2054	3.67	2.40	0.34	0.34	9%	0.22	0.22	9%	0.04	0.04	0	0	3.06			0.34	0.22
VA	2000	2005	Chiller Tune Up/Diagnostics	Grocery	2014	2054	3.67	2.40	0.01	0.35	9%	0.00	0.23	9%	0.03	0.04	0	0	2.50			0.01	0.00
VA	2000	2013	High Efficiency Chiller Motors	Grocery	2014	2054	3.55	2.32	0.12	0.47	12%	0.08	0.30	12%	0.06	0.04	0	0	1.94			0.12	0.08
VA	2000	2006	VSD for Chiller Pumps and Towers	Grocery	2014	2054	3.19	2.20	0.36	0.83	21%	0.12	0.42	16%	0.05	0.04	0	0	1.66			0.36	0.12
VA	2000	2002	Window Film (Standard) - Chiller	Grocery	2014	2054	2.97	2.06	0.22	1.05	26%	0.14	0.56	21%	0.08	0.05	0	0	1.04			0.22	0.14
VA	2000	2003	EMS - Chiller	Grocery	2014	2054	2.67	2.01	0.29	1.34	33%	0.05	0.61	23%	0.08	0.06	0	0	0.83			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	Grocery	2014	2054	2.47	1.88	0.21	1.55	39%	0.13	0.74	28%	0.12	0.07	0	0	0.69			0.00	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	Grocery	2014	2054	2.00	1.57	0.47	2.02	50%	0.31	1.05	40%	0.25	0.11	0	0	0.42			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Grocery	2014	2054	1.97	1.55	0.03	2.05	51%	0.02	1.07	41%	3.91	0.16	6	0	0.02			0.00	0.00
VA	2000	2008	New Economizer - Chiller	Grocery	2014	2054	1.97	1.55	0.00	2.05	51%	0.00	1.07	41%	41971.95	0.17	263,846	0	0.00			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Grocery	2014	2054	124.62	81.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	124.62	81.40	0.00	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	Grocery	2014	2054	124.46	81.29	0.16	0.16	0%	0.11	0.11	0%	0.03	0.03	0	0	3.70			0.16	0.11
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Grocery	2014	2054	95.83	62.59	28.63	28.79	23%	18.70	18.80	23%	0.03	0.03	0	0	3.20			28.63	18.70
VA	2100	2115	Window Film (Standard) - DX	Grocery	2014	2054	89.16	58.24	6.67	35.45	28%	4.36	23.16	28%	0.08	0.04	0	0	1.01			6.67	4.36
VA	2100	2107	Cool Roof - DX	Grocery	2014	2054	82.27	53.74	6.89	42.34	34%	4.50	27.66	34%	0.11	0.05	0	0	0.74			0.00	0.00
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Grocery	2014	2054	82.18	53.71	0.09	42.44	34%	0.03	27.69	34%	0.12	0.05	0	0	0.55			0.00	0.00
VA	2100	2108	Optimize Controls - DX	Grocery	2014	2054	80.74	53.48	1.44	43.88	35%	0.23	27.92	34%	0.10	0.05	1	0	0.50			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Grocery	2014	2054	79.54	53.29	1.20	45.08	36%	0.19	28.11	35%	0.12	0.06	1	0	0.45			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Grocery	2014	2054	74.70	50.13	4.84	49.92	40%	3.16	31.27	38%	0.24	0.07	0	0	0.43			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Grocery	2014	2054	74.68	50.12	0.02	49.94	40%	0.00	31.27	38%	0.70	0.07	4	0	0.08			0.00	0.00
VA	2100	2111	Economizer Repair - DX	Grocery	2014	2054	73.87	49.35	0.81	50.75	41%	0.77	32.04	39%	1.36	0.10	1	0	0.06			0.00	0.00
VA	2100	2109	Economizer - DX	Grocery	2014	2054	73.86	49.35	0.01	50.76	41%	0.00	32.04	39%	1.70	0.10	11	0	0.03			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Grocery	2014	2054	72.75	48.63	1.11	51.87	42%	0.72	32.77	40%	3.28	0.16	5	0	0.03			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Grocery	2014	2054	11.12	7.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.12	7.26	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	2014	2054	9.75	6.37	1.38	1.38	12%	0.90	0.90	12%	0.03	0.03	0	0	3.67			1.38	0.90
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Grocery	2014	2054	5.16	3.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.16	3.37	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Grocery	2014	2054	121.17	25.96	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	121.17	25.96	0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	Grocery	2014	2054	83.66	24.01	37.51	37.51	31%	1.95	1.95	7%	0.03	0.03	1	1	1.93			37.51	1.95
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Grocery	2014	2054	82.22	23.70	1.44	38.95	32%	0.31	2.25	9%	0.06	0.03	0	1	1.31			1.44	0.31
VA	3000	3003	Demand Controlled Ventilation	Grocery	2014	2054	70.52	18.68	11.70	50.65	42%	5.02	7.27	28%	1.14	0.29	3	2	0.08			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Grocery	2014	2054	119.80	25.66	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	119.80	25.66	0.00	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	Grocery	2014	2054	107.44	25.02	12.37	12.37	10%	0.64	0.64	3%	0.02	0.02	0	0	2.37			12.37	0.64
VA	3200	3204	Demand Controlled Ventilation	Grocery	2014	2054	92.15	18.46	15.28	27.65	23%	6.56	7.20	28%	0.86	0.49	2	2	0.10			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Grocery	2014	2054	504.16	81.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	504.16	81.17	0.00	0.00
VA	4000	4007	Efficient compressor motor	Grocery	2014	2054	503.18	81.01	0.98	0.98	0%	0.16	0.16	0%	0.02	0.02	0	0	3.52			0.98	0.16
VA	4000	4011	Demand Hot Gas Defrost	Grocery	2014	2054	490.60	78.98	12.58	13.56	3%	2.03	2.18	3%	0.02	0.02	0	0	3.25			12.58	2.03
VA	4000	4006	Electronically commutated evaporator fan motor	Grocery	2014	2054	455.70	73.36	34.90	48.46	10%	5.62	7.80	10%	0.02	0.02	0	0	2.96			34.90	5.62
VA	4000	4009	Floating head pressure controls	Grocery	2014	2054	454.58	73.27	1.12	49.58	10%	0.09	7.89	10%	0.02	0.02	0	0	2.73			1.12	0.09
VA	4000	4002	Strip curtains for walk-ins (built-up)	Grocery	2014	2054	450.63	72.64	3.94	53.52	11%	0.63	8.53	11%	0.04	0.02	0	0	1.35			3.94	0.63
VA	4000	4013	Anti-sweat (humidistat) controls	Grocery	2014	2054	444.35	72.13	6.29	59.81	12%	0.51	9.03	11%	0.04	0.02	1	0	1.29			6.29	0.51
VA	4000	4014	Freezer-Cooler Replacement Gaskets	Grocery	2014	2054	429.18	69.69	15.16	74.98	15%	2.44	11.47	14%	0.05	0.03	0	0	0.93			0.00	0.00
VA	4000	4018	Oversized Air Cooled Condenser	Grocery	2014	2054	411.11	66.78	18.07	93.05	18%	2.91	14.38	18%	0.08	0.04	0	0	0.85			0.00	0.00
VA	4000	4004	Night covers for display cases	Grocery	2014	2054	389.44	65.04	21.67	114.72	23%	1.74	16.13	20%	0.07	0.04	1	0	0.72			0.00	0.00
VA	4000	4001	High-efficiency fan motors	Grocery	2014	2054	375.71	62.83	13.73	128.45	25%	2.21	18.34	23%	0.11	0.05	1	0	0.64			0.00	0.00
VA	4000	4008	Compressor VSD retrofit	Grocery	2014	2054	352.42	60.95	23.29	151.74	30%	1.88	20.21	25%	0.10	0.06	1	0	0.55			0.00	0.00
VA	4000	4010	Refrigeration Commissioning	Grocery	2014	2054	350.61	60.66	1.81	153.55	30%	0.29	20.50	25%	0.18	0.06	1	0	0.28			0.00	0.00
VA	4000	4005	Evaporator fan controller for MT walk-ins	Grocery	2014	2054	350.36	60.64	0.25	153.80	31%	0.02	20.52	25%	0.24	0.06	3	0	0.25			0.00	0.00
VA	4000	4017	Multiplex Compressor System	Grocery	2014	2054	344.19	59.65	6.17	159.97	32%	0.99	21.52	27%	0.26	0.07	2	1	0.24			0.00	0.00
VA	4000	4016	LED Display Lighting	Grocery	2014	2054	317.93	55.42	26.26	186.23	37%	4.23	25.74	32%	0.43	0.12	3	1	0.13			0.00	0.00
VA	4000	4015	High R-Value Glass Doors	Grocery	2014	2054	313.01	54.63	4.92	191.15	38%	0.79	26.54	33%	1.94	0.17	12	1	0.03			0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Grocery	2014	2054	57.45	9.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	57.45	9.25	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Grocery	2014	2054	56.06	9.03	1.39	1.39	2%	0.22	0.22	2%	0.00	0.00	0	0	161.00			1.39	0.22
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Grocery	2014	2054	55.32	8.91	0.74	2.13	4%	0.12	0.34	4%	0.01	0.00	0	0	3.73			0.74	0.12
VA	4100	4109	Energy-Star Freezer, glass door	Grocery	2014	2054	52.33	8.43	2.99	5.12	9%	0.48	0.82	9%	0.03	0.02	0	0	2.18			2.99	0.48
VA	4100	4107	Energy-Star Freezer, solid door	Grocery	2014	2054	51.16	8.24	1.18	6.29	11%	0.19	1.01	11%	0.07	0.03	0	0	0.83			0.00	0.00
VA	4100	4108	Energy-Star Refrigerator, glass door	Grocery	2014	2054	51.09	8.23	0.06	6.36	11%	0.01	1.02	11%	0.09	0.03	1	0	0.65			0.00	0.00
VA	4100	4106	Energy-Star Refrigerator, solid door	Grocery	2014	2054	51.07	8.22	0.03	6.38	11%	0.00	1.03	11%	0.09	0.03	1	0	0.62			0.00	0.00
VA	4100	4110	Energy Star Ice Machines	Grocery	2014	2054	51.05	8.22	0.02	6.40	11%	0.00	1.03	11%	0.24	0.03	1	0	0.24			0.00	0.00
VA	4100	4112	Reach-in unit occupancy sensors	Grocery	2014	2054	51.04	8.22	0.01	6.41	11%	0.00	1.03	11%	0.29	0.03	2	0	0.20			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Grocery	2014	2054	50.70	8.16	0.35	6.75	12%	0.06	1.09	12%	0.33	0.04	2	0	0.16			0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Grocery	2014	2054	50.52	8.13	0.17	6.93	12%	0.03	1.12	12%	0.64	0.06	4	0	0.08			0.00	0.00
VA	5000	5000	Base Desktop PC	Grocery	2014	2054	2.29	0.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.29	0.41	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Grocery	2014	2054	1.25	0.32	1.03	1.03	45%	0.09	0.09	23%	0.02	0.02	0	0	2.15			1.03	0.09
VA	5000	5002	Energy Star or Better PC	Grocery	2014	2054	0.85	0.24	0.41	1.44	63%	0.07	0.17	41%	0.05	0.03	0	0	1.08			0.41	0.07
VA	5100	5100	Base Laptop PC	Grocery	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Grocery	2014	2054	0.06	0.01	0.01	0.01	19%	0.00	0.00	19%	0.02	0.02	0	0	3.02			0.01	0.00
VA	5100	5101	Laptop Network Power Management Enabling	Grocery	2014	2054	0.06	0.01	0.00	0.01	21%	0.00	0.00	21%	2.07	0.18	12	1	0.03			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Grocery	2014	2054	0.43	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.43	0.08	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Grocery	2014	2054	0.19	0.03	0.24	0.24	56%	0.04	0.04	56%	0.00	0.00	0	0	24.00			0.24	0.04
VA	5200	5202	Monitor Power Management Enabling - CRT	Grocery	2014	2054	0.12	0.03	0.07	0.32	73%	0.01	0.05	65%	0.04	0.01	0	0	1.12			0.07	0.01

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Grocery	2014	2054	0.11	0.03	0.01	0.33	76%	0.00	0.05	67%	0.44	0.02	2	0	0.12			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Grocery	2014	2054	0.68	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.68	0.12	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Grocery	2014	2054	0.54	0.10	0.14	0.14	20%	0.02	0.02	20%	0.02	0.02	0	0	3.43			0.14	0.02
VA	5300	5302	Monitor Power Management Enabling - LCD	Grocery	2014	2054	0.47	0.09	0.07	0.21	31%	0.01	0.03	26%	0.16	0.07	2	0	0.29			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Grocery	2014	2054	0.43	0.09	0.04	0.25	36%	0.00	0.03	27%	0.45	0.12	10	1	0.10			0.00	0.00
VA	5400	5400	Base Copier	Grocery	2014	2054	0.55	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.55	0.10	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Grocery	2014	2054	0.44	0.08	0.11	0.11	20%	0.02	0.02	20%	0.00	0.00	0	0	16.27			0.11	0.02
VA	5400	5402	Copier Power Management Enabling	Grocery	2014	2054	0.38	0.07	0.06	0.17	31%	0.01	0.03	26%	0.20	0.07	2	0	0.25			0.00	0.00
VA	5500	5500	Base Multifunction	Grocery	2014	2054	0.22	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.22	0.04	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Grocery	2014	2054	0.16	0.03	0.05	0.05	25%	0.01	0.01	25%	0.01	0.01	0	0	5.04			0.05	0.01
VA	5500	5501	Multifunction Power Management Enabling	Grocery	2014	2054	0.12	0.03	0.05	0.10	46%	0.00	0.01	36%	0.53	0.25	6	2	0.09			0.00	0.00
VA	5600	5600	Base Printer	Grocery	2014	2054	0.18	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.03	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Grocery	2014	2054	0.12	0.02	0.06	0.06	35%	0.01	0.01	35%	0.00	0.00	0	0	23.16			0.06	0.01
VA	5600	5601	Printer Power Management Enabling	Grocery	2014	2054	0.09	0.02	0.03	0.10	53%	0.00	0.01	44%	0.12	0.04	1	0	0.41			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Grocery	2014	2054	0.45	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.08	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Grocery	2014	2054	0.40	0.07	0.04	0.04	10%	0.01	0.01	10%	0.00	0.00	0	0	107.46			0.04	0.01
VA	5700	5702	Data Center Best Practices	Grocery	2014	2054	0.35	0.06	0.05	0.10	21%	0.01	0.02	21%	0.00	0.00	0	0	43.75			0.05	0.01
VA	5700	5703	Data Center State of the Art practices	Grocery	2014	2054	0.33	0.06	0.02	0.12	26%	0.00	0.02	26%	0.00	0.00	0	0	22.69			0.02	0.00
VA	6000	6000	Base Water Heating	Grocery	2014	2054	13.04	2.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.04	2.10	0.00	0.00
VA	6000	6007	Heat Trap	Grocery	2014	2054	12.36	1.99	0.68	0.68	5%	0.11	0.11	5%	0.02	0.02	0	0	2.39			0.68	0.11
VA	6000	6002	High Efficiency Water Heater (electric)	Grocery	2014	2054	12.11	1.95	0.25	0.92	7%	0.04	0.15	7%	0.05	0.03	0	0	1.28			0.25	0.04
VA	6000	6006	Heat Recovery Unit	Grocery	2014	2054	5.82	0.94	6.30	7.22	55%	1.01	1.16	55%	0.06	0.06	0	0	0.98			0.00	0.00
VA	6000	6004	Tankless Water Heater	Grocery	2014	2054	5.38	0.87	0.44	7.66	59%	0.07	1.23	59%	0.16	0.06	1	0	0.44			0.00	0.00
VA	6000	6008	Solar Water Heater	Grocery	2014	2054	4.63	0.74	0.75	8.41	65%	0.12	1.35	65%	0.19	0.07	1	0	0.37			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	Grocery	2014	2054	4.46	0.72	0.17	8.58	66%	0.03	1.38	66%	0.22	0.08	1	0	0.30			0.00	0.00
VA	6000	6003	Hot Water Pipe Insulation	Grocery	2014	2054	4.37	0.70	0.09	8.67	66%	0.01	1.39	66%	0.23	0.08	1	0	0.28			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Grocery	2014	2054	11.46	1.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.46	1.82	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Grocery	2014	2054	9.75	1.69	1.71	1.71	15%	0.13	0.13	7%	0.02	0.02	0	0	1.97			1.71	0.13
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Grocery	2014	2054	8.82	1.61	0.92	2.63	23%	0.07	0.21	11%	0.04	0.03	1	0	1.07			0.92	0.07
VA	7100	7100	Base Non-Refrigerated Vending Machines	Grocery	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Grocery	2014	2054	0.01	0.00	0.01	0.01	43%	0.00	0.00	21%	0.40	0.40	5	5	0.12			0.00	0.00
VA	7200	7200	Base Oven	Grocery	2014	2054	12.90	1.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.90	1.79	0.00	0.00
VA	7300	7300	Base Fryer	Grocery	2014	2054	16.78	2.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.78	2.33	0.00	0.00
VA	7400	7400	Base Steamer	Grocery	2014	2054	23.43	3.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	23.43	3.26	0.00	0.00
VA	7400	7401	Efficient Steamer	Grocery	2014	2054	7.16	1.00	16.27	16.27	69%	2.26	2.26	69%	0.06	0.06	0	0	0.98			0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Grocery	2014	2054	0.56	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.56	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	2014	2054	0.53	0.00	0.03	0.03	6%	0.00	0.00	0%	0.04	0.04	N/A	N/A	1.43			0.03	0.00
VA	8100	8100	Base Heating, Other Electric	Grocery	2014	2054	13.76	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.76	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Grocery	2014	2054	131.26	20.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	131.26	20.87	0.00	0.00
VA	9500	9501	Xmisc	Grocery	2014	2054	131.26	20.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Warehouse	2020	2054	448.71	79.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	448.71	79.75	0.00	0.00
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Warehouse	2020	2054	411.35	73.11	37.36	37.36	8%	6.64	6.64	8%	0.02	0.02	0	0	2.64			37.36	6.64
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Warehouse	2020	2054	404.59	72.51	6.77	44.12	10%	0.60	7.24	9%	0.03	0.02	0	0	1.54			6.77	0.60
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	2020	2054	353.11	63.36	51.48	95.60	21%	9.15	16.38	21%	0.04	0.03	0	0	1.24			51.48	9.15
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Warehouse	2020	2054	326.55	59.60	26.56	122.16	27%	3.77	20.15	25%	0.05	0.04	0	0	1.18			26.56	3.77
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Warehouse	2020	2054	319.89	59.30	6.66	128.82	29%	0.29	20.44	26%	0.09	0.04	2	0	0.57			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Warehouse	2020	2054	268.34	50.14	51.54	180.36	40%	9.16	29.60	37%	0.28	0.11	2	1	0.22			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Warehouse	2020	2054	245.44	46.07	22.91	203.27	45%	4.07	33.67	42%	0.24	0.12	1	1	0.27			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Warehouse	2020	2054	3.06	0.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.06	0.54	0.00	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Warehouse	2020	2054	2.74	0.49	0.32	0.32	10%	0.06	0.06	10%	0.03	0.03	0	0	2.04			0.32	0.06
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Warehouse	2020	2054	2.70	0.48	0.05	0.36	12%	0.00	0.06	11%	0.03	0.03	0	0	1.45			0.05	0.00
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Warehouse	2020	2054	2.49	0.45	0.20	0.56	18%	0.03	0.09	16%	0.05	0.04	0	0	1.27			0.20	0.03
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	2020	2054	2.18	0.40	0.32	0.88	29%	0.06	0.15	27%	0.06	0.05	0	0	0.89			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Warehouse	2020	2054	2.07	0.38	0.11	0.99	32%	0.02	0.16	30%	0.23	0.07	1	0	0.27			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Warehouse	2020	2054	1.90	0.35	0.18	1.16	38%	0.03	0.20	36%	0.29	0.10	2	1	0.22			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Warehouse	2020	2054	1.86	0.35	0.04	1.20	39%	0.00	0.20	36%	0.18	0.10	4	1	0.27			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Warehouse	2014	2054	0.46	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.46	0.08	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Warehouse	2014	2054	0.42	0.08	0.05	0.05	10%	0.00	0.00	5%	0.00	0.00	0	0	15.20			0.05	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Warehouse	2014	2054	0.39	0.07	0.03	0.08	17%	0.00	0.01	10%	0.03	0.01	0	0	2.04			0.03	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Warehouse	2014	2054	0.36	0.07	0.02	0.10	22%	0.00	0.01	12%	0.09	0.03	2	0	0.54			0.00	0.00
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Warehouse	2014	2054	0.33	0.07	0.04	0.14	30%	0.01	0.02	20%	0.11	0.05	1	0	0.50			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Warehouse	2014	2054	0.28	0.06	0.04	0.18	39%	0.01	0.02	29%	0.23	0.09	1	1	0.24			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Warehouse	2020	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Warehouse	2020	2054	13.47	2.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.47	2.39	0.00	0.00
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Warehouse	2020	2054	9.92	1.76	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.92	1.76	0.00	0.00
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Warehouse	2020	2054	18.72	3.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.72	3.33	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Warehouse	2020	2054	13.54	2.41	5.19	5.19	28%	0.92	0.92	28%	0.06	0.06	0	0	0.89			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Warehouse	2020	2054	23.92	4.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	23.92	4.25	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Warehouse	2020	2054	17.70	3.15	6.22	6.22	26%	1.11	1.11	26%	0.05	0.05	0	0	1.18			6.22	1.11
VA	1800	1800	BaseMetal Halide, 465W	Warehouse	2014	2054	270.51	48.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	270.51	48.08	0.00	0.00
VA	1800	1801	T5 (240W) (base metal halide)	Warehouse	2014	2054	179.05	31.82	91.46	91.46	34%	16.25	16.25	34%	0.01	0.01	0	0	6.53			91.46	16.25
VA	1800	1806	Occupancy Sensor, High Bay T5	Warehouse	2014	2054	173.36	31.57	5.70	97.16	36%	0.25	16.50	34%	0.03	0.01	1	0	1.67			5.70	0.25
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Warehouse	2014	2054	160.31	29.72	13.04	110.20	41%	1.85	18.35	38%	0.05	0.02	0	0	1.32			13.04	1.85
VA	1850	1850	Base CFL Exit Sign	Warehouse	2014	2054	1.60	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.60	0.28	0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1850	1851	LED Exit Sign	Warehouse	2014	2054	0.50	0.09	1.10	1.10	69%	0.20	0.20	69%	0.05	0.05	0	0	1.04			1.10	0.20
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Warehouse	2014	2054	100.54	1.36	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	100.54	1.36	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Warehouse	2014	2054	96.70	1.19	3.84	3.84	4%	0.17	0.17	13%	0.05	0.05	1	1	1.38			3.84	0.17
VA	1900	1902	LED Outdoor Area Lighting	Warehouse	2014	2054	46.53	0.51	50.17	54.01	54%	0.68	0.85	63%	0.10	0.09	7	6	0.59			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Warehouse	2014	2054	32.84	0.34	13.69	67.70	67%	0.17	1.02	75%	0.62	0.20	51	13	0.09			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Warehouse	2014	2054	227.17	216.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	227.17	216.04	0.00	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	Warehouse	2014	2054	216.72	206.10	10.45	10.45	5%	9.94	9.94	5%	0.05	0.05	0	0	2.52			10.45	9.94
VA	2100	2107	Cool Roof - DX	Warehouse	2014	2054	200.59	190.77	16.12	26.58	12%	15.33	25.28	12%	0.12	0.09	0	0	0.86			0.00	0.00
VA	2100	2108	Optimize Controls - DX	Warehouse	2014	2054	197.61	189.96	2.98	29.56	13%	0.81	26.09	12%	0.15	0.10	1	0	0.36			0.00	0.00
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Warehouse	2014	2054	152.16	146.73	45.45	75.01	33%	43.22	69.31	32%	0.48	0.33	0	0	0.26			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Warehouse	2014	2054	143.11	138.12	9.05	84.06	37%	8.61	77.92	36%	3.07	0.62	3	1	0.04			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	Warehouse	2014	2054	136.95	132.27	6.16	90.22	40%	5.86	83.78	39%	2.74	0.77	3	1	0.04			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Warehouse	2014	2054	132.85	131.15	4.10	94.33	42%	1.12	84.89	39%	2.02	0.82	7	1	0.03			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Warehouse	2014	2054	132.58	130.90	0.26	94.59	42%	0.25	85.14	39%	5.62	0.83	6	1	0.02			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Warehouse	2014	2054	132.51	130.88	0.07	94.66	42%	0.02	85.16	39%	3.71	0.84	14	1	0.02			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Warehouse	2014	2054	122.99	116.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	122.99	116.97	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Warehouse	2014	2054	107.78	102.50	15.21	15.21	12%	14.47	14.47	12%	0.05	0.05	0	0	2.61			15.21	14.47
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Warehouse	2014	2054	5.83	5.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.83	5.54	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Warehouse	2014	2054	128.07	39.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	128.07	39.55	0.00	0.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Warehouse	2014	2054	125.86	38.87	2.21	2.21	2%	0.68	0.68	2%	0.05	0.05	0	0	1.83			2.21	0.68
VA	3000	3002	Variable Speed Drive Control, 5 HP	Warehouse	2014	2054	88.87	35.95	36.99	39.20	31%	2.92	3.60	9%	0.04	0.04	0	0	1.63			36.99	2.92
VA	3000	3003	Demand Controlled Ventilation	Warehouse	2014	2054	87.73	35.31	1.14	40.34	31%	0.65	4.25	11%	1.85	0.09	3	1	0.05			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Warehouse	2014	2054	42.48	13.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	42.48	13.12	0.00	0.00
VA	3200	3202	Variable Speed Drive Control, 40 HP	Warehouse	2014	2054	29.99	12.13	12.48	12.48	29%	0.98	0.98	8%	0.02	0.02	0	0	3.18			12.48	0.98
VA	3200	3203	Air Handler Optimization, 40 HP	Warehouse	2014	2054	27.06	11.90	2.94	15.42	36%	0.23	1.22	9%	0.06	0.03	1	0	0.78			0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	Warehouse	2014	2054	26.71	11.71	0.35	15.77	37%	0.20	1.41	11%	2.02	0.07	4	1	0.05			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Warehouse	2014	2054	306.50	58.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	306.50	58.07	0.00	0.00
VA	4000	4018	Oversized Air Cooled Condenser	Warehouse	2014	2054	293.60	55.62	12.90	12.90	4%	2.44	2.44	4%	0.03	0.03	0	0	2.16			12.90	2.44
VA	4000	4010	Refrigeration Commissioning	Warehouse	2014	2054	292.09	55.34	1.51	14.41	5%	0.29	2.73	5%	0.06	0.03	0	0	0.84			0.00	0.00
VA	4000	4006	Electronically commutated evaporator fan motor	Warehouse	2014	2054	274.39	51.98	17.70	32.11	10%	3.35	6.08	10%	0.11	0.07	1	0	0.63			0.00	0.00
VA	4000	4005	Evaporator fan controller for MT walk-ins	Warehouse	2014	2054	274.34	51.98	0.05	32.16	10%	0.01	6.09	10%	0.19	0.07	2	0	0.32			0.00	0.00
VA	4000	4002	Strip curtains for walk-ins (built-up)	Warehouse	2014	2054	273.17	51.76	1.17	33.33	11%	0.22	6.31	11%	0.18	0.08	1	0	0.29			0.00	0.00
VA	4000	4001	High-efficiency fan motors	Warehouse	2014	2054	264.80	50.17	8.37	41.70	14%	1.59	7.90	14%	0.45	0.15	2	1	0.16			0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Warehouse	2014	2054	81.91	15.52	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	81.91	15.52	0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Warehouse	2014	2054	81.78	15.49	0.13	0.13	0%	0.03	0.03	0%	0.15	0.15	1	1	0.33			0.00	0.00
VA	5000	5000	Base Desktop PC	Warehouse	2014	2054	19.15	3.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.15	3.19	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Warehouse	2014	2054	10.66	2.46	8.49	8.49	44%	0.73	0.73	23%	0.01	0.01	0	0	3.53			8.49	0.73
VA	5000	5002	Energy Star or Better PC	Warehouse	2014	2054	7.16	1.88	3.49	11.98	63%	0.58	1.31	41%	0.03	0.02	0	0	1.82			3.49	0.58
VA	5100	5100	Base Laptop PC	Warehouse	2014	2054	1.36	0.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.36	0.23	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Warehouse	2014	2054	1.10	0.18	0.26	0.26	19%	0.04	0.04	19%	0.01	0.01	0	0	5.03			0.26	0.04
VA	5100	5101	Laptop Network Power Management Enabling	Warehouse	2014	2054	1.08	0.18	0.02	0.28	21%	0.00	0.05	21%	1.24	0.11	7	1	0.04			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Warehouse	2014	2054	3.95	0.66	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.95	0.66	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Warehouse	2014	2054	1.73	0.29	2.22	2.22	56%	0.37	0.37	56%	0.00	0.00	0	0	40.01			2.22	0.37
VA	5200	5202	Monitor Power Management Enabling - CRT	Warehouse	2014	2054	1.18	0.24	0.55	2.77	70%	0.05	0.42	63%	0.02	0.01	0	0	2.18			0.55	0.05
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Warehouse	2014	2054	1.08	0.23	0.09	2.86	73%	0.02	0.43	66%	0.23	0.01	1	0	0.22			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Warehouse	2014	2054	3.15	0.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.15	0.53	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Warehouse	2014	2054	2.51	0.42	0.64	0.64	20%	0.11	0.11	20%	0.01	0.01	0	0	5.71			0.64	0.11
VA	5300	5302	Monitor Power Management Enabling - LCD	Warehouse	2014	2054	2.48	0.42	0.03	0.67	21%	0.00	0.11	21%	0.08	0.01	1	0	0.57			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Warehouse	2014	2054	2.30	0.41	0.18	0.85	27%	0.01	0.12	22%	0.24	0.06	5	0	0.18			0.00	0.00
VA	5400	5400	Base Copier	Warehouse	2014	2054	4.86	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.86	0.81	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Warehouse	2014	2054	4.28	0.71	0.58	0.58	12%	0.10	0.10	12%	0.00	0.00	0	0	29.97			0.58	0.10
VA	5400	5402	Copier Power Management Enabling	Warehouse	2014	2054	4.13	0.70	0.15	0.73	15%	0.01	0.11	14%	0.09	0.02	1	0	0.52			0.00	0.00
VA	5500	5500	Base Multifunction	Warehouse	2014	2054	1.09	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.09	0.18	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Warehouse	2014	2054	0.82	0.14	0.27	0.27	25%	0.05	0.05	25%	0.01	0.01	0	0	8.40			0.27	0.05
VA	5500	5501	Multifunction Power Management Enabling	Warehouse	2014	2054	0.74	0.13	0.08	0.35	32%	0.01	0.05	29%	0.24	0.06	3	0	0.20			0.00	0.00
VA	5600	5600	Base Printer	Warehouse	2014	2054	4.88	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.88	0.81	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Warehouse	2014	2054	3.18	0.53	1.70	1.70	35%	0.28	0.28	35%	0.00	0.00	0	0	38.61			1.70	0.28
VA	5600	5601	Printer Power Management Enabling	Warehouse	2014	2054	2.87	0.50	0.31	2.01	41%	0.03	0.31	38%	0.05	0.01	1	0	0.93			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Warehouse	2014	2054	57.03	9.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	57.03	9.51	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Warehouse	2014	2054	51.32	8.56	5.70	5.70	10%	0.95	0.95	10%	0.00	0.00	0	0	107.17			5.70	0.95
VA	5700	5702	Data Center Best Practices	Warehouse	2014	2054	44.79	7.47	6.53	12.23	21%	1.09	2.04	21%	0.00	0.00	0	0	43.63			6.53	1.09
VA	5700	5703	Data Center State of the Art practices	Warehouse	2014	2054	42.29	7.05	2.51	14.74	26%	0.42	2.46	26%	0.00	0.00	0	0	22.63			2.51	0.42
VA	6000	6000	Base Water Heating	Warehouse	2014	2054	21.67	3.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	21.67	3.40	0.00	0.00
VA	6000	6006	Heat Recovery Unit	Warehouse	2014	2054	20.26	3.18	1.41	1.41	7%	0.22	0.22	7%	0.25	0.25	2	2	0.23			0.00	0.00
VA	6000	6007	Heat Trap	Warehouse	2014	2054	19.21	3.01	1.05	2.46	11%	0.16	0.39	11%	0.45	0.33	3	2	0.13			0.00	0.00
VA	6000	6002	High Efficiency Water Heater (electric)	Warehouse	2014	2054	18.83	2.95	0.38	2.84	13%	0.06	0.45	13%	0.93	0.42	6	3	0.07			0.00	0.00
VA	6000	6004	Tankless Water Heater	Warehouse	2014	2054	17.42	2.73	1.41	4.25	20%	0.22	0.67	20%	1.42	0.75	9	5	0.05			0.00	0.00
VA	6000	6008	Solar Water Heater	Warehouse	2014	2054	11.44	1.80	5.97	10.23	47%	0.94	1.60	47%	1.66	1.28	11	8	0.04			0.00	0.00
VA	6000	6003	Hot Water Pipe Insulation	Warehouse	2014	2054	11.40	1.79	0.05	10.27	47%	0.01	1.61	47%	2.54	1.28	16	8	0.03			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	Warehouse	2014	2054	11.18	1.75	0.22	10.50	48%	0.03	1.65	48%	2.84	1.32	18	8	0.02			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Warehouse	2014	2054	14.96	2.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.96	2.82	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Warehouse	2014	2054	13.29	2.66	1.67	1.67	11%	0.16	0.16	6%	0.02	0.02	0	0	2.27			1.67	0.16

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Warehouse	2014	2054	12.40	2.57	0.89	2.57	17%	0.09	0.25	9%	0.04	0.03	0	0	1.21			0.89	0.09
VA	7100	7100	Base Non-Refrigerated Vending Machines	Warehouse	2014	2054	0.62	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.62	0.12	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Warehouse	2014	2054	0.43	0.10	0.20	0.20	32%	0.02	0.02	16%	0.36	0.36	4	4	0.14			0.00	0.00
VA	7200	7200	Base Oven	Warehouse	2014	2054	4.94	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.94	0.81	0.00	0.00
VA	7300	7300	Base Fryer	Warehouse	2014	2054	10.26	1.69	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.26	1.69	0.00	0.00
VA	7400	7400	Base Steamer	Warehouse	2014	2054	4.31	0.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.31	0.71	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Warehouse	2014	2054	2.14	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.14	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Warehouse	2014	2054	2.02	0.00	0.12	0.12	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	1.65			0.12	0.00
VA	8100	8100	Base Heating, Other Electric	Warehouse	2014	2054	16.88	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.88	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Warehouse	2014	2054	349.99	65.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	349.99	65.97	0.00	0.00
VA	9500	9501	Xmisc	Warehouse	2014	2054	349.99	65.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	School	2020	2054	286.28	38.69	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	286.28	38.69	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	School	2020	2054	283.96	38.53	2.33	2.33	1%	0.16	0.16	0%	0.02	0.02	0	0	2.62			2.33	0.16
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	School	2020	2054	254.79	34.59	29.17	31.50	11%	3.94	4.10	11%	0.02	0.02	0	0	2.53			29.17	3.94
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	School	2020	2054	235.71	32.52	19.08	50.57	18%	2.07	6.17	16%	0.03	0.03	0	0	2.04			19.08	2.07
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	School	2020	2054	205.72	28.47	29.99	80.56	28%	4.05	10.22	26%	0.05	0.04	0	0	1.12			29.99	4.05
VA	1030	1034	ROB 4L4' LED Tube, 2020	School	2020	2054	172.57	23.99	33.15	113.71	40%	4.48	14.70	38%	0.35	0.13	3	1	0.20			0.00	0.00
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	School	2020	2054	162.46	23.65	10.12	123.83	43%	0.34	15.04	39%	0.18	0.13	5	1	0.27			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	School	2020	2054	148.59	21.77	13.87	137.70	48%	1.87	16.92	44%	0.31	0.15	2	1	0.23			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	School	2020	2054	17.97	2.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.97	2.43	0.00	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	School	2020	2054	16.14	2.18	1.84	1.84	10%	0.25	0.25	10%	0.03	0.03	0	0	2.01			1.84	0.25
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	School	2020	2054	15.98	2.17	0.15	1.99	11%	0.01	0.26	11%	0.03	0.03	0	0	1.59			0.15	0.01
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	School	2020	2054	14.79	2.04	1.20	3.19	18%	0.13	0.39	16%	0.04	0.04	0	0	1.38			1.20	0.13
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	School	2020	2054	12.91	1.79	1.88	5.07	28%	0.25	0.64	26%	0.07	0.05	1	0	0.88			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	School	2020	2054	12.28	1.70	0.62	5.69	32%	0.08	0.73	30%	0.28	0.07	2	1	0.25			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	School	2020	2054	11.23	1.56	1.05	6.74	37%	0.14	0.87	36%	0.36	0.12	3	1	0.19			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	School	2020	2054	10.58	1.54	0.66	7.40	41%	0.02	0.89	37%	0.30	0.13	9	1	0.16			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	School	2014	2054	1.39	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.39	0.19	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	School	2014	2054	1.33	0.18	0.06	0.06	5%	0.00	0.00	2%	0.02	0.02	0	0	2.16			0.06	0.00
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	School	2014	2054	1.21	0.17	0.11	0.18	13%	0.02	0.02	10%	0.10	0.07	1	1	0.61			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	School	2014	2054	1.06	0.15	0.15	0.33	24%	0.02	0.04	22%	0.21	0.14	2	1	0.29			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	School	2014	2054	0.89	0.14	0.17	0.50	36%	0.01	0.05	25%	0.18	0.15	5	2	0.27			0.00	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	School	2014	2054	0.82	0.13	0.07	0.57	41%	0.01	0.05	29%	0.33	0.17	3	2	0.19			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	School	2020	2054	1.04	0.14	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.04	0.14	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	School	2020	2054	0.21	0.03	0.84	0.84	80%	0.11	0.11	80%	0.01	0.01	0	0	9.75			0.84	0.11
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	School	2020	2054	0.38	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.38	0.05	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	School	2020	2054	0.08	0.01	0.29	0.29	78%	0.04	0.04	78%	0.01	0.01	0	0	8.21			0.29	0.04
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	School	2020	2054	0.28	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.04	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	School	2020	2054	0.08	0.01	0.20	0.20	71%	0.03	0.03	71%	0.01	0.01	0	0	6.03			0.20	0.03
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	School	2020	2054	20.83	2.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	20.83	2.82	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	School	2020	2054	15.06	2.04	5.77	5.77	28%	0.78	0.78	28%	0.07	0.07	1	1	0.85			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	School	2020	2054	26.62	3.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	26.62	3.60	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	School	2020	2054	19.70	2.66	6.92	6.92	26%	0.94	0.94	26%	0.05	0.05	0	0	1.13			6.92	0.94
VA	1800	1800	BaseMetal Halide, 465W	School	2014	2054	41.12	5.56	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	41.12	5.56	0.00	0.00
VA	1800	1801	T5 (240W) (base metal halide)	School	2014	2054	27.22	3.68	13.90	13.90	34%	1.88	1.88	34%	0.02	0.02	0	0	3.83			13.90	1.88
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	School	2014	2054	25.18	3.46	2.04	15.94	39%	0.22	2.10	38%	0.03	0.02	0	0	2.42			2.04	0.22
VA	1800	1806	Occupancy Sensor, High Bay T5	School	2014	2054	24.39	3.43	0.79	16.73	41%	0.03	2.13	38%	0.05	0.02	2	0	0.92			0.00	0.00
VA	1850	1850	Base CFL Exit Sign	School	2014	2054	2.22	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.22	0.30	0.00	0.00
VA	1850	1851	LED Exit Sign	School	2014	2054	1.00	0.14	1.22	1.22	55%	0.17	0.17	55%	0.04	0.04	0	0	1.46			1.22	0.17
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	School	2014	2054	67.16	2.68	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	67.16	2.68	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	School	2014	2054	60.40	1.82	6.75	6.75	10%	0.86	0.86	32%	0.05	0.05	0	0	1.50			6.75	0.86
VA	1900	1902	LED Outdoor Area Lighting	School	2014	2054	29.07	0.57	31.34	38.09	57%	1.25	2.10	79%	0.10	0.09	3	2	0.57			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	School	2014	2054	20.53	0.27	8.53	46.62	69%	0.31	2.41	90%	0.66	0.20	18	4	0.09			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	School	2014	2054	93.36	47.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	93.36	47.93	0.00	0.00
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	School	2014	2054	85.39	43.84	7.97	7.97	9%	4.09	4.09	9%	0.07	0.07	0	0	1.49			7.97	4.09
VA	2000	2005	Chiller Tune Up/Diagnostics	School	2014	2054	85.17	43.78	0.22	8.19	9%	0.06	4.15	9%	0.05	0.07	0	0	1.19			0.22	0.06
VA	2000	2013	High Efficiency Chiller Motors	School	2014	2054	85.09	43.74	0.09	8.27	9%	0.04	4.20	9%	0.10	0.07	0	0	0.96			0.00	0.00
VA	2000	2006	VSD for Chiller Pumps and Towers	School	2014	2054	84.94	43.70	0.15	8.42	9%	0.04	4.24	9%	0.08	0.07	0	0	0.89			0.00	0.00
VA	2000	2003	EMS - Chiller	School	2014	2054	80.35	43.04	4.59	13.01	14%	0.66	4.89	10%	0.13	0.09	1	0	0.49			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	School	2014	2054	78.80	42.25	1.55	14.56	16%	0.79	5.69	12%	0.21	0.10	0	0	0.39			0.00	0.00
VA	2000	2002	Window Film (Standard) - Chiller	School	2014	2054	78.40	42.04	0.40	14.96	16%	0.20	5.89	12%	0.24	0.10	0	0	0.33			0.00	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	School	2014	2054	65.41	35.37	12.99	27.95	30%	6.67	12.56	26%	0.34	0.21	1	0	0.29			0.00	0.00
VA	2000	2008	New Economizer - Chiller	School	2014	2054	58.45	34.38	6.96	34.91	37%	0.99	13.56	28%	0.39	0.25	3	1	0.14			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	School	2014	2054	58.10	34.20	0.35	35.26	38%	0.18	13.74	29%	5.57	0.30	11	1	0.01			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	School	2014	2054	223.92	114.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	223.92	114.97	0.00	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	School	2014	2054	223.78	114.90	0.14	0.14	0%	0.07	0.07	0%	0.03	0.03	0	0	3.86			0.14	0.07
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	School	2014	2054	172.31	88.47	51.47	51.61	23%	26.43	26.50	23%	0.06	0.06	0	0	1.57			51.47	26.43
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	School	2014	2054	172.07	88.43	0.24	51.85	23%	0.03	26.53	23%	0.17	0.06	1	0	0.32			0.00	0.00
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	School	2014	2054	171.80	88.36	0.27	52.11	23%	0.07	26.60	23%	0.21	0.06	1	0	0.30			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	School	2014	2054	170.22	87.55	1.58	53.69	24%	0.81	27.41	24%	0.26	0.07	1	0	0.31			0.00	0.00
VA	2100	2108	Optimize Controls - DX	School	2014	2054	167.62	87.18	2.60	56.30	25%	0.37	27.79	24%	0.18	0.07	1	0	0.28			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	School	2014	2054	158.73	82.61	8.89	65.19	29%	4.56	32.35	28%	0.38	0.11	1	0	0.26			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	School	2014	2054	157.35	82.42	1.38	66.57	30%	0.20	32.55	28%	0.23	0.12	2	0	0.23			0.00	0.00
VA	2100	2107	Cool Roof - DX	School	2014	2054	154.57	80.99	2.78	69.35	31%	1.43	33.97	30%	0.43	0.13	1	0	0.19			0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	2100	2111	Economizer Repair - DX	School	2014	2054	151.53	78.79	3.04	72.39	32%	2.20	36.18	31%	0.94	0.16	1	0	0.08			0.00	0.00
VA	2100	2109	Economizer - DX	School	2014	2054	150.79	78.68	0.74	73.13	33%	0.11	36.28	32%	1.40	0.17	10	0	0.04			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	School	2014	2054	148.99	77.76	1.80	74.93	33%	0.92	37.20	32%	5.22	0.30	10	1	0.02			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	School	2014	2054	176.18	90.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	176.18	90.46	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	2014	2054	154.39	79.27	21.79	21.79	12%	11.19	11.19	12%	0.05	0.05	0	0	1.86			21.79	11.19
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	School	2014	2054	160.46	82.38	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	160.46	82.38	0.00	0.00
VA	2300	2301	HE PTAC, EER=9.6, 1 ton	School	2014	2054	138.73	71.23	21.73	21.73	14%	11.16	11.16	14%	0.12	0.12	0	0	0.74			0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	School	2014	2054	52.81	10.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	52.81	10.30	0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	School	2014	2054	39.02	9.61	13.79	13.79	26%	0.69	0.69	7%	0.04	0.04	1	1	1.35			13.79	0.69
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	School	2014	2054	38.34	9.48	0.67	14.47	27%	0.13	0.82	8%	0.08	0.04	0	1	0.98			0.00	0.00
VA	3000	3003	Demand Controlled Ventilation	School	2014	2054	32.61	7.48	5.73	20.20	38%	2.00	2.82	27%	2.13	0.64	6	5	0.04			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	School	2014	2054	141.36	27.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	141.36	27.58	0.00	0.00
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	School	2014	2054	121.57	24.08	19.79	19.79	14%	3.51	3.51	13%	0.05	0.05	0	0	1.29			19.79	3.51
VA	3100	3102	Variable Speed Drive Control, 15 HP	School	2014	2054	89.82	22.48	31.75	51.55	36%	1.59	5.10	18%	0.06	0.06	1	1	0.96			0.00	0.00
VA	3100	3103	Air Handler Optimization, 15 HP	School	2014	2054	81.08	22.05	8.74	60.28	43%	0.44	5.54	20%	0.08	0.06	2	1	0.64			0.00	0.00
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	School	2014	2054	80.29	21.89	0.78	61.07	43%	0.15	5.69	21%	0.20	0.06	1	1	0.38			0.00	0.00
VA	3100	3105	Energy Recovery Ventilation (ERV)	School	2014	2054	76.08	20.43	4.21	65.28	46%	1.47	7.16	26%	0.71	0.10	2	1	0.13			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	School	2014	2054	64.71	16.46	11.38	76.65	54%	3.96	11.12	40%	2.88	0.51	8	4	0.03			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	School	2014	2054	58.92	11.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	58.92	11.50	0.00	0.00
VA	3200	3202	Variable Speed Drive Control, 40 HP	School	2014	2054	43.53	10.73	15.39	15.39	26%	0.77	0.77	7%	0.01	0.01	0	0	7.80			15.39	0.77
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	School	2014	2054	43.44	10.71	0.09	15.48	26%	0.02	0.79	7%	0.03	0.01	0	0	2.17			0.09	0.02
VA	3200	3203	Air Handler Optimization, 40 HP	School	2014	2054	39.21	10.50	4.23	19.71	33%	0.21	1.00	9%	0.07	0.02	1	0	0.74			0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	School	2014	2054	33.35	8.45	5.86	25.58	43%	2.04	3.04	26%	2.33	0.55	7	5	0.04			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	School	2014	2054	66.40	9.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	66.40	9.18	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	School	2014	2054	64.09	8.87	2.30	2.30	3%	0.32	0.32	3%	0.00	0.00	0	0	21.10			2.30	0.32
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	School	2014	2054	63.22	8.74	0.88	3.18	5%	0.12	0.44	5%	0.00	0.00	0	0	13.13			0.88	0.12
VA	4100	4109	Energy-Star Freezer, glass door	School	2014	2054	62.88	8.70	0.34	3.52	5%	0.05	0.49	5%	0.01	0.00	0	0	8.20			0.34	0.05
VA	4100	4106	Energy-Star Refrigerator, solid door	School	2014	2054	62.07	8.58	0.81	4.33	7%	0.11	0.60	7%	0.01	0.00	0	0	4.96			0.81	0.11
VA	4100	4107	Energy-Star Freezer, solid door	School	2014	2054	61.93	8.57	0.14	4.47	7%	0.02	0.62	7%	0.02	0.01	0	0	3.27			0.14	0.02
VA	4100	4108	Energy-Star Refrigerator, glass door	School	2014	2054	61.68	8.53	0.25	4.72	7%	0.03	0.65	7%	0.02	0.01	0	0	2.72			0.25	0.03
VA	4100	4110	Energy Star Ice Machines	School	2014	2054	60.41	8.36	1.27	5.99	9%	0.18	0.83	9%	0.03	0.01	0	0	1.80			1.27	0.18
VA	4100	4112	Reach-in unit occupancy sensors	School	2014	2054	60.40	8.35	0.01	6.00	9%	0.00	0.83	9%	0.29	0.01	2	0	0.20			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	School	2014	2054	60.34	8.35	0.05	6.06	9%	0.01	0.84	9%	0.33	0.01	2	0	0.16			0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	School	2014	2054	60.29	8.34	0.05	6.11	9%	0.01	0.84	9%	1.05	0.02	8	0	0.05			0.00	0.00
VA	5000	5000	Base Desktop PC	School	2014	2054	10.42	0.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.42	0.90	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	School	2014	2054	5.73	0.69	4.69	4.69	45%	0.21	0.21	23%	0.01	0.01	0	0	3.47			4.69	0.21
VA	5000	5002	Energy Star or Better PC	School	2014	2054	4.06	0.55	1.66	6.36	61%	0.14	0.35	39%	0.03	0.02	0	0	1.78			1.66	0.14
VA	5100	5100	Base Laptop PC	School	2014	2054	1.16	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.16	0.10	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	School	2014	2054	0.94	0.08	0.22	0.22	19%	0.02	0.02	19%	0.01	0.01	0	0	4.73			0.22	0.02
VA	5100	5101	Laptop Network Power Management Enabling	School	2014	2054	0.92	0.08	0.02	0.24	21%	0.00	0.02	21%	1.24	0.11	14	1	0.04			0.00	0.00
VA	5200	5200	Base Monitor, CRT	School	2014	2054	4.23	0.36	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.23	0.36	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	School	2014	2054	1.85	0.16	2.37	2.37	56%	0.20	0.20	56%	0.00	0.00	0	0	37.58			2.37	0.20
VA	5200	5202	Monitor Power Management Enabling - CRT	School	2014	2054	1.34	0.14	0.51	2.89	68%	0.02	0.23	62%	0.02	0.00	0	0	2.37			0.51	0.02
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	School	2014	2054	1.23	0.13	0.11	2.99	71%	0.01	0.24	65%	0.22	0.01	3	0	0.22			0.00	0.00
VA	5300	5300	Base Monitor, LCD	School	2014	2054	2.18	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.18	0.19	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	School	2014	2054	1.80	0.15	0.39	0.39	18%	0.03	0.03	18%	0.01	0.01	0	0	5.53			0.39	0.03
VA	5300	5302	Monitor Power Management Enabling - LCD	School	2014	2054	1.75	0.15	0.04	0.43	20%	0.00	0.04	19%	0.08	0.02	2	0	0.57			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	School	2014	2054	1.62	0.15	0.13	0.56	26%	0.00	0.04	20%	0.23	0.07	10	1	0.19			0.00	0.00
VA	5400	5400	Base Copier	School	2014	2054	2.78	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.78	0.24	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	School	2014	2054	2.62	0.23	0.16	0.16	6%	0.01	0.01	6%	0.00	0.00	0	0	30.20			0.16	0.01
VA	5400	5402	Copier Power Management Enabling	School	2014	2054	2.52	0.22	0.11	0.27	10%	0.00	0.02	8%	0.09	0.04	2	1	0.54			0.00	0.00
VA	5500	5500	Base Multifunction	School	2014	2054	0.34	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.34	0.03	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	School	2014	2054	0.26	0.02	0.09	0.09	25%	0.01	0.01	25%	0.01	0.01	0	0	7.91			0.09	0.01
VA	5500	5501	Multifunction Power Management Enabling	School	2014	2054	0.21	0.02	0.05	0.13	39%	0.00	0.01	32%	0.27	0.10	6	1	0.17			0.00	0.00
VA	5600	5600	Base Printer	School	2014	2054	2.91	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.91	0.25	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	School	2014	2054	1.90	0.16	1.01	1.01	35%	0.09	0.09	35%	0.00	0.00	0	0	36.34			1.01	0.09
VA	5600	5601	Printer Power Management Enabling	School	2014	2054	1.55	0.15	0.35	1.36	47%	0.02	0.10	41%	0.06	0.02	1	0	0.80			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	School	2014	2054	67.83	5.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	67.83	5.83	0.00	0.00
VA	5700	5701	Data Center Improved Operations	School	2014	2054	61.05	5.24	6.78	6.78	10%	0.58	0.58	10%	0.00	0.00	0	0	99.28			6.78	0.58
VA	5700	5702	Data Center Best Practices	School	2014	2054	53.28	4.58	7.77	14.55	21%	0.67	1.25	21%	0.00	0.00	0	0	40.42			7.77	0.67
VA	5700	5703	Data Center State of the Art practices	School	2014	2054	50.30	4.32	2.98	17.53	26%	0.26	1.51	26%	0.00	0.00	0	0	20.96			2.98	0.26
VA	6000	6000	Base Water Heating	School	2014	2054	23.82	1.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	23.82	1.85	0.00	0.00
VA	6000	6007	Heat Trap	School	2014	2054	22.58	1.76	1.23	1.23	5%	0.10	0.10	5%	0.04	0.04	1	1	1.29			1.23	0.10
VA	6000	6002	High Efficiency Water Heater (electric)	School	2014	2054	22.14	1.72	0.44	1.67	7%	0.03	0.13	7%	0.09	0.06	1	1	0.68			0.00	0.00
VA	6000	6006	Heat Recovery Unit	School	2014	2054	19.99	1.55	2.16	3.83	16%	0.17	0.30	16%	0.09	0.07	1	1	0.63			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	School	2014	2054	19.24	1.50	0.75	4.58	19%	0.06	0.36	19%	0.12	0.08	1	1	0.52			0.00	0.00
VA	6000	6004	Tankless Water Heater	School	2014	2054	17.79	1.38	1.44	6.02	25%	0.11	0.47	25%	0.16	0.10	2	1	0.42			0.00	0.00
VA	6000	6008	Solar Water Heater	School	2014	2054	16.55	1.29	1.25	7.27	31%	0.10	0.57	31%	0.18	0.11	2	1	0.36			0.00	0.00
VA	6000	6003	Hot Water Pipe Insulation	School	2014	2054	16.38	1.27	0.17	7.43	31%	0.01	0.58	31%	0.20	0.11	3	1	0.30			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	School	2014	2054	6.12	0.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.12	0.53	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	School	2014	2054	5.19	0.49	0.93	0.93	15%	0.04	0.04	8%	0.03	0.03	1	1	1.84			0.93	0.04
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	School	2014	2054	4.69	0.47	0.51	1.43	23%	0.02	0.06	12%	0.05	0.03	1	1	1.00			0.51	0.02
VA	7100	7100	Base Non-Refrigerated Vending Machines	School	2014	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.01	0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	7100	7101	Vending Misers (Non-Refrigerated)	School	2014	2054	0.05	0.01	0.04	0.04	43%	0.00	0.00	22%	0.43	0.43	10	10	0.11			0.00	0.00
VA	7200	7200	Base Oven	School	2014	2054	6.68	0.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.68	0.49	0.00	0.00
VA	7200	7201	Convection Oven	School	2014	2054	5.15	0.38	1.54	1.54	23%	0.11	0.11	23%	0.13	0.13	2	2	0.43			0.00	0.00
VA	7300	7300	Base Fryer	School	2014	2054	1.19	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.19	0.09	0.00	0.00
VA	7400	7400	Base Steamer	School	2014	2054	0.32	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.02	0.00	0.00
VA	7400	7401	Efficient Steamer	School	2014	2054	0.12	0.01	0.21	0.21	63%	0.02	0.02	63%	0.05	0.05	1	1	1.14			0.21	0.02
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	School	2014	2054	4.30	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.30	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	2014	2054	4.06	0.00	0.24	0.24	6%	0.00	0.00	0%	0.08	0.08	N/A	N/A	0.72			0.00	0.00
VA	8100	8100	Base Heating, Other Electric	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	School	2014	2054	93.87	8.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	93.87	8.18	0.00	0.00
VA	9500	9501	Xmisc	School	2014	2054	93.87	8.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Health	2020	2054	152.78	23.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	152.78	23.25	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Health	2020	2054	152.55	23.23	0.23	0.23	0%	0.02	0.02	0%	0.02	0.02	0	0	2.39			0.23	0.02
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Health	2020	2054	140.86	21.84	11.70	11.92	8%	1.39	1.41	6%	0.03	0.03	0	0	2.05			11.70	1.39
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Health	2020	2054	126.21	19.61	14.65	26.57	17%	2.23	3.64	16%	0.03	0.03	0	0	1.61			14.65	2.23
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Health	2020	2054	110.15	17.17	16.06	42.63	28%	2.44	6.08	26%	0.07	0.05	0	0	0.77			0.00	0.00
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Health	2020	2054	101.99	16.88	8.16	50.79	33%	0.29	6.37	27%	0.12	0.06	3	0	0.39			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Health	2020	2054	85.56	14.38	16.43	67.22	44%	2.50	8.87	38%	0.43	0.15	3	1	0.14			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Health	2020	2054	78.25	13.27	7.30	74.52	49%	1.11	9.98	43%	0.36	0.17	2	1	0.17			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Health	2020	2054	18.41	2.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.41	2.80	0.00	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Health	2020	2054	16.50	2.51	1.92	1.92	10%	0.29	0.29	10%	0.04	0.04	0	0	1.38			1.92	0.29
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Health	2020	2054	16.48	2.51	0.02	1.94	11%	0.00	0.29	10%	0.05	0.04	1	0	1.02			0.02	0.00
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Health	2020	2054	15.21	2.36	1.26	3.20	17%	0.15	0.44	16%	0.07	0.05	1	0	0.87			0.00	0.00
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Health	2020	2054	13.28	2.06	1.94	5.14	28%	0.29	0.74	26%	0.09	0.07	1	0	0.61			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Health	2020	2054	12.63	1.97	0.64	5.78	31%	0.10	0.84	30%	0.33	0.09	2	1	0.19			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Health	2020	2054	11.56	1.80	1.08	6.86	37%	0.16	1.00	36%	0.41	0.14	3	1	0.15			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Health	2020	2054	10.70	1.77	0.86	7.71	42%	0.03	1.03	37%	0.25	0.16	7	1	0.19			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Health	2014	2054	4.95	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.95	0.75	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Health	2014	2054	4.92	0.75	0.03	0.03	1%	0.00	0.00	0%	0.01	0.01	0	0	6.44			0.03	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Health	2014	2054	4.54	0.71	0.38	0.40	8%	0.04	0.05	6%	0.08	0.08	1	1	0.77			0.00	0.00
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Health	2014	2054	4.07	0.63	0.47	0.88	18%	0.07	0.12	16%	0.14	0.11	1	1	0.40			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Health	2014	2054	3.28	0.61	0.79	1.67	34%	0.03	0.15	19%	0.15	0.13	4	1	0.33			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Health	2014	2054	2.86	0.54	0.42	2.08	42%	0.06	0.21	28%	0.35	0.17	2	2	0.15			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Health	2020	2054	8.93	1.36	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.93	1.36	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Health	2020	2054	1.60	0.24	7.33	7.33	82%	1.12	1.12	82%	0.01	0.01	0	0	6.25			7.33	1.12
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Health	2020	2054	3.22	0.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.22	0.49	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Health	2020	2054	0.63	0.10	2.59	2.59	81%	0.39	0.39	81%	0.01	0.01	0	0	5.27			2.59	0.39
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Health	2020	2054	2.37	0.36	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.37	0.36	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Health	2020	2054	0.63	0.10	1.74	1.74	73%	0.26	0.26	73%	0.01	0.01	0	0	3.91			1.74	0.26
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Health	2020	2054	3.00	0.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.00	0.46	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Health	2020	2054	2.17	0.33	0.83	0.83	28%	0.13	0.13	28%	0.09	0.09	1	1	0.61			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Health	2020	2054	3.83	0.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.83	0.58	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Health	2020	2054	2.83	0.43	1.00	1.00	26%	0.15	0.15	26%	0.07	0.07	0	0	0.81			0.00	0.00
VA	1800	1800	BaseMetal Halide, 465W	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1850	1850	Base CFL Exit Sign	Health	2014	2054	4.72	0.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.72	0.72	0.00	0.00
VA	1850	1851	LED Exit Sign	Health	2014	2054	4.17	0.63	0.55	0.55	12%	0.08	0.08	12%	0.03	0.03	0	0	1.99			0.55	0.08
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Health	2014	2054	12.58	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.58	0.12	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Health	2014	2054	11.58	0.09	1.00	1.00	8%	0.03	0.03	27%	0.07	0.07	2	2	0.90			0.00	0.00
VA	1900	1902	LED Outdoor Area Lighting	Health	2014	2054	5.57	0.03	6.01	7.01	56%	0.06	0.09	74%	0.14	0.13	15	11	0.39			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Health	2014	2054	3.93	0.02	1.64	8.65	69%	0.01	0.10	86%	0.92	0.28	109	24	0.06			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Health	2014	2054	66.67	36.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	66.67	36.64	0.00	0.00
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Health	2014	2054	60.98	33.51	5.69	5.69	9%	3.13	3.13	9%	0.03	0.03	0	0	3.05			5.69	3.13
VA	2000	2005	Chiller Tune Up/Diagnostics	Health	2014	2054	60.88	33.49	0.10	5.79	9%	0.03	3.15	9%	0.02	0.03	0	0	2.65			0.10	0.03
VA	2000	2006	VSD for Chiller Pumps and Towers	Health	2014	2054	60.75	33.45	0.14	5.93	9%	0.04	3.19	9%	0.04	0.03	0	0	1.98			0.14	0.04
VA	2000	2013	High Efficiency Chiller Motors	Health	2014	2054	60.55	33.34	0.20	6.12	9%	0.11	3.30	9%	0.05	0.03	0	0	1.97			0.20	0.11
VA	2000	2003	EMS - Chiller	Health	2014	2054	54.79	32.60	5.75	11.88	18%	0.74	4.04	11%	0.05	0.04	0	0	1.11			5.75	0.74
VA	2000	2012	Duct Testing/Sealing - Chiller	Health	2014	2054	44.38	26.88	10.41	22.29	33%	5.72	9.76	27%	0.18	0.11	0	0	0.56			0.00	0.00
VA	2000	2008	New Economizer - Chiller	Health	2014	2054	39.35	26.24	5.03	27.32	41%	0.65	10.41	28%	0.14	0.11	1	0	0.39			0.00	0.00
VA	2000	2002	Window Film (Standard) - Chiller	Health	2014	2054	39.29	26.20	0.06	27.38	41%	0.03	10.44	28%	0.29	0.11	1	0	0.27			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	Health	2014	2054	39.18	26.14	0.11	27.49	41%	0.06	10.50	29%	0.77	0.11	1	0	0.10			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Health	2014	2054	38.74	25.90	0.44	27.93	42%	0.24	10.74	29%	2.99	0.16	5	0	0.03			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Health	2014	2054	223.12	122.63	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	223.12	122.63	0.00	0.00
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Health	2014	2054	171.80	94.42	51.32	51.32	23%	28.20	28.20	23%	0.03	0.03	0	0	3.21			51.32	28.20
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Health	2014	2054	171.64	94.38	0.16	51.48	23%	0.04	28.25	23%	0.09	0.03	0	0	0.68			0.00	0.00
VA	2100	2108	Optimize Controls - DX	Health	2014	2054	168.50	93.98	3.14	54.62	24%	0.40	28.65	23%	0.07	0.03	1	0	0.66			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Health	2014	2054	165.02	93.53	3.48	58.10	26%	0.45	29.10	24%	0.09	0.04	1	0	0.57			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Health	2014	2054	154.98	88.01	10.03	68.14	31%	5.51	34.61	28%	0.19	0.06	0	0	0.50			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	Health	2014	2054	154.15	87.56	0.83	68.97	31%	0.46	35.07	29%	0.25	0.06	0	0	0.32			0.00	0.00
VA	2100	2107	Cool Roof - DX	Health	2014	2054	153.66	87.29	0.49	69.46	31%	0.27	35.34	29%	0.65	0.07	1	0	0.12			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Health	2014	2054	151.97	86.36	1.69	71.15	32%	0.93	36.27	30%	2.55	0.12	5	0	0.03			0.00	0.00
VA	2100	2111	Economizer Repair - DX	Health	2014	2054	151.97	86.36	0.00	71.15	32%	0.00	36.27	30%	23013.76	0.13	27,755	0	0.00			0.00	0.00
VA	2100	2109	Economizer - DX	Health	2014	2054	151.97	86.36	0.00	71.15	32%	0.00	36.27	30%	26793.07	0.15	208,511	0	0.00			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Health	2014	2054	142.15	78.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	142.15	78.13	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	2014	2054	124.57	68.46	17.58	17.58	12%	9.66	9.66	12%	0.02	0.02	0	0	3.75			17.58	9.66

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Health	2014	2054	31.81	17.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	31.81	17.48	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Health	2014	2054	63.96	12.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	63.96	12.98	0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	Health	2014	2054	45.33	12.08	18.63	18.63	29%	0.90	0.90	7%	0.01	0.01	0	0	4.25			18.63	0.90
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Health	2014	2054	44.55	11.92	0.78	19.41	30%	0.16	1.06	8%	0.03	0.01	0	0	2.81			0.78	0.16
VA	3000	3003	Demand Controlled Ventilation	Health	2014	2054	40.31	10.16	4.24	23.65	37%	1.77	2.83	22%	0.84	0.16	2	1	0.10			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Health	2014	2054	222.31	45.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	222.31	45.13	0.00	0.00
VA	3100	3102	Variable Speed Drive Control, 15 HP	Health	2014	2054	157.57	41.99	64.74	64.74	29%	3.14	3.14	7%	0.00	0.00	0	0	12.29			64.74	3.14
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Health	2014	2054	157.20	41.91	0.37	65.11	29%	0.07	3.22	7%	0.01	0.00	0	0	4.97			0.37	0.07
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Health	2014	2054	134.32	37.78	22.88	87.99	40%	4.14	7.36	16%	0.02	0.01	0	0	2.69			22.88	4.14
VA	3100	3105	Energy Recovery Ventilation (ERV)	Health	2014	2054	125.61	34.15	8.71	96.70	43%	3.63	10.98	24%	0.26	0.03	1	0	0.36			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	Health	2014	2054	113.65	29.17	11.96	108.66	49%	4.98	15.96	35%	1.03	0.14	2	1	0.08			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Health	2014	2054	236.21	47.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	236.21	47.95	0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	Health	2014	2054	213.72	38.59	22.49	22.49	10%	9.36	9.36	20%	0.58	0.58	1	1	0.15			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Health	2014	2054	43.75	6.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	43.75	6.34	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Health	2014	2054	43.03	6.23	0.73	0.73	2%	0.11	0.11	2%	0.00	0.00	0	0	11.99			0.73	0.11
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Health	2014	2054	42.35	6.14	0.68	1.40	3%	0.10	0.20	3%	0.00	0.00	0	0	10.46			0.68	0.10
VA	4100	4108	Energy-Star Refrigerator, glass door	Health	2014	2054	42.01	6.09	0.34	1.74	4%	0.05	0.25	4%	0.02	0.01	0	0	3.48			0.34	0.05
VA	4100	4106	Energy-Star Refrigerator, solid door	Health	2014	2054	41.52	6.02	0.49	2.23	5%	0.07	0.32	5%	0.02	0.01	0	0	3.38			0.49	0.07
VA	4100	4110	Energy Star Ice Machines	Health	2014	2054	41.07	5.95	0.45	2.68	6%	0.07	0.39	6%	0.05	0.02	0	0	1.23			0.45	0.07
VA	4100	4112	Reach-in unit occupancy sensors	Health	2014	2054	41.06	5.95	0.01	2.70	6%	0.00	0.39	6%	0.28	0.02	2	0	0.21			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Health	2014	2054	41.01	5.94	0.05	2.74	6%	0.01	0.40	6%	0.32	0.02	2	0	0.17			0.00	0.00
VA	5000	5000	Base Desktop PC	Health	2014	2054	9.92	1.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.92	1.41	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Health	2014	2054	5.32	1.08	4.60	4.60	46%	0.33	0.33	23%	0.02	0.02	0	0	2.51			4.60	0.33
VA	5000	5002	Energy Star or Better PC	Health	2014	2054	3.64	0.84	1.69	6.29	63%	0.24	0.57	40%	0.04	0.02	0	0	1.20			1.69	0.24
VA	5100	5100	Base Laptop PC	Health	2014	2054	0.51	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.51	0.07	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Health	2014	2054	0.42	0.06	0.10	0.10	19%	0.01	0.01	19%	0.01	0.01	0	0	3.39			0.10	0.01
VA	5100	5101	Laptop Network Power Management Enabling	Health	2014	2054	0.41	0.06	0.01	0.11	21%	0.00	0.02	21%	1.77	0.16	12	1	0.03			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Health	2014	2054	2.73	0.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.73	0.39	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Health	2014	2054	1.23	0.17	1.50	1.50	55%	0.21	0.21	55%	0.00	0.00	0	0	27.71			1.50	0.21
VA	5200	5202	Monitor Power Management Enabling - CRT	Health	2014	2054	0.83	0.15	0.40	1.90	70%	0.03	0.24	62%	0.03	0.01	0	0	1.63			0.40	0.03
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Health	2014	2054	0.77	0.14	0.07	1.97	72%	0.01	0.25	65%	0.33	0.02	2	0	0.15			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Health	2014	2054	1.75	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.75	0.25	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Health	2014	2054	1.41	0.20	0.34	0.34	20%	0.05	0.05	20%	0.01	0.01	0	0	3.88			0.34	0.05
VA	5300	5302	Monitor Power Management Enabling - LCD	Health	2014	2054	1.34	0.20	0.07	0.41	24%	0.00	0.05	22%	0.12	0.03	2	0	0.39			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Health	2014	2054	1.23	0.19	0.11	0.52	30%	0.00	0.06	23%	0.33	0.09	9	1	0.13			0.00	0.00
VA	5400	5400	Base Copier	Health	2014	2054	2.77	0.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.77	0.39	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Health	2014	2054	2.30	0.33	0.47	0.47	17%	0.07	0.07	17%	0.00	0.00	0	0	19.12			0.47	0.07
VA	5400	5402	Copier Power Management Enabling	Health	2014	2054	2.15	0.32	0.15	0.61	22%	0.01	0.08	19%	0.14	0.04	2	0	0.34			0.00	0.00
VA	5500	5500	Base Multifunction	Health	2014	2054	0.45	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.06	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Health	2014	2054	0.33	0.05	0.11	0.11	25%	0.02	0.02	25%	0.01	0.01	0	0	5.67			0.11	0.02
VA	5500	5501	Multifunction Power Management Enabling	Health	2014	2054	0.29	0.04	0.05	0.16	36%	0.00	0.02	31%	0.34	0.11	5	1	0.14			0.00	0.00
VA	5600	5600	Base Printer	Health	2014	2054	2.25	0.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.25	0.32	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Health	2014	2054	1.46	0.21	0.78	0.78	35%	0.11	0.11	35%	0.00	0.00	0	0	26.07			0.78	0.11
VA	5600	5601	Printer Power Management Enabling	Health	2014	2054	1.25	0.19	0.21	0.99	44%	0.02	0.13	40%	0.07	0.02	1	0	0.63			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Health	2014	2054	39.44	5.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	39.44	5.61	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Health	2014	2054	35.50	5.04	3.94	3.94	10%	0.56	0.56	10%	0.00	0.00	0	0	103.06			3.94	0.56
VA	5700	5702	Data Center Best Practices	Health	2014	2054	30.98	4.40	4.52	8.46	21%	0.64	1.20	21%	0.00	0.00	0	0	41.96			4.52	0.64
VA	5700	5703	Data Center State of the Art practices	Health	2014	2054	29.25	4.16	1.74	10.20	26%	0.25	1.45	26%	0.00	0.00	0	0	21.76			1.74	0.25
VA	6000	6000	Base Water Heating	Health	2014	2054	16.04	2.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.04	2.07	0.00	0.00
VA	6000	6001	Demand controlled circulating systems	Health	2014	2054	15.44	1.99	0.60	0.60	4%	0.08	0.08	4%	0.04	0.04	0	0	1.65			0.60	0.08
VA	6000	6007	Heat Trap	Health	2014	2054	14.64	1.89	0.80	1.40	9%	0.10	0.18	9%	0.04	0.04	0	0	1.46			0.80	0.10
VA	6000	6002	High Efficiency Water Heater (electric)	Health	2014	2054	14.35	1.85	0.29	1.69	11%	0.04	0.22	11%	0.08	0.05	1	0	0.78			0.00	0.00
VA	6000	6006	Heat Recovery Unit	Health	2014	2054	6.89	0.89	7.46	9.15	57%	0.96	1.18	57%	0.08	0.07	1	1	0.75			0.00	0.00
VA	6000	6004	Tankless Water Heater	Health	2014	2054	6.37	0.82	0.52	9.67	60%	0.07	1.25	60%	0.26	0.08	2	1	0.27			0.00	0.00
VA	6000	6008	Solar Water Heater	Health	2014	2054	5.48	0.71	0.89	10.56	66%	0.11	1.36	66%	0.30	0.10	2	1	0.23			0.00	0.00
VA	6000	6003	Hot Water Pipe Insulation	Health	2014	2054	5.43	0.70	0.05	10.61	66%	0.01	1.37	66%	0.35	0.10	3	1	0.18			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Health	2014	2054	6.16	0.86	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.16	0.86	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Health	2014	2054	5.17	0.79	0.98	0.98	16%	0.07	0.07	8%	0.03	0.03	0	0	1.86			0.98	0.07
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Health	2014	2054	4.64	0.75	0.54	1.52	25%	0.04	0.10	12%	0.05	0.03	1	0	1.01			0.54	0.04
VA	7100	7100	Base Non-Refrigerated Vending Machines	Health	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Health	2014	2054	0.07	0.01	0.06	0.06	46%	0.00	0.00	22%	0.42	0.42	6	6	0.11			0.00	0.00
VA	7200	7200	Base Oven	Health	2014	2054	9.72	1.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.72	1.85	0.00	0.00
VA	7300	7300	Base Fryer	Health	2014	2054	9.37	1.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.37	1.79	0.00	0.00
VA	7300	7301	Efficient Fryer	Health	2014	2054	8.77	1.67	0.60	0.60	6%	0.11	0.11	6%	0.43	0.43	2	2	0.15			0.00	0.00
VA	7400	7400	Base Steamer	Health	2014	2054	8.41	1.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.41	1.61	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Health	2014	2054	17.94	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.94	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	2014	2054	16.93	0.00	1.01	1.01	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	2.98			1.01	0.00
VA	8100	8100	Base Heating, Other Electric	Health	2014	2054	25.25	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.25	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Health	2014	2054	378.95	52.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	378.95	52.75	0.00	0.00
VA	9500	9501	Xmisc	Health	2014	2054	378.95	52.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Lodging	2020	2054	9.24	1.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.24	1.31	0.00	0.00
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Lodging	2020	2054	8.28	1.17	0.96	0.96	10%	0.14	0.14	10%	0.02	0.02	0	0	2.54			0.96	0.14
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Lodging	2020	2054	7.23	1.02	1.05	2.01	22%	0.15	0.29	22%	0.05	0.04	0	0	1.22			1.05	0.15

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Lodging	2020	2054	7.19	1.02	0.03	2.05	22%	0.00	0.29	22%	0.05	0.04	1	0	1.00			0.00	0.00
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Lodging	2020	2054	6.64	0.96	0.55	2.60	28%	0.06	0.35	27%	0.07	0.05	1	0	0.85			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Lodging	2020	2054	5.57	0.81	1.07	3.67	40%	0.15	0.50	38%	0.35	0.14	3	1	0.20			0.00	0.00
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Lodging	2020	2054	5.41	0.80	0.16	3.83	41%	0.01	0.51	39%	0.18	0.14	5	1	0.27			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Lodging	2020	2054	4.95	0.74	0.46	4.29	46%	0.07	0.57	44%	0.30	0.15	2	1	0.23			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Lodging	2020	2054	37.39	5.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	37.39	5.29	0.00	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Lodging	2020	2054	33.50	4.74	3.89	3.89	10%	0.55	0.55	10%	0.03	0.03	0	0	2.00			3.89	0.55
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Lodging	2020	2054	29.24	4.14	4.26	8.15	22%	0.60	1.15	22%	0.06	0.05	0	0	0.96			0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Lodging	2020	2054	29.10	4.13	0.13	8.28	22%	0.01	1.16	22%	0.07	0.05	1	0	0.72			0.00	0.00
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Lodging	2020	2054	26.87	3.88	2.23	10.52	28%	0.25	1.41	27%	0.10	0.06	1	0	0.61			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Lodging	2020	2054	25.57	3.70	1.30	11.82	32%	0.18	1.59	30%	0.29	0.08	2	1	0.25			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Lodging	2020	2054	23.39	3.39	2.18	14.00	37%	0.31	1.90	36%	0.37	0.13	3	1	0.19			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Lodging	2020	2054	22.73	3.37	0.66	14.66	39%	0.02	1.92	36%	0.30	0.14	9	1	0.16			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Lodging	2014	2054	0.73	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.73	0.10	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Lodging	2014	2054	0.71	0.10	0.02	0.02	3%	0.00	0.00	1%	0.02	0.02	0	0	2.44			0.02	0.00
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Lodging	2014	2054	0.63	0.09	0.07	0.09	13%	0.01	0.01	11%	0.10	0.08	1	1	0.61			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Lodging	2014	2054	0.55	0.08	0.08	0.17	24%	0.01	0.02	22%	0.21	0.14	1	1	0.29			0.00	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Lodging	2014	2054	0.51	0.07	0.04	0.22	30%	0.00	0.03	27%	0.23	0.16	2	1	0.26			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Lodging	2014	2054	0.47	0.07	0.04	0.25	35%	0.00	0.03	28%	0.20	0.17	6	1	0.24			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Lodging	2020	2054	56.01	7.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	56.01	7.93	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Lodging	2020	2054	10.81	1.53	45.20	45.20	81%	6.40	6.40	81%	0.01	0.01	0	0	7.93			45.20	6.40
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Lodging	2020	2054	20.16	2.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	20.16	2.85	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Lodging	2020	2054	4.23	0.60	15.94	15.94	79%	2.26	2.26	79%	0.01	0.01	0	0	6.68			15.94	2.26
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Lodging	2020	2054	14.84	2.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.84	2.10	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Lodging	2020	2054	4.24	0.60	10.60	10.60	71%	1.50	1.50	71%	0.01	0.01	0	0	4.92			10.60	1.50
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Lodging	2020	2054	11.67	1.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.67	1.65	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Lodging	2020	2054	8.44	1.19	3.23	3.23	28%	0.46	0.46	28%	0.09	0.09	1	1	0.72			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Lodging	2020	2054	14.91	2.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.91	2.11	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Lodging	2020	2054	11.03	1.56	3.88	3.88	26%	0.55	0.55	26%	0.07	0.07	0	0	0.95			0.00	0.00
VA	1800	1800	BaseMetal Halide, 465W	Lodging	2014	2054	29.88	4.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	29.88	4.23	0.00	0.00
VA	1800	1801	T5 (240W) (base metal halide)	Lodging	2014	2054	19.78	2.80	10.10	10.10	34%	1.43	1.43	34%	0.02	0.02	0	0	3.57			10.10	1.43
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Lodging	2014	2054	18.26	2.63	1.52	11.62	39%	0.17	1.60	38%	0.05	0.02	0	0	1.25			1.52	0.17
VA	1800	1806	Occupancy Sensor, High Bay T5	Lodging	2014	2054	17.63	2.61	0.63	12.25	41%	0.02	1.62	38%	0.05	0.02	2	0	0.94			0.00	0.00
VA	1850	1850	Base CFL Exit Sign	Lodging	2014	2054	6.70	0.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.70	0.95	0.00	0.00
VA	1850	1851	LED Exit Sign	Lodging	2014	2054	3.78	0.54	2.91	2.91	44%	0.41	0.41	44%	0.03	0.03	0	0	1.81			2.91	0.41
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Lodging	2014	2054	43.47	0.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	43.47	0.37	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Lodging	2014	2054	39.90	0.27	3.56	3.56	8%	0.10	0.10	28%	0.05	0.05	2	2	1.28			3.56	0.10
VA	1900	1902	LED Outdoor Area Lighting	Lodging	2014	2054	19.20	0.09	20.70	24.27	56%	0.18	0.28	75%	0.10	0.09	12	8	0.56			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Lodging	2014	2054	13.55	0.05	5.65	29.92	69%	0.04	0.33	87%	0.65	0.20	83	18	0.09			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Lodging	2014	2054	150.18	90.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	150.18	90.43	0.00	0.00
VA	2000	2002	Window Film (Standard) - Chiller	Lodging	2014	2054	144.75	87.16	5.43	5.43	4%	3.27	3.27	4%	0.03	0.03	0	0	2.71			5.43	3.27
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Lodging	2014	2054	132.40	79.72	12.36	17.78	12%	7.44	10.71	12%	0.05	0.04	0	0	2.05			12.36	7.44
VA	2000	2005	Chiller Tune Up/Diagnostics	Lodging	2014	2054	129.34	78.84	3.05	20.84	14%	0.88	11.59	13%	0.04	0.04	0	0	1.71			3.05	0.88
VA	2000	2013	High Efficiency Chiller Motors	Lodging	2014	2054	129.34	78.84	0.01	20.84	14%	0.00	11.59	13%	0.08	0.04	0	0	1.32			0.01	0.00
VA	2000	2006	VSD for Chiller Pumps and Towers	Lodging	2014	2054	128.83	78.69	0.51	21.35	14%	0.15	11.74	13%	0.06	0.04	0	0	1.17			0.51	0.15
VA	2000	2008	New Economizer - Chiller	Lodging	2014	2054	81.45	72.03	47.38	68.73	46%	6.66	18.40	20%	0.06	0.06	0	0	0.87			0.00	0.00
VA	2000	2003	EMS - Chiller	Lodging	2014	2054	74.71	71.08	6.74	75.47	50%	0.95	19.35	21%	0.13	0.06	1	0	0.46			0.00	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	Lodging	2014	2054	60.52	62.53	14.20	89.66	60%	8.55	27.90	31%	0.43	0.12	1	0	0.24			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	Lodging	2014	2054	60.40	62.46	0.12	89.78	60%	0.07	27.97	31%	1.93	0.12	3	0	0.04			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Lodging	2014	2054	60.09	62.28	0.30	90.09	60%	0.18	28.15	31%	4.61	0.14	8	0	0.02			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Lodging	2014	2054	383.60	230.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	383.60	230.99	0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	Lodging	2014	2054	363.95	219.16	19.65	19.65	5%	11.83	11.83	5%	0.03	0.03	0	0	2.65			19.65	11.83
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Lodging	2014	2054	280.25	168.75	83.71	103.36	27%	50.41	62.24	27%	0.05	0.04	0	0	2.12			83.71	50.41
VA	2100	2108	Optimize Controls - DX	Lodging	2014	2054	275.11	168.03	5.13	108.49	28%	0.72	62.96	27%	0.08	0.04	1	0	0.59			0.00	0.00
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Lodging	2014	2054	271.25	166.91	3.87	112.36	29%	1.11	64.07	28%	0.15	0.05	1	0	0.43			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Lodging	2014	2054	263.28	165.79	7.97	120.32	31%	1.12	65.19	28%	0.14	0.05	1	0	0.36			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Lodging	2014	2054	247.27	156.16	16.01	136.33	36%	9.64	74.83	32%	0.31	0.08	1	0	0.33			0.00	0.00
VA	2100	2111	Economizer Repair - DX	Lodging	2014	2054	246.00	155.00	1.27	137.60	36%	1.15	75.98	33%	0.89	0.09	1	0	0.09			0.00	0.00
VA	2100	2107	Cool Roof - DX	Lodging	2014	2054	245.52	154.71	0.48	138.08	36%	0.29	76.27	33%	1.21	0.10	2	0	0.07			0.00	0.00
VA	2100	2109	Economizer - DX	Lodging	2014	2054	241.48	154.15	4.03	142.12	37%	0.57	76.84	33%	1.05	0.12	7	0	0.05			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Lodging	2014	2054	241.48	154.14	0.01	142.13	37%	0.00	76.84	33%	1.77	0.12	13	0	0.03			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Lodging	2014	2054	238.85	152.57	2.62	144.75	38%	1.58	78.42	34%	2.97	0.17	5	0	0.03			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Lodging	2014	2054	297.25	178.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	297.25	178.99	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	2014	2054	260.49	156.85	36.76	36.76	12%	22.14	22.14	12%	0.03	0.03	0	0	3.65			36.76	22.14
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Lodging	2014	2054	62.42	37.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	62.42	37.58	0.00	0.00
VA	2300	2301	HE PTAC, EER=9.6, 1 ton	Lodging	2014	2054	53.96	32.49	8.45	8.45	14%	5.09	5.09	14%	0.08	0.08	0	0	1.24			8.45	5.09
VA	2300	2302	Occupancy Sensor (hotels)	Lodging	2014	2054	48.11	27.74	5.85	14.31	23%	4.75	9.84	26%	0.26	0.15	0	0	0.36			0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Lodging	2014	2054	250.99	53.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	250.99	53.08	0.00	0.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Lodging	2014	2054	246.66	52.17	4.33	4.33	2%	0.92	0.92	2%	0.03	0.03	0	0	2.37			4.33	0.92
VA	3000	3003	Demand Controlled Ventilation	Lodging	2014	2054	212.47	37.30	34.19	38.52	15%	14.87	15.78	30%	0.97	0.86	2	2	0.09			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Lodging	2014	2054	43.39	9.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	43.39	9.18	0.00	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	Lodging	2014	2054	38.86	8.95	4.53	4.53	10%	0.23	0.23	3%	0.02	0.02	0	0	2.00			4.53	0.23
VA	3200	3204	Demand Controlled Ventilation	Lodging	2014	2054	33.47	6.61	5.39	9.92	23%	2.34	2.57	28%	1.06	0.59	2	2	0.08			0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	4000	4000	Base Built-Up Refrigeration System	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Lodging	2014	2054	141.67	20.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	141.67	20.71	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Lodging	2014	2054	135.53	19.81	6.14	6.14	4%	0.90	0.90	4%	0.00	0.00	0	0	69.64			6.14	0.90
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Lodging	2014	2054	133.81	19.56	1.72	7.85	6%	0.25	1.15	6%	0.00	0.00	0	0	26.71			1.72	0.25
VA	4100	4109	Energy-Star Freezer, glass door	Lodging	2014	2054	131.77	19.27	2.04	9.89	7%	0.30	1.45	7%	0.00	0.00	0	0	19.92			2.04	0.30
VA	4100	4107	Energy-Star Freezer, solid door	Lodging	2014	2054	130.94	19.14	0.84	10.73	8%	0.12	1.57	8%	0.01	0.00	0	0	7.94			0.84	0.12
VA	4100	4106	Energy-Star Refrigerator, solid door	Lodging	2014	2054	130.36	19.06	0.57	11.30	8%	0.08	1.65	8%	0.01	0.00	0	0	6.31			0.57	0.08
VA	4100	4110	Energy Star Ice Machines	Lodging	2014	2054	129.30	18.90	1.06	12.37	9%	0.16	1.81	9%	0.02	0.00	0	0	2.34			1.06	0.16
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Lodging	2014	2054	129.26	18.90	0.04	12.40	9%	0.01	1.81	9%	0.33	0.00	2	0	0.17			0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Lodging	2014	2054	128.70	18.82	0.56	12.97	9%	0.08	1.90	9%	0.35	0.02	2	0	0.14			0.00	0.00
VA	5000	5000	Base Desktop PC	Lodging	2014	2054	9.10	1.35	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.10	1.35	0.00	0.00
VA	5000	5002	Energy Star or Better PC	Lodging	2014	2054	7.19	1.07	1.91	1.91	21%	0.28	0.28	21%	0.01	0.01	0	0	3.72			1.91	0.28
VA	5000	5001	PC Network Power Management Enabling	Lodging	2014	2054	3.86	0.82	3.33	5.24	58%	0.25	0.53	39%	0.02	0.02	0	0	2.85			3.33	0.25
VA	5100	5100	Base Laptop PC	Lodging	2014	2054	0.44	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.06	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Lodging	2014	2054	0.35	0.05	0.08	0.08	19%	0.01	0.01	19%	0.01	0.01	0	0	4.87			0.08	0.01
VA	5100	5101	Laptop Network Power Management Enabling	Lodging	2014	2054	0.35	0.05	0.01	0.09	21%	0.00	0.01	21%	1.24	0.11	8	1	0.04			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Lodging	2014	2054	4.29	0.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.29	0.64	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Lodging	2014	2054	1.88	0.28	2.41	2.41	56%	0.36	0.36	56%	0.00	0.00	0	0	38.73			2.41	0.36
VA	5200	5202	Monitor Power Management Enabling - CRT	Lodging	2014	2054	1.43	0.25	0.45	2.86	67%	0.03	0.39	61%	0.02	0.00	0	0	2.72			0.45	0.03
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Lodging	2014	2054	1.31	0.23	0.11	2.97	69%	0.02	0.41	64%	0.21	0.01	1	0	0.24			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Lodging	2014	2054	1.90	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.90	0.28	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Lodging	2014	2054	1.71	0.25	0.19	0.19	10%	0.03	0.03	10%	0.01	0.01	0	0	6.24			0.19	0.03
VA	5300	5302	Monitor Power Management Enabling - LCD	Lodging	2014	2054	1.51	0.24	0.19	0.38	20%	0.01	0.04	15%	0.08	0.05	1	0	0.57			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Lodging	2014	2054	1.39	0.23	0.12	0.50	27%	0.00	0.05	17%	0.22	0.09	6	1	0.20			0.00	0.00
VA	5400	5400	Base Copier	Lodging	2014	2054	2.65	0.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.65	0.39	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Lodging	2014	2054	2.39	0.35	0.26	0.26	10%	0.04	0.04	10%	0.00	0.00	0	0	29.79			0.26	0.04
VA	5400	5402	Copier Power Management Enabling	Lodging	2014	2054	2.29	0.35	0.10	0.35	13%	0.01	0.05	12%	0.09	0.03	1	0	0.54			0.00	0.00
VA	5500	5500	Base Multifunction	Lodging	2014	2054	0.41	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.41	0.06	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Lodging	2014	2054	0.31	0.05	0.10	0.10	25%	0.02	0.02	25%	0.01	0.01	0	0	8.14			0.10	0.02
VA	5500	5501	Multifunction Power Management Enabling	Lodging	2014	2054	0.25	0.04	0.06	0.16	39%	0.00	0.02	32%	0.26	0.09	3	1	0.18			0.00	0.00
VA	5600	5600	Base Printer	Lodging	2014	2054	1.15	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.15	0.17	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Lodging	2014	2054	0.75	0.11	0.40	0.40	35%	0.06	0.06	35%	0.00	0.00	0	0	37.40			0.40	0.06
VA	5600	5601	Printer Power Management Enabling	Lodging	2014	2054	0.61	0.10	0.14	0.54	47%	0.01	0.07	41%	0.06	0.02	1	0	0.84			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Lodging	2014	2054	40.24	5.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	40.24	5.98	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Lodging	2014	2054	36.21	5.38	4.02	4.02	10%	0.60	0.60	10%	0.00	0.00	0	0	103.65			4.02	0.60
VA	5700	5702	Data Center Best Practices	Lodging	2014	2054	31.61	4.70	4.61	8.63	21%	0.68	1.28	21%	0.00	0.00	0	0	42.20			4.61	0.68
VA	5700	5703	Data Center State of the Art practices	Lodging	2014	2054	29.84	4.43	1.77	10.40	26%	0.26	1.55	26%	0.00	0.00	0	0	21.88			1.77	0.26
VA	6000	6000	Base Water Heating	Lodging	2014	2054	62.44	8.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	62.44	8.42	0.00	0.00
VA	6000	6007	Heat Trap	Lodging	2014	2054	59.20	7.98	3.23	3.23	5%	0.44	0.44	5%	0.01	0.01	0	0	4.25			3.23	0.44
VA	6000	6006	Heat Recovery Unit	Lodging	2014	2054	51.51	6.95	7.70	10.93	18%	1.04	1.47	18%	0.02	0.02	0	0	3.18			7.70	1.04
VA	6000	6001	Demand controlled circulating systems	Lodging	2014	2054	49.58	6.69	1.93	12.86	21%	0.26	1.73	21%	0.03	0.02	0	0	2.18			1.93	0.26
VA	6000	6002	High Efficiency Water Heater (electric)	Lodging	2014	2054	48.58	6.55	0.99	13.85	22%	0.13	1.87	22%	0.03	0.02	0	0	1.90			0.99	0.13
VA	6000	6004	Tankless Water Heater	Lodging	2014	2054	44.94	6.06	3.64	17.50	28%	0.49	2.36	28%	0.05	0.03	0	0	1.35			3.64	0.49
VA	6000	6008	Solar Water Heater	Lodging	2014	2054	38.65	5.21	6.29	23.79	38%	0.85	3.21	38%	0.06	0.03	0	0	1.16			6.29	0.85
VA	6000	6003	Hot Water Pipe Insulation	Lodging	2014	2054	37.99	5.12	0.66	24.45	39%	0.09	3.30	39%	0.07	0.04	1	0	0.90			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Lodging	2014	2054	15.02	2.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.02	2.44	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Lodging	2014	2054	12.67	2.26	2.35	2.35	16%	0.19	0.19	8%	0.02	0.02	0	0	1.91			2.35	0.19
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Lodging	2014	2054	11.40	2.15	1.27	3.62	24%	0.10	0.29	12%	0.05	0.03	1	0	1.04			1.27	0.10
VA	7100	7100	Base Non-Refrigerated Vending Machines	Lodging	2014	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.01	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Lodging	2014	2054	0.05	0.01	0.04	0.04	45%	0.00	0.00	22%	0.41	0.41	5	5	0.11			0.00	0.00
VA	7200	7200	Base Oven	Lodging	2014	2054	2.97	0.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.97	0.61	0.00	0.00
VA	7300	7300	Base Fryer	Lodging	2014	2054	7.48	1.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.48	1.53	0.00	0.00
VA	7400	7400	Base Steamer	Lodging	2014	2054	1.24	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.24	0.25	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Lodging	2014	2054	24.82	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.82	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	2014	2054	23.42	0.00	1.40	1.40	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	2.11			1.40	0.00
VA	8100	8100	Base Heating, Other Electric	Lodging	2014	2054	19.91	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.91	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Lodging	2014	2054	279.75	45.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	279.75	45.55	0.00	0.00
VA	9500	9501	Xmisc	Lodging	2014	2054	279.75	45.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Data Centers	2020	2054	17.07	2.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.07	2.97	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Data Centers	2020	2054	17.02	2.97	0.05	0.05	0%	0.00	0.00	0%	0.01	0.01	0	0	4.72			0.05	0.00
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Data Centers	2020	2054	15.76	2.79	1.26	1.31	8%	0.18	0.18	6%	0.01	0.01	0	0	4.30			1.26	0.18
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Data Centers	2020	2054	14.16	2.51	1.61	2.91	17%	0.28	0.46	16%	0.02	0.02	0	0	2.48			1.61	0.28
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	2020	2054	12.35	2.19	1.80	4.72	28%	0.31	0.77	26%	0.05	0.03	0	0	1.19			1.80	0.31
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Data Centers	2020	2054	11.42	2.15	0.93	5.65	33%	0.04	0.82	28%	0.07	0.04	2	0	0.70			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Data Centers	2020	2054	9.58	1.83	1.84	7.49	44%	0.32	1.14	38%	0.30	0.10	2	1	0.22			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Data Centers	2020	2054	8.76	1.69	0.82	8.31	49%	0.14	1.28	43%	0.25	0.12	1	1	0.26			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Data Centers	2020	2054	0.29	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.29	0.05	0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Data Centers	2020	2054	0.29	0.05	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	2.74			0.00	0.00
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Data Centers	2020	2054	0.27	0.05	0.02	0.02	8%	0.00	0.00	6%	0.03	0.03	0	0	2.50			0.02	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Data Centers	2020	2054	0.24	0.04	0.03	0.05	17%	0.00	0.01	16%	0.03	0.03	0	0	1.95			0.03	0.00
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	2020	2054	0.21	0.04	0.03	0.08	28%	0.01	0.01	26%	0.06	0.04	0	0	0.94			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Data Centers	2020	2054	0.20	0.04	0.01	0.09	31%	0.00	0.01	30%	0.23	0.06	1	0	0.29			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Data Centers	2020	2054	0.18	0.03	0.01	0.11	36%	0.00	0.02	31%	0.13	0.07	3	0	0.37			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Data Centers	2020	2054	0.17	0.03	0.02	0.12	42%	0.00	0.02	37%	0.31	0.10	2	1	0.21			0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1200	1200	Base Other Fluorescent Fixture	Data Centers	2014	2054	0.63	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.63	0.11	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Data Centers	2014	2054	0.61	0.11	0.01	0.01	2%	0.00	0.00	1%	0.00	0.00	0	0	13.26			0.01	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Data Centers	2014	2054	0.57	0.10	0.05	0.06	9%	0.01	0.01	7%	0.03	0.03	0	0	1.99			0.05	0.01
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Data Centers	2014	2054	0.51	0.09	0.06	0.12	19%	0.01	0.02	16%	0.10	0.06	1	0	0.60			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Data Centers	2014	2054	0.44	0.09	0.07	0.18	29%	0.00	0.02	19%	0.13	0.09	3	1	0.39			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Data Centers	2014	2054	0.39	0.08	0.06	0.24	38%	0.01	0.03	28%	0.23	0.12	1	1	0.25			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Data Centers	2020	2054	5.27	0.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.27	0.92	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Data Centers	2020	2054	1.04	0.18	4.24	4.24	80%	0.74	0.74	80%	0.01	0.01	0	0	10.00			4.24	0.74
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Data Centers	2020	2054	1.90	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.90	0.33	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Data Centers	2020	2054	0.40	0.07	1.49	1.49	79%	0.26	0.26	79%	0.01	0.01	0	0	8.42			1.49	0.26
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Data Centers	2020	2054	1.40	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.40	0.24	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Data Centers	2020	2054	0.41	0.07	0.99	0.99	71%	0.17	0.17	71%	0.01	0.01	0	0	6.20			0.99	0.17
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Data Centers	2020	2054	1.07	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.07	0.19	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Data Centers	2020	2054	0.77	0.13	0.30	0.30	28%	0.05	0.05	28%	0.06	0.06	0	0	0.89			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Data Centers	2020	2054	1.36	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.36	0.24	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Data Centers	2020	2054	1.01	0.18	0.35	0.35	26%	0.06	0.06	26%	0.05	0.05	0	0	1.18			0.35	0.06
VA	1800	1800	BaseMetal Halide, 465W	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1850	1850	Base CFL Exit Sign	Data Centers	2014	2054	0.27	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.27	0.05	0.00	0.00
VA	1850	1851	LED Exit Sign	Data Centers	2014	2054	0.15	0.03	0.12	0.12	44%	0.02	0.02	44%	0.03	0.03	0	0	1.90			0.12	0.02
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Data Centers	2014	2054	4.01	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.01	0.04	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Data Centers	2014	2054	3.65	0.04	0.36	0.36	9%	0.01	0.01	18%	0.02	0.02	1	1	2.71			0.36	0.01
VA	1900	1902	LED Outdoor Area Lighting	Data Centers	2014	2054	1.76	0.02	1.89	2.25	56%	0.02	0.03	65%	0.10	0.09	9	7	0.59			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Data Centers	2014	2054	1.25	0.01	0.50	2.75	69%	0.01	0.03	77%	0.67	0.19	65	16	0.09			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Data Centers	2014	2054	44.99	11.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	44.99	11.07	0.00	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	Data Centers	2014	2054	44.79	11.02	0.20	0.20	0%	0.05	0.05	0%	0.00	0.00	0	0	30.81			0.20	0.05
VA	2000	2005	Chiller Tune Up/Diagnostics	Data Centers	2014	2054	44.77	11.02	0.02	0.22	0%	0.00	0.05	0%	0.01	0.00	0	0	7.88			0.02	0.00
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Data Centers	2014	2054	40.94	10.08	3.82	4.05	9%	0.94	0.99	9%	0.01	0.01	0	0	7.01			3.82	0.94
VA	2000	2006	VSD for Chiller Pumps and Towers	Data Centers	2014	2054	40.66	10.05	0.29	4.33	10%	0.03	1.03	9%	0.01	0.01	0	0	5.10			0.29	0.03
VA	2000	2013	High Efficiency Chiller Motors	Data Centers	2014	2054	40.58	10.03	0.07	4.41	10%	0.02	1.04	9%	0.02	0.01	0	0	4.55			0.07	0.02
VA	2000	2003	EMS - Chiller	Data Centers	2014	2054	39.54	9.97	1.04	5.45	12%	0.06	1.10	10%	0.02	0.01	0	0	3.41			1.04	0.06
VA	2000	2008	New Economizer - Chiller	Data Centers	2014	2054	36.69	9.81	2.85	8.30	18%	0.16	1.26	11%	0.02	0.01	0	0	2.68			2.85	0.16
VA	2000	2002	Window Film (Standard) - Chiller	Data Centers	2014	2054	36.67	9.81	0.01	8.32	18%	0.00	1.27	11%	0.04	0.01	0	0	1.82			0.01	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	Data Centers	2014	2054	29.71	8.09	6.97	15.28	34%	1.72	2.98	27%	0.06	0.04	0	0	1.28			6.97	1.72
VA	2000	2004	Cool Roof - Chiller	Data Centers	2014	2054	29.61	8.07	0.09	15.38	34%	0.02	3.00	27%	0.09	0.04	0	0	0.73			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Data Centers	2014	2054	29.52	8.05	0.09	15.47	34%	0.02	3.03	27%	0.74	0.04	3	0	0.09			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Data Centers	2014	2054	25.66	6.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.66	6.32	0.00	0.00
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Data Centers	2014	2054	19.76	4.86	5.90	5.90	23%	1.45	1.45	23%	0.01	0.01	0	0	7.48			5.90	1.45
VA	2100	2111	Economizer Repair - DX	Data Centers	2014	2054	19.33	4.68	0.43	6.33	25%	0.19	1.64	26%	0.03	0.01	0	0	2.39			0.43	0.19
VA	2100	2108	Optimize Controls - DX	Data Centers	2014	2054	18.97	4.66	0.36	6.69	26%	0.02	1.66	26%	0.02	0.01	0	0	2.29			0.36	0.02
VA	2100	2109	Economizer - DX	Data Centers	2014	2054	16.67	4.53	2.29	8.98	35%	0.13	1.79	28%	0.03	0.02	0	0	1.94			2.29	0.13
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Data Centers	2014	2054	16.67	4.53	0.01	8.99	35%	0.00	1.79	28%	0.04	0.02	0	0	1.55			0.01	0.00
VA	2100	2115	Window Film (Standard) - DX	Data Centers	2014	2054	16.32	4.44	0.34	9.33	36%	0.08	1.87	30%	0.05	0.02	0	0	1.41			0.34	0.08
VA	2100	2106	Prog. Thermostat - DX	Data Centers	2014	2054	15.52	4.40	0.80	10.14	40%	0.05	1.92	30%	0.04	0.02	1	0	1.36			0.80	0.05
VA	2100	2112	Duct Testing/Sealing - DX	Data Centers	2014	2054	14.58	4.16	0.94	11.08	43%	0.23	2.15	34%	0.08	0.02	0	0	0.95			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Data Centers	2014	2054	14.58	4.16	0.00	11.08	43%	0.00	2.15	34%	0.08	0.02	1	0	0.68			0.00	0.00
VA	2100	2107	Cool Roof - DX	Data Centers	2014	2054	14.45	4.13	0.12	11.21	44%	0.03	2.18	35%	0.10	0.02	0	0	0.62			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Data Centers	2014	2054	14.36	4.11	0.09	11.30	44%	0.02	2.21	35%	0.87	0.03	4	0	0.07			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Data Centers	2014	2054	3.29	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.29	0.81	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Data Centers	2014	2054	2.88	0.71	0.41	0.41	12%	0.10	0.10	12%	0.01	0.01	0	0	10.48			0.41	0.10
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Data Centers	2014	2054	6.59	1.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.59	1.62	0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	Data Centers	2014	2054	5.97	1.58	0.61	0.61	9%	0.04	0.04	2%	0.01	0.01	0	0	8.33			0.61	0.04
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Data Centers	2014	2054	5.88	1.56	0.10	0.71	11%	0.02	0.06	4%	0.01	0.01	0	0	6.25			0.10	0.02
VA	3000	3003	Demand Controlled Ventilation	Data Centers	2014	2054	5.54	1.41	0.34	1.05	16%	0.15	0.21	13%	0.30	0.10	1	0	0.30			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Data Centers	2014	2054	22.89	5.63	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	22.89	5.63	0.00	0.00
VA	3100	3102	Variable Speed Drive Control, 15 HP	Data Centers	2014	2054	20.77	5.50	2.12	2.12	9%	0.13	0.13	2%	0.00	0.00	0	0	30.15			2.12	0.13
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Data Centers	2014	2054	20.64	5.47	0.12	2.25	10%	0.03	0.16	3%	0.01	0.00	0	0	13.77			0.12	0.03
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Data Centers	2014	2054	19.29	5.17	1.35	3.60	16%	0.30	0.47	8%	0.01	0.01	0	0	6.06			1.35	0.30
VA	3100	3103	Air Handler Optimization, 15 HP	Data Centers	2014	2054	17.47	5.06	1.82	5.42	24%	0.11	0.58	10%	0.01	0.01	0	0	4.79			1.82	0.11
VA	3100	3105	Energy Recovery Ventilation (ERV)	Data Centers	2014	2054	17.04	4.86	0.43	5.85	26%	0.19	0.77	14%	0.11	0.02	0	0	0.85			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	Data Centers	2014	2054	16.06	4.43	0.98	6.83	30%	0.44	1.21	21%	0.36	0.06	1	0	0.25			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Data Centers	2014	2054	24.32	5.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.32	5.99	0.00	0.00
VA	3200	3202	Variable Speed Drive Control, 40 HP	Data Centers	2014	2054	22.06	5.85	2.26	2.26	9%	0.14	0.14	2%	0.01	0.01	0	0	5.99			2.26	0.14
VA	3200	3203	Air Handler Optimization, 40 HP	Data Centers	2014	2054	19.98	5.72	2.08	4.34	18%	0.13	0.27	5%	0.01	0.01	0	0	5.15			2.08	0.13
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Data Centers	2014	2054	19.89	5.69	0.09	4.43	18%	0.02	0.29	5%	0.05	0.01	0	0	1.55			0.09	0.02
VA	3200	3204	Demand Controlled Ventilation	Data Centers	2014	2054	18.75	5.19	1.15	5.57	23%	0.51	0.80	13%	0.32	0.08	1	1	0.28			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Data Centers	2014	2054	3.64	0.68	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.64	0.68	0.00	0.00
VA	4100	4109	Energy-Star Freezer, glass door	Data Centers	2014	2054	3.64	0.68	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0	0	27.20			0.00	0.00
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Data Centers	2014	2054	3.57	0.67	0.07	0.07	2%	0.01	0.01	2%	0.00	0.00	0	0	26.09			0.07	0.01
VA	4100	4107	Energy-Star Freezer, solid door	Data Centers	2014	2054	3.57	0.67	0.00	0.07	2%	0.00	0.01	2%	0.01	0.00	0	0	10.90			0.00	0.00
VA	4100	4108	Energy-Star Refrigerator, glass door	Data Centers	2014	2054	3.57	0.67	0.00	0.07	2%	0.00	0.01	2%	0.01	0.00	0	0	9.19			0.00	0.00
VA	4100	4106	Energy-Star Refrigerator, solid door	Data Centers	2014	2054	3.57	0.67	0.00	0.07	2%	0.00	0.01	2%	0.01	0.00	0	0	8.80			0.00	0.00
VA	4100	4110	Energy Star Ice Machines	Data Centers	2014	2054	3.57	0.67	0.00	0.08	2%	0.00	0.01	2%	0.02	0.00	0	0	3.27			0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	4100	4112	Reach-in unit occupancy sensors	Data Centers	2014	2054	3.56	0.67	0.00	0.08	2%	0.00	0.01	2%	0.27	0.00	1	0	0.23			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Data Centers	2014	2054	3.56	0.67	0.00	0.08	2%	0.00	0.01	2%	0.30	0.00	2	0	0.19			0.00	0.00
VA	5000	5000	Base Desktop PC	Data Centers	2014	2054	0.48	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.48	0.08	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Data Centers	2014	2054	0.27	0.06	0.21	0.21	44%	0.02	0.02	23%	0.01	0.01	0	0	3.54			0.21	0.02
VA	5000	5002	Energy Star or Better PC	Data Centers	2014	2054	0.21	0.05	0.06	0.27	56%	0.01	0.03	35%	0.03	0.02	0	0	1.96			0.06	0.01
VA	5100	5100	Base Laptop PC	Data Centers	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Data Centers	2014	2054	0.03	0.00	0.01	0.01	19%	0.00	0.00	19%	0.01	0.01	0	0	5.13			0.01	0.00
VA	5100	5101	Laptop Network Power Management Enabling	Data Centers	2014	2054	0.03	0.00	0.00	0.01	21%	0.00	0.00	21%	1.24	0.11	7	1	0.04			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Data Centers	2014	2054	0.26	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.26	0.05	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Data Centers	2014	2054	0.15	0.03	0.11	0.11	43%	0.02	0.02	43%	0.00	0.00	0	0	53.39			0.11	0.02
VA	5200	5202	Monitor Power Management Enabling - CRT	Data Centers	2014	2054	0.13	0.02	0.02	0.13	50%	0.00	0.02	46%	0.01	0.00	0	0	4.12			0.02	0.00
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Data Centers	2014	2054	0.12	0.02	0.01	0.14	54%	0.00	0.02	50%	0.14	0.01	1	0	0.38			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Data Centers	2014	2054	0.13	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.02	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Data Centers	2014	2054	0.11	0.02	0.02	0.02	13%	0.00	0.00	13%	0.01	0.01	0	0	6.34			0.02	0.00
VA	5300	5302	Monitor Power Management Enabling - LCD	Data Centers	2014	2054	0.10	0.02	0.01	0.02	19%	0.00	0.00	16%	0.08	0.03	1	0	0.58			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Data Centers	2014	2054	0.09	0.02	0.01	0.03	25%	0.00	0.00	18%	0.24	0.08	5	1	0.18			0.00	0.00
VA	5400	5400	Base Copier	Data Centers	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Data Centers	2014	2054	0.10	0.02	0.01	0.01	10%	0.00	0.00	10%	0.00	0.00	0	0	31.22			0.01	0.00
VA	5400	5402	Copier Power Management Enabling	Data Centers	2014	2054	0.09	0.02	0.00	0.01	14%	0.00	0.00	12%	0.09	0.03	1	0	0.53			0.00	0.00
VA	5500	5500	Base Multifunction	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Data Centers	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	8.55			0.00	0.00
VA	5500	5501	Multifunction Power Management Enabling	Data Centers	2014	2054	0.01	0.00	0.00	0.01	38%	0.00	0.00	32%	0.28	0.10	3	1	0.18			0.00	0.00
VA	5600	5600	Base Printer	Data Centers	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Data Centers	2014	2054	0.03	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00	0.00	0	0	39.32			0.01	0.00
VA	5600	5601	Printer Power Management Enabling	Data Centers	2014	2054	0.02	0.00	0.00	0.02	46%	0.00	0.00	41%	0.06	0.02	1	0	0.82			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Data Centers	2014	2054	762.71	132.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	762.71	132.70	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Data Centers	2014	2054	686.44	119.43	76.27	76.27	10%	13.27	13.27	10%	0.00	0.00	0	0	109.14			76.27	13.27
VA	5700	5702	Data Center Best Practices	Data Centers	2014	2054	599.11	104.24	87.33	163.60	21%	15.19	28.46	21%	0.00	0.00	0	0	44.43			87.33	15.19
VA	5700	5703	Data Center State of the Art practices	Data Centers	2014	2054	565.56	98.40	33.55	197.15	26%	5.84	34.30	26%	0.00	0.00	0	0	23.04			33.55	5.84
VA	6000	6000	Base Water Heating	Data Centers	2014	2054	0.38	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.38	0.07	0.00	0.00
VA	6000	6007	Heat Trap	Data Centers	2014	2054	0.36	0.06	0.02	0.02	5%	0.00	0.00	5%	0.08	0.08	0	0	0.79			0.00	0.00
VA	6000	6002	High Efficiency Water Heater (electric)	Data Centers	2014	2054	0.36	0.06	0.01	0.03	7%	0.00	0.00	7%	0.16	0.10	1	1	0.42			0.00	0.00
VA	6000	6004	Tankless Water Heater	Data Centers	2014	2054	0.33	0.06	0.03	0.05	14%	0.00	0.01	14%	0.24	0.17	1	1	0.30			0.00	0.00
VA	6000	6008	Solar Water Heater	Data Centers	2014	2054	0.15	0.03	0.18	0.23	60%	0.03	0.04	60%	0.28	0.26	2	1	0.26			0.00	0.00
VA	6000	6006	Heat Recovery Unit	Data Centers	2014	2054	0.14	0.03	0.01	0.24	62%	0.00	0.04	62%	0.62	0.27	4	2	0.10			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	Data Centers	2014	2054	0.14	0.02	0.00	0.24	64%	0.00	0.04	64%	1.87	0.30	11	2	0.04			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Data Centers	2014	2054	0.25	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.25	0.04	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Data Centers	2014	2054	0.21	0.04	0.04	0.04	16%	0.00	0.00	8%	0.01	0.01	0	0	5.44			0.04	0.00
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Data Centers	2014	2054	0.19	0.04	0.02	0.06	24%	0.00	0.01	12%	0.02	0.01	0	0	3.00			0.02	0.00
VA	7100	7100	Base Non-Refrigerated Vending Machines	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Data Centers	2014	2054	0.01	0.00	0.00	0.00	44%	0.00	0.00	23%	0.12	0.12	1	1	0.41			0.00	0.00
VA	7200	7200	Base Oven	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	7300	7300	Base Fryer	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	7400	7400	Base Steamer	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	8100	8100	Base Heating, Other Electric	Data Centers	2014	2054	0.42	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.42	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Data Centers	2014	2054	3.84	0.67	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.84	0.67	0.00	0.00
VA	9500	9501	Xmisc	Data Centers	2014	2054	3.84	0.67	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	eligious Worsh	2020	2054	69.16	11.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	69.16	11.74	0.00	0.00
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	eligious Worsh	2020	2054	62.00	10.52	7.17	7.17	10%	1.22	1.22	10%	0.04	0.04	0	0	1.48			7.17	1.22
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	eligious Worsh	2020	2054	61.68	10.50	0.32	7.49	11%	0.03	1.24	11%	0.05	0.04	1	0	1.06			0.32	0.03
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	eligious Worsh	2020	2054	57.00	9.87	4.67	12.16	18%	0.63	1.87	16%	0.07	0.05	1	0	0.93			0.00	0.00
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	eligious Worsh	2020	2054	49.75	8.64	7.25	19.41	28%	1.23	3.10	26%	0.09	0.07	1	0	0.65			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	eligious Worsh	2020	2054	41.74	7.28	8.02	27.43	40%	1.36	4.46	38%	0.58	0.22	3	1	0.12			0.00	0.00
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	eligious Worsh	2020	2054	40.62	7.23	1.11	28.54	41%	0.05	4.51	38%	0.28	0.22	7	1	0.17			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	eligious Worsh	2020	2054	37.16	6.64	3.47	32.01	46%	0.59	5.10	43%	0.49	0.25	3	2	0.14			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	eligious Worsh	2020	2054	52.96	8.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	52.96	8.99	0.00	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	eligious Worsh	2020	2054	47.96	8.14	5.00	5.00	9%	0.85	0.85	9%	0.05	0.05	0	0	1.18			5.00	0.85
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	eligious Worsh	2020	2054	47.71	8.12	0.25	5.25	10%	0.02	0.87	10%	0.05	0.05	1	0	0.87			0.00	0.00
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	eligious Worsh	2020	2054	44.09	7.63	3.61	8.87	17%	0.49	1.36	15%	0.08	0.06	1	0	0.76			0.00	0.00
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	eligious Worsh	2020	2054	38.48	6.68	5.61	14.48	27%	0.95	2.31	26%	0.12	0.08	1	1	0.52			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	eligious Worsh	2020	2054	36.62	6.36	1.86	16.34	31%	0.32	2.62	29%	0.47	0.13	3	1	0.15			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	eligious Worsh	2020	2054	33.50	5.83	3.13	19.46	37%	0.53	3.15	35%	0.59	0.20	3	1	0.12			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	eligious Worsh	2020	2054	32.60	5.80	0.89	20.36	38%	0.04	3.19	35%	0.47	0.21	12	1	0.10			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	eligious Worsh	2014	2054	0.72	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.72	0.12	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	eligious Worsh	2014	2054	0.70	0.12	0.02	0.02	3%	0.00	0.00	2%	0.03	0.03	0	0	1.51			0.02	0.00
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	eligious Worsh	2014	2054	0.65	0.11	0.05	0.08	10%	0.01	0.01	9%	0.17	0.13	1	1	0.36			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	eligious Worsh	2014	2054	0.57	0.10	0.08	0.16	22%	0.01	0.02	20%	0.35	0.24	2	2	0.17			0.00	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	eligious Worsh	2014	2054	0.52	0.09	0.04	0.20	28%	0.01	0.03	25%	0.36	0.27	3	2	0.17			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	eligious Worsh	2014	2054	0.48	0.09	0.04	0.24	33%	0.00	0.03	26%	0.31	0.27	8	2	0.16			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	eligious Worsh	2020	2054	27.77	4.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	27.77	4.71	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	eligious Worsh	2020	2054	4.96	0.84	22.81	22.81	82%	3.87	3.87	82%	0.01	0.01	0	0	5.10			22.81	3.87
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	eligious Worsh	2020	2054	10.00	1.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.00	1.70	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	eligious Worsh	2020	2054	1.94	0.33	8.06	8.06	81%	1.37	1.37	81%	0.01	0.01	0	0	4.30			8.06	1.37

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	eligious Worsh	2020	2054	7.36	1.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.36	1.25	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	eligious Worsh	2020	2054	1.96	0.33	5.40	5.40	73%	0.92	0.92	73%	0.02	0.02	0	0	3.19			5.40	0.92
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	eligious Worsh	2020	2054	4.14	0.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.14	0.70	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	eligious Worsh	2020	2054	2.99	0.51	1.15	1.15	28%	0.19	0.19	28%	0.13	0.13	1	1	0.50			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	eligious Worsh	2020	2054	5.29	0.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.29	0.90	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	eligious Worsh	2020	2054	3.92	0.66	1.38	1.38	26%	0.23	0.23	26%	0.09	0.09	1	1	0.66			0.00	0.00
VA	1800	1800	BaseMetal Halide, 465W	eligious Worsh	2014	2054	3.51	0.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.51	0.60	0.00	0.00
VA	1800	1801	T5 (240W) (base metal halide)	eligious Worsh	2014	2054	2.33	0.39	1.19	1.19	34%	0.20	0.20	34%	0.03	0.03	0	0	2.43			1.19	0.20
VA	1800	1806	Occupancy Sensor, High Bay T5	eligious Worsh	2014	2054	2.25	0.39	0.08	1.26	36%	0.00	0.20	34%	0.08	0.03	2	0	0.64			0.00	0.00
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	eligious Worsh	2014	2054	2.08	0.37	0.17	1.43	41%	0.02	0.23	38%	0.14	0.04	1	0	0.44			0.00	0.00
VA	1850	1850	Base CFL Exit Sign	eligious Worsh	2014	2054	2.02	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.02	0.34	0.00	0.00
VA	1850	1851	LED Exit Sign	eligious Worsh	2014	2054	1.09	0.18	0.93	0.93	46%	0.16	0.16	46%	0.05	0.05	0	0	1.01			0.93	0.16
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	eligious Worsh	2014	2054	25.23	1.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.23	1.95	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	eligious Worsh	2014	2054	24.75	1.85	0.48	0.48	2%	0.11	0.11	5%	0.07	0.07	0	0	1.19			0.48	0.11
VA	1900	1902	LED Outdoor Area Lighting	eligious Worsh	2014	2054	11.91	0.85	12.84	13.32	53%	0.99	1.10	56%	0.16	0.16	2	2	0.37			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	eligious Worsh	2014	2054	8.43	0.61	3.48	16.80	67%	0.24	1.34	69%	1.07	0.35	15	4	0.06			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	eligious Worsh	2014	2054	30.08	23.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	30.08	23.26	0.00	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	eligious Worsh	2014	2054	29.71	22.97	0.38	0.38	1%	0.29	0.29	1%	0.04	0.04	0	0	3.00			0.38	0.29
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	eligious Worsh	2014	2054	27.17	21.01	2.54	2.91	10%	1.96	2.25	10%	0.08	0.07	0	0	1.54			2.54	1.96
VA	2000	2005	Chiller Tune Up/Diagnostics	eligious Worsh	2014	2054	27.15	21.00	0.02	2.93	10%	0.01	2.26	10%	0.06	0.07	0	0	1.19			0.02	0.01
VA	2000	2013	High Efficiency Chiller Motors	eligious Worsh	2014	2054	27.13	20.99	0.02	2.95	10%	0.02	2.28	10%	0.12	0.07	0	0	0.99			0.00	0.00
VA	2000	2006	VSD for Chiller Pumps and Towers	eligious Worsh	2014	2054	26.07	20.57	1.05	4.01	13%	0.42	2.69	12%	0.09	0.08	0	0	0.85			0.00	0.00
VA	2000	2003	EMS - Chiller	eligious Worsh	2014	2054	24.82	20.32	1.25	5.26	17%	0.25	2.94	13%	0.14	0.09	1	0	0.47			0.00	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	eligious Worsh	2014	2054	20.26	16.79	4.56	9.83	33%	3.53	6.47	28%	0.40	0.24	1	0	0.29			0.00	0.00
VA	2000	2002	Window Film (Standard) - Chiller	eligious Worsh	2014	2054	20.13	16.69	0.13	9.95	33%	0.10	6.57	28%	1.45	0.25	2	0	0.06			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	eligious Worsh	2014	2054	20.09	16.66	0.04	9.99	33%	0.03	6.60	28%	6.31	0.28	8	0	0.01			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	eligious Worsh	2014	2054	19.82	16.46	0.27	10.26	34%	0.21	6.81	29%	7.61	0.47	10	1	0.01			0.00	0.00
VA	2000	2008	New Economizer - Chiller	eligious Worsh	2014	2054	19.82	16.46	0.00	10.26	34%	0.00	6.81	29%	70236.15	0.59	354,039	1	0.00			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	eligious Worsh	2014	2054	96.90	74.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	96.90	74.94	0.00	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	eligious Worsh	2014	2054	96.90	74.94	0.00	0.00	0%	0.00	0.00	0%	0.04	0.04	0	0	3.08			0.00	0.00
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	eligious Worsh	2014	2054	74.61	57.70	22.29	22.29	23%	17.24	17.24	23%	0.07	0.07	0	0	1.63			22.29	17.24
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	eligious Worsh	2014	2054	74.58	57.69	0.03	22.32	23%	0.01	17.25	23%	0.23	0.07	1	0	0.31			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	eligious Worsh	2014	2054	70.19	54.30	4.39	26.71	28%	3.39	20.64	28%	0.43	0.13	1	0	0.27			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	eligious Worsh	2014	2054	68.60	53.98	1.59	28.30	29%	0.32	20.96	28%	0.24	0.13	1	0	0.23			0.00	0.00
VA	2100	2108	Optimize Controls - DX	eligious Worsh	2014	2054	67.46	53.75	1.14	29.44	30%	0.23	21.18	28%	0.25	0.14	1	0	0.20			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	eligious Worsh	2014	2054	67.20	53.55	0.26	29.70	31%	0.20	21.39	29%	1.19	0.15	2	0	0.08			0.00	0.00
VA	2100	2107	Cool Roof - DX	eligious Worsh	2014	2054	67.07	53.45	0.13	29.83	31%	0.10	21.49	29%	6.09	0.17	8	0	0.02			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	eligious Worsh	2014	2054	66.64	53.12	0.43	30.26	31%	0.33	21.82	29%	7.28	0.27	9	0	0.01			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	eligious Worsh	2014	2054	78.85	60.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	78.85	60.98	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	eligious Worsh	2014	2054	69.10	53.44	9.75	9.75	12%	7.54	7.54	12%	0.07	0.07	0	0	1.52			9.75	7.54
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	eligious Worsh	2014	2054	78.27	60.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	78.27	60.53	0.00	0.00
VA	2300	2301	HE PTAC, EER=9.6, 1 ton	eligious Worsh	2014	2054	67.67	52.33	10.60	10.60	14%	8.20	8.20	14%	0.16	0.16	0	0	0.66			0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	eligious Worsh	2014	2054	72.92	20.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	72.92	20.72	0.00	0.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	eligious Worsh	2014	2054	71.66	20.36	1.26	1.26	2%	0.36	0.36	2%	0.13	0.13	0	0	0.63			0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	eligious Worsh	2014	2054	50.40	18.85	21.26	22.52	31%	1.51	1.86	9%	0.10	0.10	1	1	0.59			0.00	0.00
VA	3000	3003	Demand Controlled Ventilation	eligious Worsh	2014	2054	49.42	18.32	0.98	23.50	32%	0.54	2.40	12%	3.09	0.22	6	2	0.03			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	eligious Worsh	2014	2054	58.13	16.52	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	58.13	16.52	0.00	0.00
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	eligious Worsh	2014	2054	49.74	14.37	8.39	8.39	14%	2.14	2.14	13%	0.06	0.06	0	0	1.20			8.39	2.14
VA	3100	3103	Air Handler Optimization, 15 HP	eligious Worsh	2014	2054	46.33	14.13	3.41	11.80	20%	0.24	2.38	14%	0.08	0.07	1	0	0.63			0.00	0.00
VA	3100	3102	Variable Speed Drive Control, 15 HP	eligious Worsh	2014	2054	32.59	13.16	13.75	25.54	44%	0.97	3.36	20%	0.13	0.10	2	1	0.43			0.00	0.00
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	eligious Worsh	2014	2054	32.10	13.02	0.49	26.03	45%	0.14	3.49	21%	0.42	0.11	1	1	0.19			0.00	0.00
VA	3100	3105	Energy Recovery Ventilation (ERV)	eligious Worsh	2014	2054	31.69	12.80	0.41	26.44	45%	0.22	3.72	23%	0.86	0.12	2	1	0.12			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	eligious Worsh	2014	2054	31.07	12.46	0.62	27.06	47%	0.34	4.06	25%	3.92	0.21	7	1	0.02			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	eligious Worsh	2014	2054	46.13	13.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	46.13	13.11	0.00	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	eligious Worsh	2014	2054	42.97	12.88	3.16	3.16	7%	0.22	0.22	2%	0.07	0.07	1	1	0.74			0.00	0.00
VA	3200	3202	Variable Speed Drive Control, 40 HP	eligious Worsh	2014	2054	30.22	11.98	12.75	15.91	34%	0.90	1.13	9%	0.21	0.18	3	3	0.28			0.00	0.00
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	eligious Worsh	2014	2054	30.10	11.94	0.12	16.03	35%	0.03	1.16	9%	1.02	0.19	4	3	0.08			0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	eligious Worsh	2014	2054	29.51	11.62	0.59	16.62	36%	0.32	1.48	11%	3.28	0.29	6	3	0.03			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	eligious Worsh	2014	2054	98.51	14.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	98.51	14.83	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	eligious Worsh	2014	2054	97.55	14.69	0.95	0.95	1%	0.14	0.14	1%	0.00	0.00	0	0	18.19			0.95	0.14
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	eligious Worsh	2014	2054	96.17	14.48	1.39	2.34	2%	0.21	0.35	2%	0.00	0.00	0	0	17.61			1.39	0.21
VA	4100	4108	Energy-Star Refrigerator, glass door	eligious Worsh	2014	2054	95.55	14.38	0.62	2.96	3%	0.09	0.45	3%	0.01	0.00	0	0	5.68			0.62	0.09
VA	4100	4106	Energy-Star Refrigerator, solid door	eligious Worsh	2014	2054	93.94	14.14	1.60	4.56	5%	0.24	0.69	5%	0.01	0.01	0	0	5.57			1.60	0.24
VA	4100	4110	Energy Star Ice Machines	eligious Worsh	2014	2054	91.85	13.83	2.09	6.65	7%	0.31	1.00	7%	0.03	0.01	0	0	2.03			2.09	0.31
VA	4100	4112	Reach-in unit occupancy sensors	eligious Worsh	2014	2054	91.84	13.83	0.01	6.67	7%	0.00	1.00	7%	0.28	0.01	2	0	0.20			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	eligious Worsh	2014	2054	91.76	13.81	0.08	6.75	7%	0.01	1.02	7%	0.32	0.02	2	0	0.17			0.00	0.00
VA	5000	5000	Base Desktop PC	eligious Worsh	2014	2054	9.54	1.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.54	1.44	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	eligious Worsh	2014	2054	5.24	1.11	4.30	4.30	45%	0.33	0.33	23%	0.02	0.02	0	0	1.95			4.30	0.33
VA	5000	5002	Energy Star or Better PC	eligious Worsh	2014	2054	3.61	0.87	1.63	5.93	62%	0.25	0.58	40%	0.05	0.03	0	0	0.99			0.00	0.00
VA	5100	5100	Base Laptop PC	eligious Worsh	2014	2054	0.66	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.66	0.10	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	eligious Worsh	2014	2054	0.53	0.08	0.12	0.12	19%	0.02	0.02	19%	0.02	0.02	0	0	2.72			0.12	0.02
VA	5100	5101	Laptop Network Power Management Enabling	eligious Worsh	2014	2054	0.52	0.08	0.01	0.13	21%	0.00	0.02	21%	2.25	0.20	15	1	0.02			0.00	0.00
VA	5200	5200	Base Monitor, CRT	eligious Worsh	2014	2054	1.67	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.67	0.25	0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	5200	5201	Energy Star or Better Monitor - CRT	eligious Worsh	2014	2054	0.73	0.11	0.94	0.94	56%	0.14	0.14	56%	0.00	0.00	0	0	21.63			0.94	0.14
VA	5200	5202	Monitor Power Management Enabling - CRT	eligious Worsh	2014	2054	0.55	0.10	0.19	1.12	67%	0.01	0.16	62%	0.03	0.01	0	0	1.41			0.19	0.01
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	eligious Worsh	2014	2054	0.51	0.09	0.04	1.17	70%	0.01	0.16	64%	0.39	0.02	3	0	0.13			0.00	0.00
VA	5300	5300	Base Monitor, LCD	eligious Worsh	2014	2054	1.99	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.99	0.30	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	eligious Worsh	2014	2054	1.63	0.25	0.36	0.36	18%	0.05	0.05	18%	0.02	0.02	0	0	3.17			0.36	0.05
VA	5300	5302	Monitor Power Management Enabling - LCD	eligious Worsh	2014	2054	1.57	0.24	0.06	0.41	21%	0.00	0.06	19%	0.15	0.03	2	0	0.32			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	eligious Worsh	2014	2054	1.45	0.24	0.12	0.53	27%	0.00	0.06	21%	0.42	0.12	11	1	0.10			0.00	0.00
VA	5400	5400	Base Copier	eligious Worsh	2014	2054	3.87	0.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.87	0.59	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	eligious Worsh	2014	2054	3.35	0.51	0.52	0.52	13%	0.08	0.08	13%	0.00	0.00	0	0	15.93			0.52	0.08
VA	5400	5402	Copier Power Management Enabling	eligious Worsh	2014	2054	3.19	0.49	0.17	0.68	18%	0.01	0.09	16%	0.17	0.04	2	0	0.28			0.00	0.00
VA	5500	5500	Base Multifunction	eligious Worsh	2014	2054	0.51	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.51	0.08	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	eligious Worsh	2014	2054	0.38	0.06	0.13	0.13	25%	0.02	0.02	25%	0.01	0.01	0	0	4.54			0.13	0.02
VA	5500	5501	Multifunction Power Management Enabling	eligious Worsh	2014	2054	0.32	0.05	0.06	0.19	37%	0.00	0.02	31%	0.47	0.16	6	1	0.10			0.00	0.00
VA	5600	5600	Base Printer	eligious Worsh	2014	2054	1.56	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.56	0.24	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	eligious Worsh	2014	2054	1.02	0.15	0.54	0.54	35%	0.08	0.08	35%	0.00	0.00	0	0	20.86			0.54	0.08
VA	5600	5601	Printer Power Management Enabling	eligious Worsh	2014	2054	0.85	0.14	0.17	0.71	45%	0.01	0.10	40%	0.10	0.03	1	0	0.46			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	eligious Worsh	2014	2054	8.06	1.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.06	1.22	0.00	0.00
VA	5700	5701	Data Center Improved Operations	eligious Worsh	2014	2054	7.25	1.10	0.81	0.81	10%	0.12	0.12	10%	0.00	0.00	0	0	72.20			0.81	0.12
VA	5700	5702	Data Center Best Practices	eligious Worsh	2014	2054	6.33	0.96	0.92	1.73	21%	0.14	0.26	21%	0.00	0.00	0	0	29.39			0.92	0.14
VA	5700	5703	Data Center State of the Art practices	eligious Worsh	2014	2054	5.97	0.90	0.35	2.08	26%	0.05	0.32	26%	0.00	0.00	0	0	15.24			0.35	0.05
VA	6000	6000	Base Water Heating	eligious Worsh	2014	2054	27.02	3.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	27.02	3.99	0.00	0.00
VA	6000	6007	Heat Trap	eligious Worsh	2014	2054	25.62	3.78	1.40	1.40	5%	0.21	0.21	5%	0.03	0.03	0	0	1.99			1.40	0.21
VA	6000	6002	High Efficiency Water Heater (electric)	eligious Worsh	2014	2054	25.11	3.71	0.51	1.91	7%	0.08	0.28	7%	0.06	0.04	0	0	1.07			0.51	0.08
VA	6000	6004	Tankless Water Heater	eligious Worsh	2014	2054	23.22	3.43	1.88	3.79	14%	0.28	0.56	14%	0.09	0.06	1	0	0.76			0.00	0.00
VA	6000	6003	Hot Water Pipe Insulation	eligious Worsh	2014	2054	22.78	3.36	0.44	4.24	16%	0.07	0.63	16%	0.11	0.07	1	0	0.59			0.00	0.00
VA	6000	6006	Heat Recovery Unit	eligious Worsh	2014	2054	22.04	3.25	0.74	4.98	18%	0.11	0.73	18%	0.10	0.07	1	1	0.55			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	eligious Worsh	2014	2054	21.21	3.13	0.83	5.80	21%	0.12	0.86	21%	0.31	0.11	2	1	0.21			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	eligious Worsh	2014	2054	4.50	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.50	0.75	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	eligious Worsh	2014	2054	3.78	0.69	0.72	0.72	16%	0.06	0.06	8%	0.03	0.03	0	0	1.82			0.72	0.06
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	eligious Worsh	2014	2054	3.38	0.65	0.39	1.11	25%	0.03	0.09	12%	0.05	0.03	1	0	1.00			0.00	0.00
VA	7100	7100	Base Non-Refrigerated Vending Machines	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	23%	0.44	0.44	5	5	0.11			0.00	0.00
VA	7200	7200	Base Oven	eligious Worsh	2014	2054	26.99	4.38	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	26.99	4.38	0.00	0.00
VA	7300	7300	Base Fryer	eligious Worsh	2014	2054	1.40	0.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.40	0.23	0.00	0.00
VA	7300	7301	Efficient Fryer	eligious Worsh	2014	2054	1.31	0.21	0.09	0.09	6%	0.01	0.01	6%	0.43	0.43	3	3	0.14			0.00	0.00
VA	7400	7400	Base Steamer	eligious Worsh	2014	2054	1.23	0.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.23	0.20	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	eligious Worsh	2014	2054	2.39	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.39	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	eligious Worsh	2014	2054	2.26	0.00	0.13	0.13	6%	0.00	0.00	0%	0.06	0.06	N/A	N/A	0.95			0.00	0.00
VA	8100	8100	Base Heating, Other Electric	eligious Worsh	2014	2054	19.53	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.53	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	eligious Worsh	2014	2054	333.79	55.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	333.79	55.49	0.00	0.00
VA	9500	9501	Xmisc	eligious Worsh	2014	2054	333.79	55.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Misc	2020	2054	414.67	70.38	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	414.67	70.38	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Misc	2020	2054	412.52	70.20	2.15	2.15	1%	0.18	0.18	0%	0.01	0.01	0	0	3.68			2.15	0.18
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Misc	2020	2054	381.28	66.00	31.25	33.40	8%	4.20	4.38	6%	0.02	0.02	0	0	3.22			31.25	4.20
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Misc	2020	2054	341.77	59.29	39.50	72.90	18%	6.70	11.08	16%	0.02	0.02	0	0	2.74			39.50	6.70
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Misc	2020	2054	298.29	51.91	43.48	116.38	28%	7.38	18.46	26%	0.04	0.03	0	0	1.32			43.48	7.38
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Misc	2020	2054	290.34	51.59	7.94	124.33	30%	0.33	18.79	27%	0.08	0.03	2	0	0.64			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Misc	2020	2054	243.56	43.65	46.78	171.11	41%	7.94	26.73	38%	0.25	0.09	1	1	0.25			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Misc	2020	2054	222.77	40.12	20.79	191.90	46%	3.53	30.26	43%	0.20	0.10	1	1	0.30			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Misc	2020	2054	317.53	53.89	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	317.53	53.89	0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Misc	2020	2054	315.87	53.75	1.66	1.66	1%	0.14	0.14	0%	0.02	0.02	0	0	2.99			1.66	0.14
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Misc	2020	2054	291.94	50.53	23.93	25.58	8%	3.22	3.35	6%	0.02	0.02	0	0	2.62			23.93	3.22
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Misc	2020	2054	264.36	45.85	27.58	53.17	17%	4.68	8.03	15%	0.02	0.02	0	0	2.19			27.58	4.68
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Misc	2020	2054	230.72	40.15	33.64	86.80	27%	5.71	13.74	26%	0.05	0.03	0	0	1.05			33.64	5.71
VA	1130	1134	ROB 2L4' LED Tube, 2020	Misc	2020	2054	219.57	38.25	11.15	97.95	31%	1.89	15.64	29%	0.19	0.05	1	0	0.32			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Misc	2020	2054	200.83	35.07	18.74	116.70	37%	3.18	18.82	35%	0.24	0.08	1	1	0.26			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Misc	2020	2054	195.48	34.85	5.35	122.05	38%	0.22	19.04	35%	0.15	0.09	4	1	0.32			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Misc	2014	2054	4.34	0.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.34	0.74	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Misc	2014	2054	4.20	0.72	0.14	0.14	3%	0.01	0.01	2%	0.01	0.01	0	0	4.71			0.14	0.01
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Misc	2014	2054	3.88	0.67	0.32	0.45	10%	0.05	0.07	9%	0.07	0.06	0	0	0.74			0.00	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Misc	2014	2054	3.59	0.63	0.29	0.75	17%	0.04	0.10	14%	0.10	0.07	1	1	0.62			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Misc	2014	2054	3.33	0.62	0.26	1.01	23%	0.01	0.12	16%	0.09	0.08	2	1	0.56			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Misc	2014	2054	2.91	0.55	0.42	1.43	33%	0.07	0.19	25%	0.18	0.11	1	1	0.30			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Misc	2020	2054	261.09	44.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	261.09	44.31	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Misc	2020	2054	57.45	9.75	203.64	203.64	78%	34.56	34.56	78%	0.00	0.00	0	0	13.22			203.64	34.56
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Misc	2020	2054	93.99	15.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	93.99	15.95	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Misc	2020	2054	22.39	3.80	71.61	71.61	76%	12.15	12.15	76%	0.00	0.00	0	0	11.10			71.61	12.15
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Misc	2020	2054	69.19	11.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	69.19	11.74	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Misc	2020	2054	22.17	3.76	47.02	47.02	68%	7.98	7.98	68%	0.01	0.01	0	0	8.08			47.02	7.98
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Misc	2020	2054	49.34	8.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	49.34	8.37	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Misc	2020	2054	35.67	6.05	13.67	13.67	28%	2.32	2.32	28%	0.05	0.05	0	0	1.05			13.67	2.32
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Misc	2020	2054	63.05	10.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	63.05	10.70	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Misc	2020	2054	46.65	7.92	16.39	16.39	26%	2.78	2.78	26%	0.04	0.04	0	0	1.39			16.39	2.78
VA	1800	1800	BaseMetal Halide, 465W	Misc	2014	2054	85.35	14.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	85.35	14.48	0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1800	1801	T5 (240W) (base metal halide)	Misc	2014	2054	56.49	9.59	28.86	28.86	34%	4.90	4.90	34%	0.01	0.01	0	0	7.55			28.86	4.90
VA	1800	1806	Occupancy Sensor, High Bay T5	Misc	2014	2054	54.65	9.51	1.85	30.70	36%	0.08	4.97	34%	0.02	0.01	1	0	2.00			1.85	0.08
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Misc	2014	2054	50.51	8.96	4.14	34.84	41%	0.56	5.53	38%	0.05	0.01	0	0	1.38			4.14	0.56
VA	1850	1850	Base CFL Exit Sign	Misc	2014	2054	9.40	1.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.40	1.60	0.00	0.00
VA	1850	1851	LED Exit Sign	Misc	2014	2054	5.06	0.86	4.34	4.34	46%	0.74	0.74	46%	0.03	0.03	0	0	1.95			4.34	0.74
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Misc	2014	2054	89.16	6.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	89.16	6.90	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Misc	2014	2054	81.36	5.16	7.80	7.80	9%	1.74	1.74	25%	0.04	0.04	0	0	2.12			7.80	1.74
VA	1900	1902	LED Outdoor Area Lighting	Misc	2014	2054	39.15	1.89	42.21	50.01	56%	3.27	5.01	73%	0.09	0.08	1	1	0.67			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Misc	2014	2054	27.71	1.09	11.44	61.45	69%	0.80	5.81	84%	0.59	0.18	8	2	0.10			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Misc	2014	2054	81.13	62.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	81.13	62.75	0.00	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	Misc	2014	2054	80.12	61.96	1.01	1.01	1%	0.78	0.78	1%	0.02	0.02	0	0	6.00			1.01	0.78
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Misc	2014	2054	73.28	56.67	6.84	7.85	10%	5.29	6.07	10%	0.04	0.04	0	0	3.08			6.84	5.29
VA	2000	2005	Chiller Tune Up/Diagnostics	Misc	2014	2054	72.90	56.52	0.39	8.24	10%	0.15	6.23	10%	0.03	0.04	0	0	2.36			0.39	0.15
VA	2000	2013	High Efficiency Chiller Motors	Misc	2014	2054	72.83	56.47	0.06	8.30	10%	0.05	6.27	10%	0.06	0.04	0	0	1.98			0.06	0.05
VA	2000	2006	VSD for Chiller Pumps and Towers	Misc	2014	2054	70.00	55.36	2.83	11.13	14%	1.11	7.39	12%	0.05	0.04	0	0	1.70			2.83	1.11
VA	2000	2003	EMS - Chiller	Misc	2014	2054	63.83	54.13	6.17	17.30	21%	1.22	8.61	14%	0.07	0.05	0	0	0.90			0.00	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	Misc	2014	2054	52.10	45.06	11.73	29.04	36%	9.07	17.69	28%	0.21	0.12	0	0	0.55			0.00	0.00
VA	2000	2002	Window Film (Standard) - Chiller	Misc	2014	2054	51.76	44.80	0.33	29.37	36%	0.26	17.94	29%	0.76	0.12	1	0	0.12			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	Misc	2014	2054	51.66	44.72	0.10	29.47	36%	0.08	18.02	29%	3.31	0.13	4	0	0.03			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Misc	2014	2054	50.97	44.19	0.69	30.16	37%	0.53	18.56	30%	3.99	0.22	5	0	0.02			0.00	0.00
VA	2000	2008	New Economizer - Chiller	Misc	2014	2054	50.97	44.19	0.00	30.16	37%	0.00	18.56	30%	36828.01	0.28	185,639	0	0.00			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Misc	2014	2054	312.72	241.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	312.72	241.85	0.00	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	Misc	2014	2054	312.71	241.84	0.01	0.01	0%	0.01	0.01	0%	0.02	0.02	0	0	6.16			0.01	0.01
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Misc	2014	2054	240.79	186.22	71.92	71.93	23%	55.62	55.63	23%	0.03	0.03	0	0	3.27			71.92	55.62
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Misc	2014	2054	240.02	185.91	0.77	72.70	23%	0.30	55.93	23%	0.11	0.03	0	0	0.61			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Misc	2014	2054	225.90	174.99	14.12	86.82	28%	10.92	66.85	28%	0.22	0.06	0	0	0.54			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Misc	2014	2054	221.59	174.14	4.31	91.13	29%	0.86	67.71	28%	0.12	0.07	1	0	0.45			0.00	0.00
VA	2100	2108	Optimize Controls - DX	Misc	2014	2054	217.91	173.41	3.68	94.82	30%	0.73	68.44	28%	0.13	0.07	1	0	0.40			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	Misc	2014	2054	217.06	172.75	0.85	95.66	31%	0.66	69.09	29%	0.60	0.07	1	0	0.15			0.00	0.00
VA	2100	2107	Cool Roof - DX	Misc	2014	2054	216.63	172.42	0.43	96.09	31%	0.33	69.42	29%	3.04	0.09	4	0	0.03			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Misc	2014	2054	215.25	171.35	1.38	97.47	31%	1.07	70.49	29%	3.64	0.14	5	0	0.03			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Misc	2014	2054	297.00	229.69	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	297.00	229.69	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	2014	2054	260.27	201.28	36.73	36.73	12%	28.41	28.41	12%	0.04	0.04	0	0	3.05			36.73	28.41
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Misc	2014	2054	187.11	144.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	187.11	144.70	0.00	0.00
VA	2300	2301	HE PTAC, EER=9.6, 1 ton	Misc	2014	2054	161.77	125.11	25.34	25.34	14%	19.60	19.60	14%	0.08	0.08	0	0	1.33			25.34	19.60
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Misc	2014	2054	351.21	99.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	351.21	99.79	0.00	0.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Misc	2014	2054	345.15	98.06	6.06	6.06	2%	1.72	1.72	2%	0.06	0.06	0	0	1.26			6.06	1.72
VA	3000	3002	Variable Speed Drive Control, 5 HP	Misc	2014	2054	246.37	91.07	98.78	104.83	30%	7.00	8.72	9%	0.05	0.05	1	1	1.19			98.78	7.00
VA	3000	3003	Demand Controlled Ventilation	Misc	2014	2054	241.56	88.44	4.81	109.65	31%	2.63	11.35	11%	1.52	0.11	3	1	0.06			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Misc	2014	2054	279.97	79.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	279.97	79.55	0.00	0.00
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Misc	2014	2054	239.56	69.24	40.41	40.41	14%	10.31	10.31	13%	0.03	0.03	0	0	2.40			40.41	10.31
VA	3100	3103	Air Handler Optimization, 15 HP	Misc	2014	2054	223.16	68.07	16.41	56.81	20%	1.16	11.47	14%	0.04	0.03	1	0	1.26			16.41	1.16
VA	3100	3102	Variable Speed Drive Control, 15 HP	Misc	2014	2054	159.29	63.55	63.86	120.68	43%	4.52	16.00	20%	0.07	0.05	1	0	0.87			0.00	0.00
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Misc	2014	2054	156.91	62.87	2.38	123.06	44%	0.68	16.67	21%	0.20	0.05	1	0	0.39			0.00	0.00
VA	3100	3105	Energy Recovery Ventilation (ERV)	Misc	2014	2054	154.91	61.78	2.00	125.06	45%	1.09	17.77	22%	0.43	0.06	1	0	0.24			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	Misc	2014	2054	151.88	60.13	3.03	128.09	46%	1.65	19.42	24%	1.93	0.10	4	1	0.05			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Misc	2014	2054	222.17	63.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	222.17	63.12	0.00	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	Misc	2014	2054	206.95	62.04	15.22	15.22	7%	1.08	1.08	2%	0.03	0.03	0	0	1.47			15.22	1.08
VA	3200	3202	Variable Speed Drive Control, 40 HP	Misc	2014	2054	147.72	57.85	59.23	74.44	34%	4.20	5.27	8%	0.10	0.09	1	1	0.56			0.00	0.00
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Misc	2014	2054	147.14	57.68	0.59	75.03	34%	0.17	5.44	9%	0.50	0.09	2	1	0.16			0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	Misc	2014	2054	144.26	56.11	2.88	77.90	35%	1.57	7.01	11%	1.61	0.15	3	2	0.06			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Misc	2014	2054	306.76	46.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	306.76	46.18	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Misc	2014	2054	299.24	45.05	7.52	7.52	2%	1.13	1.13	2%	0.00	0.00	0	0	36.51			7.52	1.13
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Misc	2014	2054	294.99	44.41	4.25	11.77	4%	0.64	1.77	4%	0.00	0.00	0	0	34.70			4.25	0.64
VA	4100	4108	Energy-Star Refrigerator, glass door	Misc	2014	2054	293.75	44.22	1.24	13.00	4%	0.19	1.96	4%	0.01	0.00	0	0	11.20			1.24	0.19
VA	4100	4106	Energy-Star Refrigerator, solid door	Misc	2014	2054	290.56	43.74	3.19	16.19	5%	0.48	2.44	5%	0.01	0.00	0	0	11.00			3.19	0.48
VA	4100	4110	Energy Star Ice Machines	Misc	2014	2054	286.23	43.09	4.33	20.53	7%	0.65	3.09	7%	0.01	0.00	0	0	4.02			4.33	0.65
VA	4100	4112	Reach-in unit occupancy sensors	Misc	2014	2054	286.22	43.09	0.01	20.54	7%	0.00	3.09	7%	0.28	0.01	2	0	0.20			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Misc	2014	2054	286.16	43.08	0.06	20.60	7%	0.01	3.10	7%	0.32	0.01	2	0	0.17			0.00	0.00
VA	5000	5000	Base Desktop PC	Misc	2014	2054	26.53	4.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	26.53	4.02	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Misc	2014	2054	14.58	3.10	11.96	11.96	45%	0.92	0.92	23%	0.01	0.01	0	0	3.90			11.96	0.92
VA	5000	5002	Energy Star or Better PC	Misc	2014	2054	10.03	2.41	4.54	16.50	62%	0.69	1.61	40%	0.03	0.02	0	0	1.98			4.54	0.69
VA	5100	5100	Base Laptop PC	Misc	2014	2054	1.52	0.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.52	0.23	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Misc	2014	2054	1.23	0.19	0.29	0.29	19%	0.04	0.04	19%	0.01	0.01	0	0	5.43			0.29	0.04
VA	5100	5101	Laptop Network Power Management Enabling	Misc	2014	2054	1.20	0.18	0.03	0.31	21%	0.00	0.05	21%	1.13	0.10	7	1	0.05			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Misc	2014	2054	6.13	0.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.13	0.93	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Misc	2014	2054	2.69	0.41	3.44	3.44	56%	0.52	0.52	56%	0.00	0.00	0	0	43.26			3.44	0.52
VA	5200	5202	Monitor Power Management Enabling - CRT	Misc	2014	2054	2.01	0.35	0.68	4.12	67%	0.05	0.57	62%	0.02	0.00	0	0	2.81			0.68	0.05
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Misc	2014	2054	1.85	0.33	0.16	4.27	70%	0.02	0.60	64%	0.19	0.01	1	0	0.26			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Misc	2014	2054	5.57	0.84	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.57	0.84	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Misc	2014	2054	4.57	0.69	1.00	1.00	18%	0.15	0.15	18%	0.01	0.01	0	0	6.34			1.00	0.15
VA	5300	5302	Monitor Power Management Enabling - LCD	Misc	2014	2054	4.41	0.68	0.16	1.16	21%	0.01	0.16	19%	0.07	0.02	1	0	0.63			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Misc	2014	2054	4.07	0.67	0.33	1.49	27%	0.01	0.18	21%	0.21	0.06	5	1	0.21			0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	5400	5400	Base Copier	Misc	2014	2054	9.83	1.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.83	1.49	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Misc	2014	2054	8.51	1.29	1.32	1.32	13%	0.20	0.20	13%	0.00	0.00	0	0	31.86			1.32	0.20
VA	5400	5402	Copier Power Management Enabling	Misc	2014	2054	8.09	1.26	0.42	1.74	18%	0.03	0.23	16%	0.09	0.02	1	0	0.55			0.00	0.00
VA	5500	5500	Base Multifunction	Misc	2014	2054	1.46	0.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.46	0.22	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Misc	2014	2054	1.10	0.17	0.37	0.37	25%	0.06	0.06	25%	0.01	0.01	0	0	9.07			0.37	0.06
VA	5500	5501	Multifunction Power Management Enabling	Misc	2014	2054	0.92	0.15	0.18	0.55	37%	0.01	0.07	31%	0.23	0.08	3	1	0.20			0.00	0.00
VA	5600	5600	Base Printer	Misc	2014	2054	7.65	1.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.65	1.16	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Misc	2014	2054	4.99	0.76	2.66	2.66	35%	0.40	0.40	35%	0.00	0.00	0	0	41.71			2.66	0.40
VA	5600	5601	Printer Power Management Enabling	Misc	2014	2054	4.17	0.69	0.82	3.48	45%	0.06	0.47	40%	0.05	0.01	1	0	0.93			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Misc	2014	2054	57.89	8.77	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	57.89	8.77	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Misc	2014	2054	52.10	7.89	5.79	5.79	10%	0.88	0.88	10%	0.00	0.00	0	0	105.02			5.79	0.88
VA	5700	5702	Data Center Best Practices	Misc	2014	2054	45.47	6.89	6.63	12.42	21%	1.00	1.88	21%	0.00	0.00	0	0	42.75			6.63	1.00
VA	5700	5703	Data Center State of the Art practices	Misc	2014	2054	42.93	6.50	2.55	14.96	26%	0.39	2.27	26%	0.00	0.00	0	0	22.17			2.55	0.39
VA	6000	6000	Base Water Heating	Misc	2014	2054	92.42	13.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	92.42	13.64	0.00	0.00
VA	6000	6007	Heat Trap	Misc	2014	2054	87.63	12.94	4.79	4.79	5%	0.71	0.71	5%	0.01	0.01	0	0	3.99			4.79	0.71
VA	6000	6002	High Efficiency Water Heater (electric)	Misc	2014	2054	85.88	12.68	1.75	6.54	7%	0.26	0.97	7%	0.03	0.02	0	0	2.13			1.75	0.26
VA	6000	6004	Tankless Water Heater	Misc	2014	2054	79.44	11.73	6.44	12.98	14%	0.95	1.92	14%	0.05	0.03	0	0	1.52			6.44	0.95
VA	6000	6003	Hot Water Pipe Insulation	Misc	2014	2054	78.07	11.53	1.37	14.35	16%	0.20	2.12	16%	0.05	0.03	0	0	1.18			1.37	0.20
VA	6000	6006	Heat Recovery Unit	Misc	2014	2054	75.53	11.15	2.54	16.89	18%	0.37	2.49	18%	0.05	0.04	0	0	1.11			2.54	0.37
VA	6000	6001	Demand controlled circulating systems	Misc	2014	2054	72.70	10.73	2.83	19.72	21%	0.42	2.91	21%	0.15	0.05	1	0	0.42			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Misc	2014	2054	16.86	2.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.86	2.80	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Misc	2014	2054	14.16	2.58	2.70	2.70	16%	0.23	0.23	8%	0.03	0.03	0	0	1.82			2.70	0.23
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Misc	2014	2054	12.68	2.45	1.48	4.18	25%	0.12	0.35	12%	0.05	0.03	1	0	1.00			0.00	0.00
VA	7100	7100	Base Non-Refrigerated Vending Machines	Misc	2014	2054	0.18	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.03	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Misc	2014	2054	0.10	0.02	0.08	0.08	46%	0.01	0.01	23%	0.44	0.44	5	5	0.11			0.00	0.00
VA	7200	7200	Base Oven	Misc	2014	2054	5.95	0.96	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.95	0.96	0.00	0.00
VA	7300	7300	Base Fryer	Misc	2014	2054	10.69	1.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.69	1.73	0.00	0.00
VA	7300	7301	Efficient Fryer	Misc	2014	2054	10.00	1.62	0.68	0.68	6%	0.11	0.11	6%	0.43	0.43	3	3	0.14			0.00	0.00
VA	7400	7400	Base Steamer	Misc	2014	2054	2.65	0.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.65	0.43	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Misc	2014	2054	45.34	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	45.34	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	2014	2054	42.78	0.00	2.56	2.56	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	1.89			2.56	0.00
VA	8100	8100	Base Heating, Other Electric	Misc	2014	2054	42.11	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	42.11	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Misc	2014	2054	803.83	133.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	803.83	133.64	0.00	0.00
VA	9500	9501	Xmisc	Misc	2014	2054	803.83	133.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Office	2020	2054	56.85	10.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	56.85	10.58	0.00	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Office	2020	2054	56.82	10.58	0.03	0.03	0%	0.00	0.00	0%	0.01	0.01	0	0	5.84			0.03	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	2020	2054	52.56	9.94	4.26	4.29	8%	0.63	0.64	6%	0.01	0.01	0	0	5.25			4.26	0.63
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Office	2020	2054	47.20	8.95	5.35	9.65	17%	1.00	1.63	15%	0.02	0.02	0	0	2.97			5.35	1.00
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	2020	2054	41.20	7.83	6.01	15.65	28%	1.12	2.75	26%	0.04	0.03	0	0	1.43			6.01	1.12
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Office	2020	2054	37.77	7.67	3.43	19.08	34%	0.16	2.91	28%	0.06	0.03	1	0	0.87			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Office	2020	2054	31.68	6.54	6.08	25.17	44%	1.13	4.04	38%	0.25	0.08	1	1	0.26			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Office	2020	2054	28.98	6.03	2.70	27.87	49%	0.50	4.55	43%	0.21	0.10	1	1	0.32			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Office	2020	2054	0.96	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.96	0.18	0.00	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Office	2020	2054	0.96	0.18	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	3.39			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Office	2020	2054	0.89	0.17	0.07	0.07	8%	0.01	0.01	6%	0.02	0.02	0	0	3.05			0.07	0.01
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Office	2020	2054	0.80	0.15	0.09	0.17	17%	0.02	0.03	16%	0.02	0.02	0	0	2.34			0.09	0.02
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Office	2020	2054	0.69	0.13	0.10	0.27	28%	0.02	0.05	26%	0.05	0.03	0	0	1.12			0.10	0.02
NC	1130	1134	ROB 2L4' LED Tube, 2020	Office	2020	2054	0.66	0.13	0.03	0.30	31%	0.01	0.05	30%	0.19	0.05	1	0	0.35			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Office	2020	2054	0.61	0.12	0.06	0.35	37%	0.00	0.06	31%	0.11	0.06	2	0	0.46			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Office	2020	2054	0.55	0.11	0.05	0.41	42%	0.01	0.07	36%	0.26	0.09	1	1	0.25			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Office	2014	2054	2.09	0.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.09	0.39	0.00	0.00
NC	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Office	2014	2054	2.08	0.39	0.01	0.01	0%	0.00	0.00	0%	0.00	0.00	0	0	16.40			0.01	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Office	2014	2054	1.92	0.36	0.16	0.16	8%	0.02	0.02	6%	0.03	0.03	0	0	2.45			0.16	0.02
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Office	2014	2054	1.72	0.33	0.20	0.36	17%	0.04	0.06	16%	0.08	0.05	0	0	0.73			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	2014	2054	1.47	0.32	0.25	0.61	29%	0.01	0.07	19%	0.10	0.07	2	1	0.48			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Office	2020	2054	13.73	2.56	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.73	2.56	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Office	2020	2054	2.40	0.45	11.33	11.33	83%	2.11	2.11	83%	0.01	0.01	0	0	10.64			11.33	2.11
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Office	2020	2054	4.94	0.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.94	0.92	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Office	2020	2054	0.94	0.17	4.00	4.00	81%	0.75	0.75	81%	0.01	0.01	0	0	8.98			4.00	0.75
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Office	2020	2054	3.64	0.68	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.64	0.68	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Office	2020	2054	0.95	0.18	2.69	2.69	74%	0.50	0.50	74%	0.01	0.01	0	0	6.68			2.69	0.50
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Office	2020	2054	0.25	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.25	0.05	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Office	2020	2054	0.18	0.03	0.07	0.07	28%	0.01	0.01	28%	0.05	0.05	0	0	1.06			0.07	0.01
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Office	2020	2054	0.32	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.06	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Office	2020	2054	0.23	0.04	0.08	0.08	26%	0.02	0.02	26%	0.04	0.04	0	0	1.41			0.08	0.02
NC	1800	1800	BaseMetal Halide, 465W	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Office	2014	2054	0.52	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.52	0.10	0.00	0.00
NC	1850	1851	LED Exit Sign	Office	2014	2054	0.29	0.05	0.23	0.23	44%	0.04	0.04	44%	0.02	0.02	0	0	2.27			0.23	0.04
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Office	2014	2054	1.31	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.31	0.02	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Office	2014	2054	1.19	0.01	0.12	0.12	9%	0.01	0.01	30%	0.04	0.04	1	1	1.58			0.12	0.01
NC	1900	1902	LED Outdoor Area Lighting	Office	2014	2054	0.57	0.00	0.62	0.74	56%	0.01	0.01	77%	0.08	0.08	6	4	0.67			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Office	2014	2054	0.40	0.00	0.17	0.90	69%	0.00	0.02	89%	0.54	0.16	44	9	0.10			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Office	2014	2054	0.75	0.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.75	0.53	0.00	0.00
NC	2000	2010	Ceiling/roof Insulation - Chiller	Office	2014	2054	0.75	0.52	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	17.67			0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	2014	2054	0.68	0.48	0.06	0.07	9%	0.04	0.05	9%	0.03	0.03	0	0	4.02			0.06	0.04
NC	2000	2005	Chiller Tune Up/Diagnostics	Office	2014	2054	0.68	0.48	0.00	0.07	9%	0.00	0.05	9%	0.02	0.03	0	0	3.21			0.00	0.00
NC	2000	2013	High Efficiency Chiller Motors	Office	2014	2054	0.68	0.48	0.00	0.07	9%	0.00	0.05	9%	0.04	0.03	0	0	2.62			0.00	0.00
NC	2000	2006	VSD for Chiller Pumps and Towers	Office	2014	2054	0.68	0.48	0.00	0.07	10%	0.00	0.05	9%	0.03	0.03	0	0	2.35			0.00	0.00
NC	2000	2003	EMS - Chiller	Office	2014	2054	0.63	0.47	0.05	0.12	16%	0.01	0.06	11%	0.05	0.04	0	0	1.32			0.05	0.01
NC	2000	2008	New Economizer - Chiller	Office	2014	2054	0.59	0.46	0.04	0.16	22%	0.01	0.07	12%	0.06	0.04	0	0	1.00			0.00	0.00
NC	2000	2002	Window Film (Standard) - Chiller	Office	2014	2054	0.59	0.46	0.00	0.16	22%	0.00	0.07	12%	0.09	0.04	0	0	0.94			0.00	0.00
NC	2000	2012	Duct Testing/Sealing	Office	2014	2054	0.48	0.38	0.11	0.27	36%	0.08	0.14	27%	0.16	0.09	0	0	0.70			0.00	0.00
NC	2000	2004	Cool Roof - Chiller	Office	2014	2054	0.48	0.38	0.00	0.28	37%	0.00	0.14	28%	0.23	0.09	0	0	0.38			0.00	0.00
NC	2000	2011	Duct/Pipe Insulation - Chiller	Office	2014	2054	0.47	0.38	0.00	0.28	37%	0.00	0.15	28%	1.94	0.10	3	0	0.05			0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Office	2014	2054	16.50	11.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.50	11.54	0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Office	2014	2054	12.70	8.89	3.79	3.79	23%	2.65	2.65	23%	0.02	0.02	0	0	4.23			3.79	2.65
NC	2100	2111	Economizer Repair - DX	Office	2014	2054	12.08	8.23	0.62	4.42	27%	0.65	3.31	29%	0.06	0.03	0	0	1.55			0.62	0.65
NC	2100	2108	Optimize Controls - DX	Office	2014	2054	11.87	8.20	0.21	4.62	28%	0.04	3.35	29%	0.06	0.03	0	0	0.86			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	Office	2014	2054	11.63	8.02	0.25	4.87	30%	0.17	3.52	30%	0.10	0.03	0	0	0.84			0.00	0.00
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	Office	2014	2054	11.61	8.02	0.01	4.88	30%	0.00	3.52	31%	0.09	0.03	0	0	0.75			0.00	0.00
NC	2100	2109	Economizer - DX	Office	2014	2054	10.34	7.80	1.28	6.16	37%	0.22	3.74	32%	0.08	0.04	0	0	0.73			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Office	2014	2054	9.71	7.36	0.63	6.79	41%	0.44	4.18	36%	0.20	0.06	0	0	0.56			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Office	2014	2054	9.50	7.32	0.21	6.99	42%	0.04	4.22	37%	0.11	0.06	1	0	0.51			0.00	0.00
NC	2100	2107	Cool Roof - DX	Office	2014	2054	9.42	7.26	0.08	7.07	43%	0.06	4.28	37%	0.26	0.06	0	0	0.34			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Office	2014	2054	9.42	7.26	0.00	7.08	43%	0.00	4.28	37%	0.21	0.06	1	0	0.27			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Office	2014	2054	9.36	7.22	0.06	7.14	43%	0.04	4.32	37%	2.16	0.08	3	0	0.04			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Office	2014	2054	18.61	13.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.61	13.02	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014	2054	16.31	11.41	2.30	2.30	12%	1.61	1.61	12%	0.02	0.02	0	0	5.93			2.30	1.61
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Office	2014	2054	2.08	1.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.08	1.45	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Office	2014	2054	13.42	4.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.42	4.05	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Office	2014	2054	13.21	3.99	0.22	0.22	2%	0.07	0.07	2%	0.02	0.02	0	0	4.09			0.22	0.07
NC	3000	3002	Variable Speed Drive Control, 5 HP	Office	2014	2054	9.98	3.74	3.22	3.44	26%	0.24	0.31	8%	0.02	0.02	0	0	3.76			3.22	0.24
NC	3000	3003	Demand Controlled Ventilation	Office	2014	2054	9.44	3.43	0.54	3.99	30%	0.31	0.62	15%	0.66	0.10	1	1	0.15			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Office	2014	2054	2.33	0.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.33	0.70	0.00	0.00
NC	3100	3102	Variable Speed Drive Control, 15 HP	Office	2014	2054	1.76	0.66	0.57	0.57	24%	0.04	0.04	6%	0.00	0.00	0	0	13.82			0.57	0.04
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Office	2014	2054	1.75	0.66	0.01	0.58	25%	0.00	0.05	7%	0.01	0.00	0	0	6.81			0.01	0.00
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Office	2014	2054	1.63	0.62	0.12	0.69	30%	0.03	0.08	11%	0.02	0.01	0	0	3.01			0.12	0.03
NC	3100	3103	Air Handler Optimization, 15 HP	Office	2014	2054	1.48	0.61	0.16	0.85	37%	0.01	0.09	13%	0.02	0.01	0	0	2.27			0.16	0.01
NC	3100	3105	Energy Recovery Ventilation (ERV)	Office	2014	2054	1.44	0.59	0.03	0.88	38%	0.02	0.11	16%	0.25	0.02	0	0	0.42			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	Office	2014	2054	1.36	0.55	0.08	0.96	41%	0.04	0.15	22%	0.79	0.08	1	1	0.12			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Office	2014	2054	1.47	0.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.47	0.44	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	Office	2014	2054	1.33	0.43	0.14	0.14	10%	0.01	0.01	2%	0.02	0.02	0	0	3.24			0.14	0.01
NC	3200	3202	Variable Speed Drive Control, 40 HP	Office	2014	2054	1.00	0.41	0.32	0.46	32%	0.02	0.04	8%	0.02	0.02	0	0	2.48			0.32	0.02
NC	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Office	2014	2054	1.00	0.41	0.00	0.47	32%	0.00	0.04	8%	0.11	0.02	0	0	0.77			0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	Office	2014	2054	0.94	0.38	0.05	0.52	36%	0.03	0.07	15%	0.72	0.09	1	1	0.13			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Office	2014	2054	4.90	0.69	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.90	0.69	0.00	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Office	2014	2054	4.81	0.67	0.09	0.09	2%	0.01	0.01	2%	0.00	0.00	0	0	23.22			0.09	0.01
NC	4100	4110	Energy Star Ice Machines	Office	2014	2054	4.80	0.67	0.01	0.10	2%	0.00	0.01	2%	0.02	0.00	0	0	2.90			0.01	0.00
NC	5000	5000	Base Desktop PC	Office	2014	2054	8.14	1.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.14	1.13	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Office	2014	2054	4.39	0.87	3.75	3.75	46%	0.26	0.26	23%	0.01	0.01	0	0	4.29			3.75	0.26
NC	5000	5002	Energy Star or Better PC	Office	2014	2054	3.41	0.73	0.98	4.72	58%	0.14	0.40	35%	0.02	0.01	0	0	2.13			0.98	0.14
NC	5100	5100	Base Laptop PC	Office	2014	2054	0.20	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.03	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Office	2014	2054	0.16	0.02	0.04	0.04	19%	0.01	0.01	19%	0.01	0.01	0	0	5.82			0.04	0.01
NC	5100	5101	Laptop Network Power Management Enabling	Office	2014	2054	0.16	0.02	0.00	0.04	21%	0.00	0.01	21%	1.03	0.09	7	1	0.05			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Office	2014	2054	2.91	0.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.91	0.40	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Office	2014	2054	1.67	0.23	1.24	1.24	43%	0.17	0.17	43%	0.00	0.00	0	0	60.59			1.24	0.17
NC	5200	5202	Monitor Power Management Enabling - CRT	Office	2014	2054	1.45	0.22	0.22	1.46	50%	0.02	0.19	46%	0.01	0.00	0	0	5.11			0.22	0.02
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Office	2014	2054	1.34	0.20	0.11	1.58	54%	0.02	0.20	50%	0.12	0.01	1	0	0.43			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Office	2014	2054	1.20	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.20	0.17	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Office	2014	2054	1.04	0.14	0.16	0.16	13%	0.02	0.02	13%	0.01	0.01	0	0	5.54			0.16	0.02
NC	5300	5302	Monitor Power Management Enabling - LCD	Office	2014	2054	0.97	0.14	0.08	0.23	20%	0.01	0.03	16%	0.09	0.03	1	0	0.53			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Office	2014	2054	0.89	0.14	0.08	0.31	26%	0.00	0.03	18%	0.24	0.08	7	1	0.18			0.00	0.00
NC	5400	5400	Base Copier	Office	2014	2054	3.29	0.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.29	0.46	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Office	2014	2054	2.96	0.41	0.33	0.33	10%	0.05	0.05	10%	0.00	0.00	0	0	35.49			0.33	0.05
NC	5400	5402	Copier Power Management Enabling	Office	2014	2054	2.83	0.40	0.13	0.45	14%	0.01	0.05	12%	0.07	0.02	1	0	0.64			0.00	0.00
NC	5500	5500	Base Multifunction	Office	2014	2054	0.45	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.06	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Office	2014	2054	0.34	0.05	0.11	0.11	25%	0.02	0.02	25%	0.01	0.01	0	0	9.72			0.11	0.02
NC	5500	5501	Multifunction Power Management Enabling	Office	2014	2054	0.28	0.04	0.06	0.18	39%	0.00	0.02	32%	0.21	0.08	3	1	0.22			0.00	0.00
NC	5600	5600	Base Printer	Office	2014	2054	4.28	0.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.28	0.59	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Office	2014	2054	2.79	0.39	1.49	1.49	35%	0.21	0.21	35%	0.00	0.00	0	0	44.69			1.49	0.21
NC	5600	5601	Printer Power Management Enabling	Office	2014	2054	2.28	0.35	0.51	2.00	47%	0.04	0.24	41%	0.05	0.01	1	0	1.00			0.51	0.04
NC	5700	5700	Base Data Center/Server Room	Office	2014	2054	1.34	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.34	0.19	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Office	2014	2054	1.21	0.17	0.13	0.13	10%	0.02	0.02	10%	0.00	0.00	0	0	154.45			0.13	0.02
NC	5700	5702	Data Center Best Practices	Office	2014	2054	1.05	0.15	0.15	0.29	21%	0.02	0.04	21%	0.00	0.00	0	0	62.88			0.15	0.02
NC	5700	5703	Data Center State of the Art practices	Office	2014	2054	0.99	0.14	0.06	0.35	26%	0.01	0.05	26%	0.00	0.00	0	0	32.61			0.06	0.01
NC	6000	6000	Base Water Heating	Office	2014	2054	3.14	0.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.14	0.42	0.00	0.00
NC	6000	6007	Heat Trap	Office	2014	2054	2.98	0.40	0.16	0.16	5%	0.02	0.02	5%	0.01	0.01	0	0	4.07			0.16	0.02

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	6000	6002	High Efficiency Water Heater (electric)	Office	2014	2054	2.92	0.39	0.06	0.22	7%	0.01	0.03	7%	0.03	0.02	0	0	2.17			0.06	0.01
NC	6000	6004	Tankless Water Heater	Office	2014	2054	2.70	0.36	0.22	0.44	14%	0.03	0.06	14%	0.04	0.03	0	0	1.54			0.22	0.03
NC	6000	6008	Solar Water Heater	Office	2014	2054	1.26	0.17	1.44	1.88	60%	0.19	0.25	60%	0.05	0.05	0	0	1.32			1.44	0.19
NC	6000	6003	Hot Water Pipe Insulation	Office	2014	2054	1.25	0.17	0.01	1.89	60%	0.00	0.26	60%	0.11	0.05	1	0	0.56			0.00	0.00
NC	6000	6006	Heat Recovery Unit	Office	2014	2054	1.17	0.16	0.08	1.97	63%	0.01	0.27	63%	0.12	0.05	1	0	0.49			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	Office	2014	2054	1.13	0.15	0.03	2.01	64%	0.00	0.27	64%	0.35	0.06	3	0	0.18			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Office	2014	2054	1.93	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.93	0.28	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Office	2014	2054	1.62	0.26	0.31	0.31	16%	0.02	0.02	8%	0.03	0.03	0	0	1.81			0.31	0.02
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Office	2014	2054	1.45	0.25	0.17	0.48	25%	0.01	0.03	12%	0.05	0.03	1	0	0.99			0.00	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7200	7200	Base Oven	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7300	7300	Base Fryer	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7400	7400	Base Steamer	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Office	2014	2054	2.83	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.83	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014	2054	2.67	0.00	0.16	0.16	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	3.11			0.16	0.00
NC	8100	8100	Base Heating, Other Electric	Office	2014	2054	2.65	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.65	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Office	2014	2054	22.23	3.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	22.23	3.24	0.00	0.00
NC	9500	9501	Xmisc	Office	2014	2054	22.23	3.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Restaurant	2020	2054	0.79	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.79	0.16	0.00	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Restaurant	2020	2054	0.79	0.16	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	6.10			0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Restaurant	2020	2054	0.73	0.15	0.06	0.06	8%	0.01	0.01	6%	0.01	0.01	0	0	5.43			0.06	0.01
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Restaurant	2020	2054	0.65	0.13	0.08	0.14	17%	0.01	0.02	16%	0.03	0.02	0	0	1.71			0.08	0.01
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	2020	2054	0.57	0.11	0.08	0.22	28%	0.02	0.04	26%	0.07	0.04	0	0	0.82			0.00	0.00
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Restaurant	2020	2054	0.56	0.11	0.01	0.23	29%	0.00	0.04	26%	0.13	0.04	3	0	0.39			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Restaurant	2020	2054	0.47	0.10	0.09	0.32	40%	0.02	0.06	38%	0.40	0.14	2	1	0.16			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Restaurant	2020	2054	0.43	0.09	0.04	0.36	45%	0.01	0.07	43%	0.33	0.16	2	1	0.19			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Restaurant	2020	2054	4.69	0.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.69	0.93	0.00	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Restaurant	2020	2054	4.68	0.92	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	2.91			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Restaurant	2020	2054	4.33	0.87	0.35	0.36	8%	0.06	0.06	6%	0.02	0.02	0	0	2.60			0.35	0.06
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Restaurant	2020	2054	3.88	0.78	0.45	0.81	17%	0.09	0.14	16%	0.04	0.03	0	0	1.35			0.45	0.09
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	2020	2054	3.38	0.68	0.49	1.30	28%	0.10	0.24	26%	0.09	0.05	0	0	0.65			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Restaurant	2020	2054	3.22	0.65	0.16	1.47	31%	0.03	0.27	30%	0.32	0.08	2	0	0.20			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Restaurant	2020	2054	2.95	0.60	0.27	1.74	37%	0.05	0.33	36%	0.40	0.13	2	1	0.16			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Restaurant	2020	2054	2.90	0.59	0.04	1.78	38%	0.00	0.33	36%	0.26	0.14	5	1	0.19			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Restaurant	2020	2054	1.22	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.22	0.24	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Restaurant	2020	2054	0.24	0.05	0.98	0.98	80%	0.19	0.19	80%	0.01	0.01	0	0	7.37			0.98	0.19
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Restaurant	2020	2054	0.44	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.09	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Restaurant	2020	2054	0.09	0.02	0.34	0.34	79%	0.07	0.07	79%	0.01	0.01	0	0	6.21			0.34	0.07
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Restaurant	2020	2054	0.32	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.06	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Restaurant	2020	2054	0.09	0.02	0.23	0.23	71%	0.05	0.05	71%	0.01	0.01	0	0	4.57			0.23	0.05
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Restaurant	2020	2054	0.16	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.03	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Restaurant	2020	2054	0.12	0.02	0.04	0.04	28%	0.01	0.01	28%	0.08	0.08	0	0	0.65			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Restaurant	2020	2054	0.20	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.04	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Restaurant	2020	2054	0.15	0.03	0.05	0.05	26%	0.01	0.01	26%	0.06	0.06	0	0	0.87			0.00	0.00
NC	1800	1800	BaseMetal Halide, 465W	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1800	1801	T5 (240W) (base metal halide)	Restaurant	2014	2054	0.00	0.00	0.00	0.00	34%	0.00	0.00	34%	0.02	0.02	0	0	4.74			0.00	0.00
NC	1800	1806	Occupancy Sensor, High Bay T5	Restaurant	2014	2054	0.00	0.00	0.00	0.00	36%	0.00	0.00	34%	0.04	0.02	1	0	1.23			0.00	0.00
NC	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Restaurant	2014	2054	0.00	0.00	0.00	0.00	41%	0.00	0.00	38%	1.06	0.14	7	1	0.06			0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Restaurant	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	1850	1851	LED Exit Sign	Restaurant	2014	2054	0.05	0.01	0.07	0.07	58%	0.01	0.01	58%	0.06	0.06	0	0	0.98			0.00	0.00
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Restaurant	2014	2054	1.83	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.83	0.12	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Restaurant	2014	2054	1.52	0.06	0.31	0.31	17%	0.06	0.06	50%	0.07	0.07	0	0	1.13			0.31	0.06
NC	1900	1902	LED Outdoor Area Lighting	Restaurant	2014	2054	0.73	0.01	0.79	1.10	60%	0.05	0.11	93%	0.16	0.13	2	1	0.38			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Restaurant	2014	2054	0.52	0.00	0.21	1.31	72%	0.01	0.13	104%	1.02	0.28	17	3	0.06			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Restaurant	2014	2054	0.42	0.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.42	0.26	0.00	0.00
NC	2000	2010	Ceiling/roof Insulation - Chiller	Restaurant	2014	2054	0.39	0.24	0.03	0.03	7%	0.02	0.02	7%	0.02	0.02	0	0	7.13			0.03	0.02
NC	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Restaurant	2014	2054	0.35	0.22	0.03	0.06	15%	0.02	0.04	15%	0.02	0.02	0	0	4.81			0.03	0.02
NC	2000	2005	Chiller Tune Up/Diagnostics	Restaurant	2014	2054	0.35	0.22	0.00	0.06	15%	0.00	0.04	15%	0.02	0.02	0	0	3.98			0.00	0.00
NC	2000	2003	EMS - Chiller	Restaurant	2014	2054	0.32	0.22	0.03	0.09	22%	0.00	0.04	17%	0.04	0.03	0	0	1.65			0.03	0.00
NC	2000	2012	Duct Testing/Sealing	Restaurant	2014	2054	0.27	0.18	0.06	0.15	36%	0.04	0.08	31%	0.11	0.06	0	0	0.91			0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Restaurant	2014	2054	6.90	4.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.90	4.32	0.00	0.00
NC	2100	2113	Ceiling/roof Insulation - DX	Restaurant	2014	2054	6.90	4.32	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	7.68			0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Restaurant	2014	2054	5.31	3.32	1.59	1.59	23%	0.99	0.99	23%	0.02	0.02	0	0	5.44			1.59	0.99
NC	2100	2115	Window Film (Standard) - DX	Restaurant	2014	2054	4.93	3.08	0.39	1.97	29%	0.24	1.24	29%	0.02	0.02	0	0	3.77			0.39	0.24
NC	2100	2108	Optimize Controls - DX	Restaurant	2014	2054	4.84	3.07	0.09	2.06	30%	0.01	1.25	29%	0.04	0.02	0	0	1.14			0.09	0.01
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	Restaurant	2014	2054	4.84	3.07	0.00	2.06	30%	0.00	1.25	29%	0.07	0.02	0	0	1.00			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Restaurant	2014	2054	4.73	3.05	0.11	2.17	31%	0.02	1.27	29%	0.06	0.02	0	0	0.82			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Restaurant	2014	2054	4.46	2.89	0.27	2.44	35%	0.17	1.43	33%	0.13	0.03	0	0	0.80			0.00	0.00
NC	2100	2111	Economizer Repair - DX	Restaurant	2014	2054	4.32	2.75	0.14	2.58	37%	0.13	1.57	36%	0.12	0.04	0	0	0.68			0.00	0.00
NC	2100	2107	Cool Roof - DX	Restaurant	2014	2054	4.18	2.67	0.14	2.72	39%	0.09	1.65	38%	0.14	0.04	0	0	0.61			0.00	0.00
NC	2100	2109	Economizer - DX	Restaurant	2014	2054	4.10	2.65	0.09	2.80	41%	0.01	1.66	39%	0.15	0.05	1	0	0.37			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Restaurant	2014	2054	4.10	2.65	0.00	2.80	41%	0.00	1.67	39%	0.15	0.05	1	0	0.36			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Restaurant	2014	2054	4.05	2.62	0.05	2.85	41%	0.03	1.70	39%	1.55	0.07	2	0	0.05			0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Restaurant	2014	2054	3.42	2.14	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.42	2.14	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	2014	2054	3.00	1.88	0.42	0.42	12%	0.27	0.27	12%	0.01	0.01	0	0	7.63			0.42	0.27
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Restaurant	2014	2054	1.27	0.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.27	0.80	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Restaurant	2014	2054	3.98	1.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.98	1.03	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Restaurant	2014	2054	3.91	1.01	0.07	0.07	2%	0.02	0.02	2%	0.11	0.11	0	0	0.70			0.00	0.00
NC	3000	3002	Variable Speed Drive Control, 5 HP	Restaurant	2014	2054	2.72	0.93	1.19	1.26	32%	0.08	0.09	9%	0.09	0.09	1	1	0.67			0.00	0.00
NC	3000	3003	Demand Controlled Ventilation	Restaurant	2014	2054	2.36	0.75	0.37	1.62	41%	0.18	0.28	27%	0.86	0.26	2	2	0.11			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Restaurant	2014	2054	17.13	2.56	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.13	2.56	0.00	0.00
NC	4100	4103	Night covers for display cases (self-contained)	Restaurant	2014	2054	16.71	2.50	0.42	0.42	2%	0.06	0.06	2%	0.00	0.00	0	0	12.78			0.42	0.06
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Restaurant	2014	2054	16.47	2.47	0.24	0.66	4%	0.04	0.10	4%	0.01	0.00	0	0	8.19			0.24	0.04
NC	4100	4109	Energy-Star Freezer, glass door	Restaurant	2014	2054	16.21	2.43	0.25	0.92	5%	0.04	0.14	5%	0.01	0.01	0	0	6.92			0.25	0.04
NC	4100	4107	Energy-Star Freezer, solid door	Restaurant	2014	2054	16.11	2.41	0.11	1.02	6%	0.02	0.15	6%	0.02	0.01	0	0	2.79			0.11	0.02
NC	4100	4108	Energy-Star Refrigerator, glass door	Restaurant	2014	2054	15.99	2.39	0.12	1.14	7%	0.02	0.17	7%	0.03	0.01	0	0	2.27			0.12	0.02
NC	4100	4106	Energy-Star Refrigerator, solid door	Restaurant	2014	2054	15.74	2.36	0.25	1.39	8%	0.04	0.21	8%	0.03	0.01	0	0	2.21			0.25	0.04
NC	4100	4110	Energy Star Ice Machines	Restaurant	2014	2054	15.49	2.32	0.24	1.64	10%	0.04	0.24	10%	0.07	0.02	0	0	0.81			0.00	0.00
NC	4100	4112	Reach-in unit occupancy sensors	Restaurant	2014	2054	15.49	2.32	0.01	1.64	10%	0.00	0.25	10%	0.29	0.02	2	0	0.20			0.00	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Restaurant	2014	2054	15.45	2.31	0.04	1.68	10%	0.01	0.25	10%	0.33	0.03	2	0	0.16			0.00	0.00
NC	4100	4101	Strip curtains for walk-ins (self-contained)	Restaurant	2014	2054	15.42	2.31	0.03	1.71	10%	0.00	0.26	10%	0.37	0.03	2	0	0.13			0.00	0.00
NC	5000	5000	Base Desktop PC	Restaurant	2014	2054	0.24	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.24	0.05	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Restaurant	2014	2054	0.13	0.04	0.11	0.11	45%	0.01	0.01	23%	0.02	0.02	0	0	2.51			0.11	0.01
NC	5000	5002	Energy Star or Better PC	Restaurant	2014	2054	0.09	0.03	0.04	0.15	63%	0.01	0.02	41%	0.04	0.03	0	0	1.28			0.04	0.01
NC	5100	5100	Base Laptop PC	Restaurant	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Restaurant	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	3.57			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Restaurant	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.77	0.16	9	1	0.03			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Restaurant	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Restaurant	2014	2054	0.02	0.00	0.03	0.03	56%	0.01	0.01	56%	0.00	0.00	0	0	28.38			0.03	0.01
NC	5200	5202	Monitor Power Management Enabling - CRT	Restaurant	2014	2054	0.02	0.00	0.01	0.04	67%	0.00	0.01	62%	0.03	0.01	0	0	1.84			0.01	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Restaurant	2014	2054	0.02	0.00	0.00	0.04	69%	0.00	0.01	64%	0.30	0.02	2	0	0.18			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Restaurant	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Restaurant	2014	2054	0.05	0.01	0.01	0.01	20%	0.00	0.00	20%	0.02	0.02	0	0	3.12			0.01	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Restaurant	2014	2054	0.05	0.01	0.00	0.02	27%	0.00	0.00	24%	0.17	0.06	2	0	0.28			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Restaurant	2014	2054	0.04	0.01	0.00	0.02	32%	0.00	0.00	25%	0.47	0.13	9	1	0.09			0.00	0.00
NC	5400	5400	Base Copier	Restaurant	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Restaurant	2014	2054	0.11	0.02	0.02	0.02	15%	0.00	0.00	15%	0.00	0.00	0	0	20.57			0.02	0.00
NC	5400	5402	Copier Power Management Enabling	Restaurant	2014	2054	0.10	0.02	0.01	0.03	23%	0.00	0.00	19%	0.15	0.05	1	0	0.33			0.00	0.00
NC	5500	5500	Base Multifunction	Restaurant	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Restaurant	2014	2054	0.03	0.01	0.01	0.01	25%	0.00	0.00	25%	0.01	0.01	0	0	5.95			0.01	0.00
NC	5500	5501	Multifunction Power Management Enabling	Restaurant	2014	2054	0.02	0.01	0.01	0.02	52%	0.00	0.00	39%	0.56	0.29	6	2	0.09			0.00	0.00
NC	5600	5600	Base Printer	Restaurant	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Restaurant	2014	2054	0.02	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00	0.00	0	0	27.37			0.01	0.00
NC	5600	5601	Printer Power Management Enabling	Restaurant	2014	2054	0.02	0.00	0.01	0.02	58%	0.00	0.00	47%	0.12	0.05	1	0	0.40			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Restaurant	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Restaurant	2014	2054	0.05	0.01	0.01	0.01	10%	0.00	0.00	10%	0.00	0.00	0	0	95.51			0.01	0.00
NC	5700	5702	Data Center Best Practices	Restaurant	2014	2054	0.04	0.01	0.01	0.01	21%	0.00	0.00	21%	0.00	0.00	0	0	38.88			0.01	0.00
NC	5700	5703	Data Center State of the Art practices	Restaurant	2014	2054	0.04	0.01	0.00	0.01	26%	0.00	0.00	26%	0.00	0.00	0	0	20.17			0.00	0.00
NC	6000	6000	Base Water Heating	Restaurant	2014	2054	2.97	0.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.97	0.50	0.00	0.00
NC	6000	6007	Heat Trap	Restaurant	2014	2054	2.81	0.47	0.15	0.15	5%	0.03	0.03	5%	0.01	0.01	0	0	9.61			0.15	0.03
NC	6000	6002	High Efficiency Water Heater (electric)	Restaurant	2014	2054	2.76	0.47	0.06	0.21	7%	0.01	0.04	7%	0.01	0.01	0	0	5.15			0.06	0.01
NC	6000	6006	Heat Recovery Unit	Restaurant	2014	2054	1.32	0.22	1.43	1.64	55%	0.24	0.28	55%	0.01	0.01	0	0	5.04			1.43	0.24
NC	6000	6004	Tankless Water Heater	Restaurant	2014	2054	1.22	0.21	0.10	1.74	59%	0.02	0.29	59%	0.04	0.01	0	0	1.76			0.10	0.02
NC	6000	6008	Solar Water Heater	Restaurant	2014	2054	1.05	0.18	0.17	1.91	65%	0.03	0.32	65%	0.05	0.02	0	0	1.51			0.17	0.03
NC	6000	6003	Hot Water Pipe Insulation	Restaurant	2014	2054	1.03	0.17	0.02	1.93	65%	0.00	0.33	65%	0.06	0.02	0	0	1.17			0.02	0.00
NC	6000	6001	Demand controlled circulating systems	Restaurant	2014	2054	0.99	0.17	0.04	1.97	67%	0.01	0.33	67%	0.18	0.02	1	0	0.37			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Restaurant	2014	2054	0.20	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.04	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Restaurant	2014	2054	0.16	0.04	0.03	0.03	16%	0.00	0.00	8%	0.03	0.03	0	0	1.85			0.03	0.00
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Restaurant	2014	2054	0.15	0.03	0.02	0.05	25%	0.00	0.00	12%	0.05	0.03	0	0	1.01			0.02	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7200	7200	Base Oven	Restaurant	2014	2054	1.06	0.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.06	0.22	0.00	0.00
NC	7200	7201	Convection Oven	Restaurant	2014	2054	0.81	0.17	0.24	0.24	23%	0.05	0.05	23%	0.10	0.10	0	0	0.65			0.00	0.00
NC	7300	7300	Base Fryer	Restaurant	2014	2054	0.82	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.82	0.17	0.00	0.00
NC	7300	7301	Efficient Fryer	Restaurant	2014	2054	0.77	0.16	0.05	0.05	6%	0.01	0.01	6%	0.32	0.32	2	2	0.20			0.00	0.00
NC	7400	7400	Base Steamer	Restaurant	2014	2054	0.75	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.75	0.15	0.00	0.00
NC	7400	7401	Efficient Steamer	Restaurant	2014	2054	0.23	0.05	0.52	0.52	69%	0.11	0.11	69%	0.05	0.05	0	0	1.42			0.52	0.11
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Restaurant	2014	2054	0.10	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	2014	2054	0.09	0.00	0.01	0.01	6%	0.00	0.00	0%	0.05	0.05	N/A	N/A	1.05			0.01	0.00
NC	8100	8100	Base Heating, Other Electric	Restaurant	2014	2054	0.26	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.26	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Restaurant	2014	2054	6.97	1.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.97	1.37	0.00	0.00
NC	9500	9501	Xmisc	Restaurant	2014	2054	6.97	1.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Retail	2020	2054	41.00	7.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	41.00	7.42	0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Retail	2020	2054	37.89	6.97	3.11	3.11	8%	0.45	0.45	6%	0.02	0.02	0	0	3.62			3.11	0.45
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Retail	2020	2054	33.95	6.26	3.94	7.05	17%	0.71	1.16	16%	0.03	0.02	0	0	2.18			3.94	0.71

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Retail	2020	2054	29.63	5.48	4.32	11.37	28%	0.78	1.94	26%	0.05	0.03	0	0	1.05			4.32	0.78
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Retail	2020	2054	29.20	5.46	0.43	11.80	29%	0.02	1.96	26%	0.10	0.04	2	0	0.50			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Retail	2020	2054	24.50	4.61	4.70	16.50	40%	0.85	2.81	38%	0.31	0.11	2	1	0.21			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Retail	2020	2054	22.40	4.23	2.09	18.59	45%	0.38	3.19	43%	0.26	0.13	1	1	0.25			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Retail	2020	2054	8.19	1.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.19	1.48	0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Retail	2020	2054	7.57	1.39	0.62	0.62	8%	0.09	0.09	6%	0.03	0.03	0	0	2.12			0.62	0.09
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Retail	2020	2054	6.78	1.25	0.79	1.41	17%	0.14	0.23	16%	0.03	0.03	0	0	1.73			0.79	0.14
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Retail	2020	2054	5.92	1.09	0.86	2.27	28%	0.16	0.39	26%	0.07	0.04	0	0	0.83			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Retail	2020	2054	5.63	1.04	0.29	2.56	31%	0.05	0.44	30%	0.25	0.07	1	0	0.26			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Retail	2020	2054	5.15	0.96	0.48	3.04	37%	0.09	0.53	36%	0.31	0.11	2	1	0.20			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Retail	2020	2054	5.08	0.95	0.07	3.11	38%	0.00	0.53	36%	0.20	0.11	5	1	0.25			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Retail	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Retail	2014	2054	0.06	0.01	0.00	0.00	8%	0.00	0.00	6%	0.06	0.06	0	0	1.09			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Retail	2014	2054	0.05	0.01	0.01	0.01	17%	0.00	0.00	16%	0.10	0.08	1	1	0.54			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Retail	2014	2054	0.05	0.01	0.00	0.01	20%	0.00	0.00	16%	0.12	0.09	3	1	0.42			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Retail	2020	2054	2.53	0.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.53	0.46	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Retail	2020	2054	0.43	0.08	2.10	2.10	83%	0.38	0.38	83%	0.01	0.01	0	0	8.36			2.10	0.38
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Retail	2020	2054	0.91	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.91	0.16	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Retail	2020	2054	0.17	0.03	0.74	0.74	82%	0.13	0.13	82%	0.01	0.01	0	0	7.06			0.74	0.13
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Retail	2020	2054	0.67	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.67	0.12	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Retail	2020	2054	0.17	0.03	0.50	0.50	75%	0.09	0.09	75%	0.01	0.01	0	0	5.26			0.50	0.09
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Retail	2020	2054	1.31	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.31	0.24	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Retail	2020	2054	0.95	0.17	0.36	0.36	28%	0.07	0.07	28%	0.06	0.06	0	0	0.86			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Retail	2020	2054	1.67	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.67	0.30	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Retail	2020	2054	1.24	0.22	0.43	0.43	26%	0.08	0.08	26%	0.05	0.05	0	0	1.14			0.43	0.08
NC	1800	1800	BaseMetal Halide, 465W	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Retail	2014	2054	0.30	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.30	0.05	0.00	0.00
NC	1850	1851	LED Exit Sign	Retail	2014	2054	0.13	0.02	0.17	0.17	56%	0.03	0.03	56%	0.04	0.04	0	0	1.31			0.17	0.03
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Retail	2014	2054	1.36	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.36	0.09	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Retail	2014	2054	1.32	0.08	0.03	0.03	2%	0.01	0.01	7%	0.04	0.04	0	0	1.77			0.03	0.01
NC	1900	1902	LED Outdoor Area Lighting	Retail	2014	2054	0.64	0.04	0.69	0.72	53%	0.04	0.05	58%	0.10	0.10	2	1	0.58			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Retail	2014	2054	0.45	0.03	0.19	0.91	67%	0.01	0.06	70%	0.68	0.22	11	3	0.09			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Retail	2014	2054	24.20	20.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.20	20.00	0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Retail	2014	2054	18.64	15.40	5.57	5.57	23%	4.60	4.60	23%	0.04	0.04	0	0	2.95			5.57	4.60
NC	2100	2111	Economizer Repair - DX	Retail	2014	2054	17.33	13.88	1.30	6.87	28%	1.52	6.12	31%	0.08	0.05	0	0	1.08			1.30	1.52
NC	2100	2107	Cool Roof - DX	Retail	2014	2054	16.56	13.24	0.77	7.64	32%	0.64	6.76	34%	0.12	0.05	0	0	0.81			0.00	0.00
NC	2100	2108	Optimize Controls - DX	Retail	2014	2054	16.29	13.19	0.27	7.91	33%	0.06	6.82	34%	0.10	0.06	0	0	0.51			0.00	0.00
NC	2100	2109	Economizer - DX	Retail	2014	2054	14.90	12.89	1.39	9.30	38%	0.30	7.11	36%	0.13	0.07	1	0	0.45			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Retail	2014	2054	14.00	12.14	0.91	10.20	42%	0.75	7.86	39%	0.31	0.09	0	0	0.39			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Retail	2014	2054	13.61	12.06	0.39	10.59	44%	0.08	7.95	40%	0.17	0.09	1	0	0.32			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	Retail	2014	2054	13.56	12.02	0.05	10.64	44%	0.04	7.99	40%	0.38	0.09	0	0	0.25			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Retail	2014	2054	13.56	12.01	0.01	10.65	44%	0.00	7.99	40%	0.29	0.09	1	0	0.21			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Retail	2014	2054	13.46	11.93	0.10	10.75	44%	0.08	8.07	40%	3.43	0.12	4	0	0.03			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Retail	2014	2054	12.96	10.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.96	10.71	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	2014	2054	11.36	9.38	1.60	1.60	12%	1.32	1.32	12%	0.03	0.03	0	0	4.14			1.60	1.32
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Retail	2014	2054	1.11	0.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.11	0.92	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Retail	2014	2054	15.33	4.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.33	4.29	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Retail	2014	2054	15.08	4.23	0.24	0.24	2%	0.07	0.07	2%	0.02	0.02	0	0	3.41			0.24	0.07
NC	3000	3002	Variable Speed Drive Control, 5 HP	Retail	2014	2054	10.56	3.91	4.52	4.76	31%	0.32	0.38	9%	0.02	0.02	0	0	3.15			4.52	0.32
NC	3000	3003	Demand Controlled Ventilation	Retail	2014	2054	9.45	3.32	1.11	5.87	38%	0.59	0.98	23%	1.16	0.23	2	1	0.08			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Retail	2014	2054	0.53	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.53	0.15	0.00	0.00
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Retail	2014	2054	0.46	0.13	0.08	0.08	14%	0.02	0.02	13%	0.03	0.03	0	0	2.44			0.08	0.02
NC	3100	3103	Air Handler Optimization, 15 HP	Retail	2014	2054	0.41	0.13	0.05	0.12	23%	0.00	0.02	15%	0.03	0.03	0	0	1.86			0.05	0.00
NC	3100	3102	Variable Speed Drive Control, 15 HP	Retail	2014	2054	0.29	0.12	0.12	0.25	46%	0.01	0.03	21%	0.07	0.05	1	0	0.85			0.00	0.00
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Retail	2014	2054	0.29	0.12	0.00	0.25	46%	0.00	0.03	21%	0.21	0.05	1	0	0.39			0.00	0.00
NC	3100	3105	Energy Recovery Ventilation (ERV)	Retail	2014	2054	0.27	0.11	0.02	0.27	50%	0.01	0.04	28%	0.46	0.08	1	0	0.23			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	Retail	2014	2054	0.24	0.09	0.03	0.29	55%	0.01	0.06	38%	1.59	0.22	3	1	0.06			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Retail	2014	2054	0.53	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.53	0.15	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	Retail	2014	2054	0.48	0.15	0.05	0.05	10%	0.00	0.00	3%	0.02	0.02	0	0	2.17			0.05	0.00
NC	3200	3202	Variable Speed Drive Control, 40 HP	Retail	2014	2054	0.34	0.14	0.14	0.20	37%	0.01	0.01	9%	0.06	0.05	1	1	1.02			0.14	0.01
NC	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Retail	2014	2054	0.34	0.14	0.00	0.20	37%	0.00	0.01	9%	0.28	0.05	1	1	0.29			0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	Retail	2014	2054	0.30	0.12	0.04	0.23	44%	0.02	0.03	22%	1.27	0.23	2	2	0.07			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Retail	2014	2054	5.88	0.89	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.88	0.89	0.00	0.00
NC	4100	4109	Energy-Star Freezer, glass door	Retail	2014	2054	5.85	0.89	0.03	0.03	0%	0.00	0.00	0%	0.04	0.04	0	0	1.57			0.03	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Retail	2014	2054	5.72	0.87	0.13	0.15	3%	0.02	0.02	3%	0.04	0.04	0	0	1.43			0.13	0.02
NC	4100	4107	Energy-Star Freezer, solid door	Retail	2014	2054	5.71	0.87	0.01	0.16	3%	0.00	0.02	3%	0.09	0.04	1	0	0.62			0.00	0.00
NC	4100	4108	Energy-Star Refrigerator, glass door	Retail	2014	2054	5.61	0.85	0.11	0.27	5%	0.02	0.04	5%	0.11	0.07	1	0	0.53			0.00	0.00
NC	4100	4106	Energy-Star Refrigerator, solid door	Retail	2014	2054	5.59	0.85	0.02	0.28	5%	0.00	0.04	5%	0.12	0.07	1	0	0.49			0.00	0.00
NC	4100	4112	Reach-in unit occupancy sensors	Retail	2014	2054	5.56	0.85	0.03	0.31	5%	0.00	0.05	5%	0.27	0.09	2	1	0.21			0.00	0.00
NC	4100	4110	Energy Star Ice Machines	Retail	2014	2054	5.56	0.84	0.01	0.32	5%	0.00	0.05	5%	0.32	0.09	2	1	0.18			0.00	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Retail	2014	2054	5.51	0.84	0.05	0.37	6%	0.01	0.06	6%	0.31	0.12	2	1	0.17			0.00	0.00
NC	4100	4101	Strip curtains for walk-ins (self-contained)	Retail	2014	2054	5.50	0.84	0.00	0.37	6%	0.00	0.06	6%	1.91	0.13	13	1	0.03			0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	5000	5000	Base Desktop PC	Retail	2014	2054	0.82	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.82	0.15	0.00	0.00
NC	5000	5002	Energy Star or Better PC	Retail	2014	2054	0.70	0.12	0.12	0.12	15%	0.02	0.02	15%	0.01	0.01	0	0	3.49			0.12	0.02
NC	5000	5001	PC Network Power Management Enabling	Retail	2014	2054	0.38	0.10	0.31	0.44	53%	0.03	0.05	35%	0.02	0.02	0	0	2.73			0.31	0.03
NC	5100	5100	Base Laptop PC	Retail	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Retail	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	4.53			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Retail	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.38	0.12	8	1	0.04			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Retail	2014	2054	0.25	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.25	0.05	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Retail	2014	2054	0.11	0.02	0.14	0.14	56%	0.03	0.03	56%	0.00	0.00	0	0	36.02			0.14	0.03
NC	5200	5202	Monitor Power Management Enabling - CRT	Retail	2014	2054	0.09	0.02	0.02	0.16	63%	0.00	0.03	60%	0.02	0.00	0	0	2.75			0.02	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Retail	2014	2054	0.09	0.02	0.01	0.17	66%	0.00	0.03	63%	0.21	0.01	1	0	0.25			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Retail	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Retail	2014	2054	0.07	0.01	0.01	0.01	14%	0.00	0.00	14%	0.01	0.01	0	0	4.27			0.01	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Retail	2014	2054	0.07	0.01	0.00	0.01	17%	0.00	0.00	16%	0.11	0.03	1	0	0.42			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Retail	2014	2054	0.06	0.01	0.00	0.02	24%	0.00	0.00	17%	0.32	0.11	7	1	0.14			0.00	0.00
NC	5400	5400	Base Copier	Retail	2014	2054	0.50	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.50	0.09	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Retail	2014	2054	0.43	0.08	0.07	0.07	14%	0.01	0.01	14%	0.00	0.00	0	0	26.26			0.07	0.01
NC	5400	5402	Copier Power Management Enabling	Retail	2014	2054	0.41	0.07	0.02	0.09	18%	0.00	0.01	16%	0.11	0.03	1	0	0.45			0.00	0.00
NC	5500	5500	Base Multifunction	Retail	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Retail	2014	2054	0.06	0.01	0.02	0.02	25%	0.00	0.00	25%	0.01	0.01	0	0	7.56			0.02	0.00
NC	5500	5501	Multifunction Power Management Enabling	Retail	2014	2054	0.05	0.01	0.01	0.03	36%	0.00	0.00	30%	0.28	0.09	3	1	0.17			0.00	0.00
NC	5600	5600	Base Printer	Retail	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Retail	2014	2054	0.05	0.01	0.03	0.03	35%	0.01	0.01	35%	0.00	0.00	0	0	34.75			0.03	0.01
NC	5600	5601	Printer Power Management Enabling	Retail	2014	2054	0.05	0.01	0.01	0.04	44%	0.00	0.01	39%	0.06	0.01	1	0	0.80			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Retail	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Retail	2014	2054	0.07	0.01	0.01	0.01	10%	0.00	0.00	10%	0.00	0.00	0	0	120.93			0.01	0.00
NC	5700	5702	Data Center Best Practices	Retail	2014	2054	0.06	0.01	0.01	0.02	21%	0.00	0.00	21%	0.00	0.00	0	0	49.23			0.01	0.00
NC	5700	5703	Data Center State of the Art practices	Retail	2014	2054	0.06	0.01	0.00	0.02	26%	0.00	0.00	26%	0.00	0.00	0	0	25.53			0.00	0.00
NC	6000	6000	Base Water Heating	Retail	2014	2054	3.11	0.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.11	0.50	0.00	0.00
NC	6000	6007	Heat Trap	Retail	2014	2054	2.95	0.47	0.16	0.16	5%	0.03	0.03	5%	0.02	0.02	0	0	2.86			0.16	0.03
NC	6000	6002	High Efficiency Water Heater (electric)	Retail	2014	2054	2.89	0.47	0.06	0.22	7%	0.01	0.04	7%	0.04	0.03	0	0	1.53			0.06	0.01
NC	6000	6004	Tankless Water Heater	Retail	2014	2054	2.68	0.43	0.22	0.44	14%	0.03	0.07	14%	0.07	0.05	0	0	1.09			0.22	0.03
NC	6000	6008	Solar Water Heater	Retail	2014	2054	2.60	0.42	0.07	0.51	16%	0.01	0.08	16%	0.08	0.05	0	0	0.93			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	Retail	2014	2054	2.56	0.41	0.04	0.55	18%	0.01	0.09	18%	0.08	0.05	0	0	0.82			0.00	0.00
NC	6000	6006	Heat Recovery Unit	Retail	2014	2054	2.48	0.40	0.08	0.64	20%	0.01	0.10	20%	0.09	0.06	1	0	0.64			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	Retail	2014	2054	2.44	0.39	0.04	0.68	22%	0.01	0.11	22%	0.13	0.06	1	0	0.50			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Retail	2014	2054	1.91	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.91	0.34	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Retail	2014	2054	1.61	0.31	0.30	0.30	16%	0.03	0.03	8%	0.03	0.03	0	0	1.85			0.30	0.03
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Retail	2014	2054	1.44	0.30	0.16	0.47	24%	0.01	0.04	12%	0.05	0.03	1	0	1.01			0.16	0.01
NC	7100	7100	Base Non-Refrigerated Vending Machines	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7200	7200	Base Oven	Retail	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	7200	7201	Convection Oven	Retail	2014	2054	0.01	0.00	0.00	0.00	23%	0.00	0.00	23%	0.09	0.09	1	1	0.68			0.00	0.00
NC	7300	7300	Base Fryer	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7300	7301	Efficient Fryer	Retail	2014	2054	0.00	0.00	0.00	0.00	6%	0.00	0.00	6%	0.30	0.30	2	2	0.21			0.00	0.00
NC	7400	7400	Base Steamer	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7400	7401	Efficient Steamer	Retail	2014	2054	0.00	0.00	0.00	0.00	64%	0.00	0.00	64%	0.04	0.04	0	0	1.73			0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Retail	2014	2054	1.44	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.44	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	2014	2054	1.36	0.00	0.08	0.08	6%	0.00	0.00	0%	0.04	0.04	N/A	N/A	1.44			0.08	0.00
NC	8100	8100	Base Heating, Other Electric	Retail	2014	2054	0.39	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Retail	2014	2054	36.79	6.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	36.79	6.58	0.00	0.00
NC	9500	9501	Xmisc	Retail	2014	2054	36.79	6.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Grocery	2020	2054	4.64	0.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.64	0.71	0.00	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Grocery	2020	2054	4.64	0.71	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	4.44			0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Grocery	2020	2054	4.28	0.67	0.36	0.36	8%	0.04	0.04	6%	0.02	0.02	0	0	3.81			0.36	0.04
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Grocery	2020	2054	3.85	0.60	0.44	0.79	17%	0.07	0.11	15%	0.04	0.03	0	0	1.27			0.44	0.07
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Grocery	2020	2054	3.36	0.52	0.49	1.28	28%	0.07	0.18	26%	0.08	0.05	1	0	0.61			0.00	0.00
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Grocery	2020	2054	3.31	0.52	0.05	1.33	29%	0.00	0.19	26%	0.12	0.05	3	0	0.42			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Grocery	2020	2054	2.77	0.44	0.53	1.87	40%	0.08	0.27	38%	0.50	0.18	3	1	0.11			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Grocery	2020	2054	2.54	0.40	0.24	2.10	45%	0.04	0.30	43%	0.41	0.21	3	1	0.13			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Grocery	2020	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Grocery	2020	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	3.71			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Grocery	2020	2054	0.02	0.00	0.00	0.00	8%	0.00	0.00	6%	0.02	0.02	0	0	3.18			0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	17%	0.00	0.00	15%	0.05	0.04	0	0	1.01			0.00	0.00
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	27%	0.00	0.00	26%	0.11	0.06	1	0	0.48			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	28%	0.00	0.00	26%	0.20	0.07	6	0	0.24			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Grocery	2020	2054	0.01	0.00	0.00	0.01	32%	0.00	0.00	29%	0.40	0.11	3	1	0.14			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Grocery	2020	2054	0.01	0.00	0.00	0.01	38%	0.00	0.00	35%	0.51	0.17	3	1	0.11			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Grocery	2020	2054	0.42	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.42	0.06	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Grocery	2020	2054	0.08	0.01	0.34	0.34	81%	0.05	0.05	81%	0.01	0.01	0	0	4.76			0.34	0.05
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Grocery	2020	2054	0.15	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.15	0.02	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Grocery	2020	2054	0.03	0.00	0.12	0.12	80%	0.02	0.02	80%	0.01	0.01	0	0	4.01			0.12	0.02
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Grocery	2020	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Grocery	2020	2054	0.03	0.00	0.08	0.08	72%	0.01	0.01	72%	0.02	0.02	0	0	2.96			0.08	0.01
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Grocery	2020	2054	0.67	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.67	0.10	0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Grocery	2020	2054	0.48	0.07	0.19	0.19	28%	0.03	0.03	28%	0.12	0.12	1	1	0.44			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Grocery	2020	2054	0.85	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.85	0.13	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Grocery	2020	2054	0.63	0.10	0.22	0.22	26%	0.03	0.03	26%	0.09	0.09	1	1	0.59			0.00	0.00
NC	1800	1800	BaseMetal Halide, 465W	Grocery	2014	2054	0.19	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.03	0.00	0.00
NC	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Grocery	2014	2054	0.17	0.03	0.01	0.01	8%	0.00	0.00	6%	0.01	0.01	0	0	8.77			0.01	0.00
NC	1800	1801	T5 (240W) (base metal halide)	Grocery	2014	2054	0.12	0.02	0.06	0.07	39%	0.01	0.01	37%	0.02	0.01	0	0	4.35			0.06	0.01
NC	1800	1806	Occupancy Sensor, High Bay T5	Grocery	2014	2054	0.11	0.02	0.00	0.08	41%	0.00	0.01	38%	0.04	0.02	1	0	1.23			0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Grocery	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	1850	1851	LED Exit Sign	Grocery	2014	2054	0.01	0.00	0.00	0.00	2%	0.00	0.00	2%	0.03	0.03	0	0	1.58			0.00	0.00
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Grocery	2014	2054	0.18	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.00	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Grocery	2014	2054	0.16	0.00	0.03	0.03	15%	0.00	0.00	49%	0.10	0.10	1	1	0.65			0.00	0.00
NC	1900	1902	LED Outdoor Area Lighting	Grocery	2014	2054	0.08	0.00	0.08	0.11	59%	0.00	0.00	93%	0.22	0.19	9	5	0.26			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Grocery	2014	2054	0.05	0.00	0.02	0.13	71%	0.00	0.00	104%	1.40	0.39	65	11	0.04			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Grocery	2014	2054	1.49	0.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.49	0.97	0.00	0.00
NC	2100	2113	Ceiling/roof Insulation - DX	Grocery	2014	2054	1.49	0.97	0.00	0.00	0%	0.00	0.00	0%	0.04	0.04	0	0	3.08			0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Grocery	2014	2054	1.15	0.75	0.34	0.34	23%	0.22	0.22	23%	0.04	0.04	0	0	2.67			0.34	0.22
NC	2100	2115	Window Film (Standard) - DX	Grocery	2014	2054	1.07	0.70	0.08	0.42	28%	0.05	0.28	28%	0.10	0.05	0	0	0.84			0.00	0.00
NC	2100	2107	Cool Roof - DX	Grocery	2014	2054	0.98	0.64	0.08	0.51	34%	0.05	0.33	34%	0.14	0.06	0	0	0.62			0.00	0.00
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	Grocery	2014	2054	0.98	0.64	0.00	0.51	34%	0.00	0.33	34%	0.14	0.06	0	0	0.45			0.00	0.00
NC	2100	2108	Optimize Controls - DX	Grocery	2014	2054	0.96	0.64	0.02	0.53	35%	0.00	0.33	34%	0.12	0.07	1	0	0.42			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Grocery	2014	2054	0.95	0.64	0.01	0.54	36%	0.00	0.34	35%	0.14	0.07	1	0	0.37			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Grocery	2014	2054	0.89	0.60	0.06	0.60	40%	0.04	0.37	38%	0.29	0.09	0	0	0.36			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Grocery	2014	2054	0.89	0.60	0.00	0.60	40%	0.00	0.37	38%	0.84	0.09	5	0	0.07			0.00	0.00
NC	2100	2111	Economizer Repair - DX	Grocery	2014	2054	0.88	0.59	0.01	0.61	41%	0.01	0.38	39%	1.63	0.11	2	0	0.05			0.00	0.00
NC	2100	2109	Economizer - DX	Grocery	2014	2054	0.88	0.59	0.00	0.61	41%	0.00	0.38	39%	2.04	0.11	13	0	0.03			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Grocery	2014	2054	0.87	0.58	0.01	0.62	42%	0.01	0.39	40%	3.94	0.20	6	0	0.02			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Grocery	2014	2054	1.02	0.67	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.02	0.67	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	2014	2054	0.89	0.58	0.13	0.13	12%	0.08	0.08	12%	0.03	0.03	0	0	3.06			0.13	0.08
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Grocery	2014	2054	0.17	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.17	0.11	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Grocery	2014	2054	2.67	0.57	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.67	0.57	0.00	0.00
NC	3000	3002	Variable Speed Drive Control, 5 HP	Grocery	2014	2054	1.85	0.53	0.83	0.83	31%	0.04	0.04	7%	0.03	0.03	1	1	1.61			0.83	0.04
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Grocery	2014	2054	1.81	0.52	0.03	0.86	32%	0.01	0.05	9%	0.07	0.04	0	1	1.09			0.03	0.01
NC	3000	3003	Demand Controlled Ventilation	Grocery	2014	2054	1.56	0.41	0.26	1.12	42%	0.11	0.16	28%	1.37	0.34	3	2	0.06			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Grocery	2014	2054	2.64	0.57	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.64	0.57	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	Grocery	2014	2054	2.37	0.55	0.27	0.27	10%	0.01	0.01	3%	0.02	0.02	0	0	1.98			0.27	0.01
NC	3200	3204	Demand Controlled Ventilation	Grocery	2014	2054	2.03	0.41	0.34	0.61	23%	0.14	0.16	28%	1.04	0.58	2	2	0.08			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Grocery	2014	2054	12.34	1.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.34	1.99	0.00	0.00
NC	4000	4007	Efficient compressor motor	Grocery	2014	2054	12.31	1.98	0.02	0.02	0%	0.00	0.00	0%	0.02	0.02	0	0	3.52			0.02	0.00
NC	4000	4011	Demand Hot Gas Defrost	Grocery	2014	2054	12.01	1.93	0.31	0.33	3%	0.05	0.05	3%	0.02	0.02	0	0	3.25			0.31	0.05
NC	4000	4009	Floating head pressure controls	Grocery	2014	2054	11.98	1.93	0.03	0.36	3%	0.00	0.06	3%	0.02	0.02	0	0	2.94			0.03	0.00
NC	4000	4006	Electronically commutated evaporator fan motor	Grocery	2014	2054	11.13	1.86	0.85	1.21	10%	0.07	0.12	6%	0.02	0.02	0	0	2.65			0.85	0.07
NC	4000	4013	Anti-sweat (humidistat) controls	Grocery	2014	2054	10.97	1.85	0.16	1.37	11%	0.01	0.14	7%	0.04	0.02	1	0	1.30			0.16	0.01
NC	4000	4002	Strip curtains for walk-ins (built-up)	Grocery	2014	2054	10.66	1.80	0.31	1.68	14%	0.05	0.19	9%	0.04	0.03	0	0	1.30			0.31	0.05
NC	4000	4014	Freezer-Cooler Replacement Gaskets	Grocery	2014	2054	10.30	1.74	0.36	2.04	17%	0.06	0.24	12%	0.06	0.03	0	0	0.91			0.00	0.00
NC	4000	4018	Oversized Air Cooled Condenser	Grocery	2014	2054	9.87	1.67	0.43	2.47	20%	0.07	0.31	16%	0.08	0.04	0	0	0.83			0.00	0.00
NC	4000	4001	High-efficiency fan motors	Grocery	2014	2054	9.52	1.62	0.35	2.82	23%	0.06	0.37	19%	0.11	0.05	1	0	0.66			0.00	0.00
NC	4000	4004	Night covers for display cases	Grocery	2014	2054	8.97	1.62	0.54	3.36	27%	0.00	0.37	19%	0.07	0.05	N/A	0	0.59			0.00	0.00
NC	4000	4008	Compressor VSD retrofit	Grocery	2014	2054	8.42	1.57	0.56	3.92	32%	0.04	0.42	21%	0.10	0.06	1	1	0.54			0.00	0.00
NC	4000	4010	Refrigeration Commissioning	Grocery	2014	2054	8.38	1.56	0.04	3.96	32%	0.01	0.42	21%	0.18	0.06	1	1	0.28			0.00	0.00
NC	4000	4005	Evaporator fan controller for MT walk-ins	Grocery	2014	2054	8.37	1.56	0.01	3.97	32%	0.00	0.42	21%	0.25	0.06	3	1	0.24			0.00	0.00
NC	4000	4017	Multiplex Compressor System	Grocery	2014	2054	8.22	1.54	0.15	4.12	33%	0.02	0.45	22%	0.27	0.07	2	1	0.24			0.00	0.00
NC	4000	4016	LED Display Lighting	Grocery	2014	2054	7.64	1.45	0.58	4.70	38%	0.09	0.54	27%	0.44	0.11	3	1	0.12			0.00	0.00
NC	4000	4015	High R-Value Glass Doors	Grocery	2014	2054	7.52	1.43	0.12	4.82	39%	0.02	0.56	28%	1.97	0.16	12	1	0.03			0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Grocery	2014	2054	1.23	0.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.23	0.20	0.00	0.00
NC	4100	4103	Night covers for display cases (self-contained)	Grocery	2014	2054	1.14	0.18	0.09	0.09	7%	0.01	0.01	7%	0.00	0.00	0	0	159.86			0.09	0.01
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Grocery	2014	2054	1.13	0.18	0.02	0.10	8%	0.00	0.02	8%	0.01	0.00	0	0	3.56			0.02	0.00
NC	4100	4109	Energy-Star Freezer, glass door	Grocery	2014	2054	1.06	0.17	0.07	0.17	14%	0.01	0.03	14%	0.03	0.01	0	0	2.08			0.07	0.01
NC	4100	4107	Energy-Star Freezer, solid door	Grocery	2014	2054	1.03	0.17	0.03	0.20	16%	0.00	0.03	16%	0.07	0.02	0	0	0.79			0.00	0.00
NC	4100	4108	Energy-Star Refrigerator, glass door	Grocery	2014	2054	1.03	0.17	0.00	0.20	16%	0.00	0.03	16%	0.09	0.02	1	0	0.61			0.00	0.00
NC	4100	4106	Energy-Star Refrigerator, solid door	Grocery	2014	2054	1.03	0.17	0.00	0.20	16%	0.00	0.03	16%	0.10	0.02	1	0	0.58			0.00	0.00
NC	4100	4110	Energy Star Ice Machines	Grocery	2014	2054	1.03	0.17	0.00	0.20	16%	0.00	0.03	16%	0.25	0.02	2	0	0.23			0.00	0.00
NC	4100	4112	Reach-in unit occupancy sensors	Grocery	2014	2054	1.03	0.17	0.00	0.20	16%	0.00	0.03	16%	0.31	0.02	2	0	0.19			0.00	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Grocery	2014	2054	1.02	0.16	0.01	0.21	17%	0.00	0.03	17%	0.35	0.03	2	0	0.15			0.00	0.00
NC	4100	4101	Strip curtains for walk-ins (self-contained)	Grocery	2014	2054	1.01	0.16	0.01	0.22	18%	0.00	0.04	18%	0.68	0.07	4	0	0.07			0.00	0.00
NC	5000	5000	Base Desktop PC	Grocery	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Grocery	2014	2054	0.04	0.01	0.03	0.03	45%	0.00	0.00	23%	0.03	0.03	0	0	1.80			0.03	0.00
NC	5000	5002	Energy Star or Better PC	Grocery	2014	2054	0.02	0.01	0.01	0.04	63%	0.00	0.00	41%	0.06	0.04	0	0	0.90			0.00	0.00
NC	5100	5100	Base Laptop PC	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Grocery	2014	2054	0.00	0.00	0.00	0.00	19%	0.00	0.00	19%	0.02	0.02	0	0	2.52			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	2.48	0.22	14	1	0.02			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Grocery	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Grocery	2014	2054	0.01	0.00	0.01	0.01	56%	0.00	0.00	56%	0.00	0.00	0	0	20.00			0.01	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	5200	5202	Monitor Power Management Enabling - CRT	Grocery	2014	2054	0.01	0.00	0.00	0.02	73%	0.00	0.00	65%	0.05	0.01	1	0	0.93			0.00	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Grocery	2014	2054	0.01	0.00	0.00	0.02	76%	0.00	0.00	67%	0.52	0.03	3	0	0.10			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Grocery	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Grocery	2014	2054	0.01	0.00	0.00	0.00	20%	0.00	0.00	20%	0.02	0.02	0	0	2.20			0.00	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Grocery	2014	2054	0.01	0.00	0.00	0.00	31%	0.00	0.00	26%	0.25	0.10	3	1	0.19			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Grocery	2014	2054	0.01	0.00	0.00	0.00	36%	0.00	0.00	27%	0.70	0.19	15	1	0.06			0.00	0.00
NC	5400	5400	Base Copier	Grocery	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Grocery	2014	2054	0.04	0.01	0.01	0.01	20%	0.00	0.00	20%	0.00	0.00	0	0	13.56			0.01	0.00
NC	5400	5402	Copier Power Management Enabling	Grocery	2014	2054	0.03	0.01	0.01	0.02	31%	0.00	0.00	26%	0.24	0.09	3	1	0.20			0.00	0.00
NC	5500	5500	Base Multifunction	Grocery	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Grocery	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	4.20			0.00	0.00
NC	5500	5501	Multifunction Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	36%	0.64	0.30	7	2	0.07			0.00	0.00
NC	5600	5600	Base Printer	Grocery	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Grocery	2014	2054	0.00	0.00	0.00	0.00	35%	0.00	0.00	35%	0.00	0.00	0	0	19.30			0.00	0.00
NC	5600	5601	Printer Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	53%	0.00	0.00	44%	0.14	0.05	2	0	0.34			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Grocery	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Grocery	2014	2054	0.02	0.00	0.00	0.00	10%	0.00	0.00	10%	0.00	0.00	0	0	67.16			0.00	0.00
NC	5700	5702	Data Center Best Practices	Grocery	2014	2054	0.02	0.00	0.00	0.00	21%	0.00	0.00	21%	0.00	0.00	0	0	27.34			0.00	0.00
NC	5700	5703	Data Center State of the Art practices	Grocery	2014	2054	0.02	0.00	0.00	0.01	26%	0.00	0.00	26%	0.00	0.00	0	0	14.18			0.00	0.00
NC	6000	6000	Base Water Heating	Grocery	2014	2054	0.30	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.30	0.05	0.00	0.00
NC	6000	6007	Heat Trap	Grocery	2014	2054	0.29	0.05	0.02	0.02	5%	0.00	0.00	5%	0.03	0.03	0	0	1.99			0.02	0.00
NC	6000	6002	High Efficiency Water Heater (electric)	Grocery	2014	2054	0.28	0.04	0.01	0.02	7%	0.00	0.00	7%	0.06	0.04	0	0	1.07			0.01	0.00
NC	6000	6006	Heat Recovery Unit	Grocery	2014	2054	0.13	0.02	0.15	0.17	55%	0.02	0.03	55%	0.07	0.07	0	0	0.82			0.00	0.00
NC	6000	6004	Tankless Water Heater	Grocery	2014	2054	0.12	0.02	0.01	0.18	59%	0.00	0.03	59%	0.19	0.07	1	0	0.36			0.00	0.00
NC	6000	6008	Solar Water Heater	Grocery	2014	2054	0.11	0.02	0.02	0.19	65%	0.00	0.03	65%	0.23	0.09	1	1	0.31			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	Grocery	2014	2054	0.10	0.02	0.00	0.20	66%	0.00	0.03	66%	0.26	0.09	2	1	0.25			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	Grocery	2014	2054	0.10	0.02	0.00	0.20	66%	0.00	0.03	66%	0.28	0.09	2	1	0.23			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Grocery	2014	2054	0.71	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.71	0.11	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Grocery	2014	2054	0.59	0.10	0.12	0.12	16%	0.01	0.01	8%	0.03	0.03	0	0	1.83			0.12	0.01
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Grocery	2014	2054	0.53	0.10	0.06	0.18	25%	0.00	0.01	12%	0.05	0.03	1	0	1.00			0.06	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7100	7101	Vending Misers (Non-Refrigerated)	Grocery	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	23%	0.43	0.43	5	5	0.11			0.00	0.00
NC	7200	7200	Base Oven	Grocery	2014	2054	0.16	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.02	0.00	0.00
NC	7300	7300	Base Fryer	Grocery	2014	2054	0.04	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.00	0.00	0.00
NC	7400	7400	Base Steamer	Grocery	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	7400	7401	Efficient Steamer	Grocery	2014	2054	0.02	0.00	0.05	0.05	69%	0.01	0.01	69%	0.04	0.04	0	0	1.63			0.05	0.01
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Grocery	2014	2054	0.12	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	2014	2054	0.11	0.00	0.01	0.01	6%	0.00	0.00	0%	0.04	0.04	N/A	N/A	1.19			0.01	0.00
NC	8100	8100	Base Heating, Other Electric	Grocery	2014	2054	0.05	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Grocery	2014	2054	3.48	0.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.48	0.55	0.00	0.00
NC	9500	9501	Xmisc	Grocery	2014	2054	3.48	0.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Warehouse	2020	2054	30.12	5.35	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	30.12	5.35	0.00	0.00
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Warehouse	2020	2054	27.61	4.91	2.51	2.51	8%	0.45	0.45	8%	0.01	0.01	0	0	4.74			2.51	0.45
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	2020	2054	24.10	4.28	3.51	6.02	20%	0.62	1.07	20%	0.02	0.02	0	0	2.28			3.51	0.62
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Warehouse	2020	2054	22.29	4.03	1.81	7.83	26%	0.26	1.33	25%	0.03	0.02	0	0	2.16			1.81	0.26
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Warehouse	2020	2054	21.66	4.00	0.63	8.46	28%	0.03	1.35	25%	0.05	0.02	1	0	0.98			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Warehouse	2020	2054	18.17	3.38	3.49	11.95	40%	0.62	1.97	37%	0.16	0.06	1	0	0.41			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Warehouse	2020	2054	16.62	3.10	1.55	13.50	45%	0.28	2.25	42%	0.13	0.07	1	0	0.49			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Warehouse	2020	2054	0.21	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.21	0.04	0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Warehouse	2020	2054	0.18	0.03	0.02	0.02	10%	0.00	0.00	10%	0.02	0.02	0	0	3.67			0.02	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Warehouse	2020	2054	0.17	0.03	0.01	0.04	17%	0.00	0.01	16%	0.03	0.02	0	0	2.33			0.01	0.00
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	2020	2054	0.15	0.03	0.02	0.06	28%	0.00	0.01	26%	0.03	0.03	0	0	1.63			0.02	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Warehouse	2020	2054	0.14	0.03	0.01	0.06	31%	0.00	0.01	30%	0.13	0.04	1	0	0.50			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Warehouse	2020	2054	0.13	0.02	0.01	0.08	37%	0.00	0.01	36%	0.16	0.06	1	0	0.40			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Warehouse	2020	2054	0.13	0.02	0.00	0.08	39%	0.00	0.01	36%	0.10	0.06	2	0	0.47			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Warehouse	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Warehouse	2014	2054	0.03	0.01	0.00	0.00	8%	0.00	0.00	6%	0.02	0.02	0	0	4.07			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Warehouse	2014	2054	0.03	0.00	0.00	0.01	17%	0.00	0.00	16%	0.05	0.04	0	0	1.06			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Warehouse	2014	2054	0.02	0.00	0.00	0.01	23%	0.00	0.00	17%	0.06	0.04	1	0	0.80			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Warehouse	2020	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Warehouse	2020	2054	1.36	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.36	0.24	0.00	0.00
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Warehouse	2020	2054	1.00	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.00	0.18	0.00	0.00
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Warehouse	2020	2054	0.19	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.03	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Warehouse	2020	2054	0.14	0.02	0.05	0.05	28%	0.01	0.01	28%	0.03	0.03	0	0	1.60			0.05	0.01
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Warehouse	2020	2054	0.25	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.25	0.04	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Warehouse	2020	2054	0.18	0.03	0.06	0.06	26%	0.01	0.01	26%	0.03	0.03	0	0	2.13			0.06	0.01
NC	1800	1800	BaseMetal Halide, 465W	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Warehouse	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	1850	1851	LED Exit Sign	Warehouse	2014	2054	0.02	0.00	0.05	0.05	69%	0.01	0.01	69%	0.03	0.03	0	0	1.88			0.05	0.01
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Warehouse	2014	2054	0.16	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.00	0.00	0.00
NC	1900	1902	LED Outdoor Area Lighting	Warehouse	2014	2054	0.08	0.00	0.08	0.08	52%	0.00	0.00	52%	0.05	0.05	4	4	1.10			0.08	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Warehouse	2014	2054	0.06	0.00	0.02	0.11	66%	0.00	0.00	65%	0.33	0.11	27	8	0.17			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Warehouse	2014	2054	2.75	2.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.75	2.62	0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	2100	2113	Ceiling/roof Insulation - DX	Warehouse	2014	2054	2.63	2.50	0.13	0.13	5%	0.12	0.12	5%	0.03	0.03	0	0	4.53			0.13	0.12
NC	2100	2107	Cool Roof - DX	Warehouse	2014	2054	2.43	2.31	0.20	0.32	12%	0.19	0.31	12%	0.07	0.05	0	0	1.54			0.20	0.19
NC	2100	2108	Optimize Controls - DX	Warehouse	2014	2054	2.40	2.30	0.04	0.36	13%	0.01	0.32	12%	0.08	0.05	0	0	0.65			0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Warehouse	2014	2054	1.84	1.78	0.55	0.91	33%	0.52	0.84	32%	0.26	0.18	0	0	0.46			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Warehouse	2014	2054	1.73	1.67	0.11	1.02	37%	0.10	0.94	36%	1.71	0.35	2	0	0.08			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	Warehouse	2014	2054	1.66	1.60	0.07	1.09	40%	0.07	1.02	39%	1.52	0.43	2	0	0.07			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Warehouse	2014	2054	1.61	1.59	0.05	1.14	42%	0.01	1.03	39%	1.12	0.46	4	1	0.05			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Warehouse	2014	2054	1.61	1.59	0.00	1.15	42%	0.00	1.03	39%	3.12	0.46	3	1	0.03			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Warehouse	2014	2054	1.61	1.59	0.00	1.15	42%	0.00	1.03	39%	2.06	0.47	8	1	0.03			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Warehouse	2014	2054	1.32	1.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.32	1.25	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Warehouse	2014	2054	5.72	1.77	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.72	1.77	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Warehouse	2014	2054	5.62	1.74	0.10	0.10	2%	0.03	0.03	2%	0.03	0.03	0	0	3.29			0.10	0.03
NC	3000	3002	Variable Speed Drive Control, 5 HP	Warehouse	2014	2054	3.97	1.61	1.65	1.75	31%	0.13	0.16	9%	0.02	0.02	0	0	2.93			1.65	0.13
NC	3000	3003	Demand Controlled Ventilation	Warehouse	2014	2054	3.92	1.58	0.05	1.80	31%	0.03	0.19	11%	1.03	0.05	2	0	0.09			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Warehouse	2014	2054	1.90	0.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.90	0.59	0.00	0.00
NC	3200	3202	Variable Speed Drive Control, 40 HP	Warehouse	2014	2054	1.34	0.54	0.56	0.56	29%	0.04	0.04	8%	0.01	0.01	0	0	5.73			0.56	0.04
NC	3200	3203	Air Handler Optimization, 40 HP	Warehouse	2014	2054	1.21	0.53	0.13	0.69	36%	0.01	0.05	9%	0.04	0.02	0	0	1.41			0.13	0.01
NC	3200	3204	Demand Controlled Ventilation	Warehouse	2014	2054	1.19	0.52	0.02	0.70	37%	0.01	0.06	11%	1.12	0.04	2	0	0.09			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Warehouse	2014	2054	0.96	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.96	0.18	0.00	0.00
NC	4000	4018	Oversized Air Cooled Condenser	Warehouse	2014	2054	0.92	0.17	0.04	0.04	4%	0.01	0.01	4%	0.02	0.02	0	0	3.88			0.04	0.01
NC	4000	4010	Refrigeration Commissioning	Warehouse	2014	2054	0.92	0.17	0.00	0.05	5%	0.00	0.01	5%	0.03	0.02	0	0	1.50			0.00	0.00
NC	4000	4006	Electronically commutated evaporator fan motor	Warehouse	2014	2054	0.86	0.17	0.06	0.10	10%	0.01	0.01	8%	0.06	0.04	1	0	1.00			0.06	0.01
NC	4000	4005	Evaporator fan controller for MT walk-ins	Warehouse	2014	2054	0.86	0.17	0.00	0.10	11%	0.00	0.01	8%	0.10	0.04	1	0	0.57			0.00	0.00
NC	4000	4002	Strip curtains for walk-ins (built-up)	Warehouse	2014	2054	0.82	0.16	0.03	0.14	14%	0.01	0.02	11%	0.10	0.06	1	0	0.50			0.00	0.00
NC	4000	4001	High-efficiency fan motors	Warehouse	2014	2054	0.80	0.16	0.03	0.16	17%	0.00	0.03	14%	0.26	0.09	1	1	0.28			0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Warehouse	2014	2054	1.43	0.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.43	0.27	0.00	0.00
NC	5000	5000	Base Desktop PC	Warehouse	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Warehouse	2014	2054	0.01	0.00	0.01	0.01	44%	0.00	0.00	23%	0.01	0.01	0	0	6.36			0.01	0.00
NC	5000	5002	Energy Star or Better PC	Warehouse	2014	2054	0.01	0.00	0.00	0.01	63%	0.00	0.00	41%	0.02	0.01	0	0	3.27			0.00	0.00
NC	5100	5100	Base Laptop PC	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Warehouse	2014	2054	0.00	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	9.06			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Warehouse	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	0.69	0.06	4	0	0.08			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Warehouse	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Warehouse	2014	2054	0.01	0.00	0.02	0.02	56%	0.00	0.00	56%	0.00	0.00	0	0	72.03			0.02	0.00
NC	5200	5202	Monitor Power Management Enabling - CRT	Warehouse	2014	2054	0.01	0.00	0.00	0.02	70%	0.00	0.00	63%	0.01	0.00	0	0	3.92			0.00	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Warehouse	2014	2054	0.01	0.00	0.00	0.02	73%	0.00	0.00	66%	0.13	0.01	1	0	0.40			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Warehouse	2014	2054	0.00	0.00	0.00	0.00	20%	0.00	0.00	20%	0.01	0.01	0	0	7.90			0.00	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Warehouse	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	0.06	0.01	1	0	0.79			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Warehouse	2014	2054	0.00	0.00	0.00	0.00	27%	0.00	0.00	22%	0.17	0.04	4	0	0.26			0.00	0.00
NC	5400	5400	Base Copier	Warehouse	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Warehouse	2014	2054	0.01	0.00	0.00	0.00	12%	0.00	0.00	12%	0.00	0.00	0	0	53.95			0.00	0.00
NC	5400	5402	Copier Power Management Enabling	Warehouse	2014	2054	0.01	0.00	0.00	0.00	15%	0.00	0.00	14%	0.05	0.01	1	0	0.94			0.00	0.00
NC	5500	5500	Base Multifunction	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Warehouse	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	25%	0.00	0.00	0	0	15.12			0.00	0.00
NC	5500	5501	Multifunction Power Management Enabling	Warehouse	2014	2054	0.00	0.00	0.00	0.00	32%	0.00	0.00	29%	0.13	0.03	2	0	0.36			0.00	0.00
NC	5600	5600	Base Printer	Warehouse	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Warehouse	2014	2054	0.02	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00	0.00	0	0	69.50			0.01	0.00
NC	5600	5601	Printer Power Management Enabling	Warehouse	2014	2054	0.02	0.00	0.00	0.01	41%	0.00	0.00	38%	0.03	0.01	0	0	1.67			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Warehouse	2014	2054	0.44	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.07	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Warehouse	2014	2054	0.40	0.07	0.04	0.04	10%	0.01	0.01	10%	0.00	0.00	0	0	107.17			0.04	0.01
NC	5700	5702	Data Center Best Practices	Warehouse	2014	2054	0.35	0.06	0.05	0.09	21%	0.01	0.02	21%	0.00	0.00	0	0	43.63			0.05	0.01
NC	5700	5703	Data Center State of the Art practices	Warehouse	2014	2054	0.33	0.05	0.02	0.11	26%	0.00	0.02	26%	0.00	0.00	0	0	22.63			0.02	0.00
NC	6000	6000	Base Water Heating	Warehouse	2014	2054	0.41	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.41	0.06	0.00	0.00
NC	6000	6006	Heat Recovery Unit	Warehouse	2014	2054	0.38	0.06	0.03	0.03	7%	0.00	0.00	7%	0.14	0.14	1	1	0.42			0.00	0.00
NC	6000	6007	Heat Trap	Warehouse	2014	2054	0.36	0.06	0.02	0.05	11%	0.00	0.01	11%	0.25	0.19	2	1	0.24			0.00	0.00
NC	6000	6002	High Efficiency Water Heater (electric)	Warehouse	2014	2054	0.36	0.06	0.01	0.05	13%	0.00	0.01	13%	0.52	0.23	3	1	0.13			0.00	0.00
NC	6000	6004	Tankless Water Heater	Warehouse	2014	2054	0.33	0.05	0.03	0.08	20%	0.00	0.01	20%	0.79	0.42	5	3	0.09			0.00	0.00
NC	6000	6008	Solar Water Heater	Warehouse	2014	2054	0.22	0.03	0.11	0.19	47%	0.02	0.03	47%	0.92	0.71	6	5	0.08			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	Warehouse	2014	2054	0.21	0.03	0.00	0.20	48%	0.00	0.03	48%	1.43	0.73	9	5	0.05			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	Warehouse	2014	2054	0.21	0.03	0.00	0.20	49%	0.00	0.03	49%	1.60	0.74	10	5	0.04			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7200	7200	Base Oven	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7300	7300	Base Fryer	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7400	7400	Base Steamer	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8100	8100	Base Heating, Other Electric	Warehouse	2014	2054	1.39	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.39	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Warehouse	2014	2054	8.68	1.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.68	1.64	0.00	0.00
NC	9500	9501	Xmisc	Warehouse	2014	2054	8.68	1.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	School	2020	2054	5.21	0.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.21	0.70	0.00	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	School	2020	2054	5.20	0.70	0.01	0.01	0%	0.00	0.00	0%	0.02	0.02	0	0	2.88			0.01	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	School	2020	2054	4.67	0.63	0.53	0.55	11%	0.07	0.07	10%	0.02	0.02	0	0	2.79			0.53	0.07
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	School	2020	2054	4.32	0.59	0.35	0.90	17%	0.04	0.11	16%	0.03	0.02	0	0	2.25			0.35	0.04
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	School	2020	2054	3.77	0.52	0.55	1.45	28%	0.07	0.19	26%	0.05	0.03	0	0	1.24			0.55	0.07
NC	1030	1034	ROB 4L4' LED Tube, 2020	School	2020	2054	3.16	0.44	0.61	2.05	39%	0.08	0.27	38%	0.31	0.12	2	1	0.22			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	School	2020	2054	2.89	0.40	0.27	2.32	45%	0.04	0.30	43%	0.26	0.13	2	1	0.27			0.00	0.00
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	School	2020	2054	2.70	0.39	0.19	2.51	48%	0.01	0.31	44%	0.18	0.14	5	1	0.27			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	School	2020	2054	0.33	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.33	0.04	0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	School	2020	2054	0.29	0.04	0.03	0.03	10%	0.00	0.00	10%	0.03	0.03	0	0	2.21			0.03	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	School	2020	2054	0.29	0.04	0.00	0.03	11%	0.00	0.00	10%	0.03	0.03	0	0	1.74			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	School	2020	2054	0.27	0.04	0.02	0.06	17%	0.00	0.01	16%	0.04	0.03	0	0	1.53			0.02	0.00
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	School	2020	2054	0.24	0.03	0.03	0.09	28%	0.00	0.01	26%	0.06	0.04	0	0	0.98			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	School	2020	2054	0.23	0.03	0.01	0.10	31%	0.00	0.01	30%	0.26	0.07	2	1	0.27			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	School	2020	2054	0.21	0.03	0.02	0.12	37%	0.00	0.02	36%	0.32	0.11	2	1	0.21			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	School	2020	2054	0.19	0.03	0.01	0.14	41%	0.00	0.02	37%	0.28	0.13	8	1	0.17			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	School	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00	0.00
NC	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	School	2014	2054	0.02	0.00	0.00	0.00	2%	0.00	0.00	1%	0.02	0.02	0	0	2.38			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	School	2014	2054	0.02	0.00	0.00	0.00	10%	0.00	0.00	9%	0.09	0.08	1	1	0.69			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	School	2014	2054	0.02	0.00	0.00	0.01	35%	0.00	0.00	24%	0.17	0.15	5	2	0.29			0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	School	2014	2054	0.02	0.00	0.00	0.01	40%	0.00	0.00	28%	0.29	0.17	3	2	0.21			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	School	2020	2054	0.43	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.43	0.06	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	School	2020	2054	0.07	0.01	0.36	0.36	83%	0.05	0.05	83%	0.01	0.01	0	0	9.21			0.36	0.05
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	School	2020	2054	0.16	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.02	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	School	2020	2054	0.03	0.00	0.13	0.13	81%	0.02	0.02	81%	0.01	0.01	0	0	7.78			0.13	0.02
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	School	2020	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	School	2020	2054	0.03	0.00	0.09	0.09	74%	0.01	0.01	74%	0.01	0.01	0	0	5.79			0.09	0.01
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	School	2020	2054	4.78	0.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.78	0.65	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	School	2020	2054	3.46	0.47	1.32	1.32	28%	0.18	0.18	28%	0.06	0.06	0	0	0.94			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	School	2020	2054	6.11	0.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.11	0.83	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	School	2020	2054	4.52	0.61	1.59	1.59	26%	0.21	0.21	26%	0.05	0.05	0	0	1.25			1.59	0.21
NC	1800	1800	BaseMetal Halide, 465W	School	2014	2054	0.68	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.68	0.09	0.00	0.00
NC	1800	1801	T5 (240W) (base metal halide)	School	2014	2054	0.45	0.06	0.23	0.23	34%	0.03	0.03	34%	0.02	0.02	0	0	4.22			0.23	0.03
NC	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	School	2014	2054	0.42	0.06	0.03	0.26	39%	0.00	0.03	38%	0.02	0.02	0	0	2.67			0.03	0.00
NC	1800	1806	Occupancy Sensor, High Bay T5	School	2014	2054	0.40	0.06	0.01	0.28	41%	0.00	0.04	38%	0.05	0.02	1	0	1.02			0.01	0.00
NC	1850	1850	Base CFL Exit Sign	School	2014	2054	0.22	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.22	0.03	0.00	0.00
NC	1850	1851	LED Exit Sign	School	2014	2054	0.10	0.01	0.12	0.12	55%	0.02	0.02	55%	0.03	0.03	0	0	1.61			0.12	0.02
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	School	2014	2054	7.24	0.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.24	0.29	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	School	2014	2054	5.86	0.11	1.37	1.37	19%	0.17	0.17	60%	0.05	0.05	0	0	1.47			1.37	0.17
NC	1900	1902	LED Outdoor Area Lighting	School	2014	2054	2.82	-0.01	3.04	4.42	61%	0.12	0.30	102%	0.10	0.09	3	1	0.56			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	School	2014	2054	1.99	-0.04	0.83	5.24	72%	0.03	0.33	113%	0.67	0.18	19	3	0.09			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	School	2014	2054	15.88	8.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.88	8.15	0.00	0.00
NC	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	School	2014	2054	14.52	7.46	1.36	1.36	9%	0.70	0.70	9%	0.06	0.06	0	0	1.64			1.36	0.70
NC	2000	2005	Chiller Tune Up/Diagnostics	School	2014	2054	14.46	7.44	0.06	1.42	9%	0.02	0.71	9%	0.05	0.06	0	0	1.31			0.06	0.02
NC	2000	2013	High Efficiency Chiller Motors	School	2014	2054	14.45	7.43	0.01	1.43	9%	0.01	0.72	9%	0.09	0.06	0	0	1.06			0.01	0.01
NC	2000	2006	VSD for Chiller Pumps and Towers	School	2014	2054	14.42	7.42	0.03	1.46	9%	0.01	0.73	9%	0.07	0.06	0	0	0.98			0.00	0.00
NC	2000	2003	EMS - Chiller	School	2014	2054	13.64	7.31	0.78	2.24	14%	0.11	0.84	10%	0.12	0.08	1	0	0.54			0.00	0.00
NC	2000	2004	Cool Roof - Chiller	School	2014	2054	13.38	7.18	0.26	2.50	16%	0.13	0.97	12%	0.19	0.09	0	0	0.42			0.00	0.00
NC	2000	2002	Window Film (Standard) - Chiller	School	2014	2054	13.31	7.14	0.07	2.57	16%	0.03	1.01	12%	0.22	0.09	0	0	0.37			0.00	0.00
NC	2000	2012	Duct Testing/Sealing	School	2014	2054	11.10	6.01	2.21	4.77	30%	1.13	2.14	26%	0.31	0.19	1	0	0.32			0.00	0.00
NC	2000	2008	New Economizer - Chiller	School	2014	2054	9.92	5.84	1.18	5.95	38%	0.17	2.31	28%	0.36	0.23	2	1	0.16			0.00	0.00
NC	2000	2011	Duct/Pipe Insulation - Chiller	School	2014	2054	9.86	5.81	0.06	6.01	38%	0.03	2.34	29%	5.08	0.27	10	1	0.02			0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	School	2014	2054	24.78	12.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.78	12.72	0.00	0.00
NC	2100	2113	Ceiling/roof Insulation - DX	School	2014	2054	24.76	12.71	0.02	0.02	0%	0.01	0.01	0%	0.02	0.02	0	0	4.24			0.02	0.01
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	School	2014	2054	19.07	9.79	5.70	5.71	23%	2.92	2.93	23%	0.05	0.05	0	0	1.73			5.70	2.92
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	School	2014	2054	19.06	9.79	0.00	5.71	23%	0.00	2.93	23%	0.16	0.05	1	0	0.35			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	School	2014	2054	18.89	9.70	0.18	5.89	24%	0.09	3.02	24%	0.23	0.06	0	0	0.34			0.00	0.00
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	School	2014	2054	18.84	9.69	0.05	5.94	24%	0.01	3.04	24%	0.19	0.06	1	0	0.33			0.00	0.00
NC	2100	2108	Optimize Controls - DX	School	2014	2054	18.55	9.64	0.29	6.23	25%	0.04	3.08	24%	0.16	0.06	1	0	0.31			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	School	2014	2054	17.57	9.14	0.98	7.21	29%	0.51	3.58	28%	0.35	0.10	1	0	0.28			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	School	2014	2054	17.41	9.12	0.15	7.36	30%	0.02	3.60	28%	0.21	0.10	1	0	0.25			0.00	0.00
NC	2100	2107	Cool Roof - DX	School	2014	2054	17.11	8.96	0.31	7.67	31%	0.16	3.76	30%	0.39	0.12	1	0	0.20			0.00	0.00
NC	2100	2111	Economizer Repair - DX	School	2014	2054	17.07	8.93	0.04	7.71	31%	0.03	3.79	30%	0.86	0.12	1	0	0.09			0.00	0.00
NC	2100	2109	Economizer - DX	School	2014	2054	16.99	8.92	0.08	7.79	31%	0.01	3.80	30%	1.25	0.13	9	0	0.04			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	School	2014	2054	16.78	8.82	0.20	7.99	32%	0.10	3.90	31%	4.66	0.25	9	1	0.02			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	School	2014	2054	17.76	9.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.76	9.12	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	2014	2054	15.57	7.99	2.20	2.20	12%	1.13	1.13	12%	0.04	0.04	0	0	2.05			2.20	1.13
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	School	2014	2054	24.65	12.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.65	12.65	0.00	0.00
NC	2300	2301	HE PTAC, EER=9.6, 1 ton	School	2014	2054	21.31	10.94	3.34	3.34	14%	1.71	1.71	14%	0.11	0.11	0	0	0.81			0.00	0.00
NC	2300	2302	Occupancy Sensor (hotels)	School	2014	2054	17.98	8.81	3.33	6.66	27%	2.13	3.85	30%	0.35	0.23	1	0	0.25			0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	School	2014	2054	5.22	1.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.22	1.02	0.00	0.00
NC	3000	3002	Variable Speed Drive Control, 5 HP	School	2014	2054	4.45	0.98	0.76	0.76	15%	0.04	0.04	4%	0.03	0.03	1	1	1.71			0.76	0.04
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	School	2014	2054	4.38	0.96	0.08	0.84	16%	0.01	0.05	5%	0.06	0.04	0	1	1.24			0.08	0.01
NC	3000	3003	Demand Controlled Ventilation	School	2014	2054	3.72	0.74	0.65	1.49	29%	0.23	0.28	28%	1.68	0.76	5	4	0.05			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	School	2014	2054	13.96	2.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.96	2.72	0.00	0.00
NC	3100	3102	Variable Speed Drive Control, 15 HP	School	2014	2054	11.92	2.62	2.04	2.04	15%	0.10	0.10	4%	0.04	0.04	1	1	1.42			2.04	0.10

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	School	2014	2054	10.25	2.33	1.67	3.71	27%	0.30	0.40	15%	0.06	0.05	0	0	1.21			1.67	0.30
NC	3100	3103	Air Handler Optimization, 15 HP	School	2014	2054	9.26	2.28	1.00	4.71	34%	0.05	0.45	16%	0.06	0.05	1	1	0.81			0.00	0.00
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	School	2014	2054	9.17	2.26	0.09	4.80	34%	0.02	0.47	17%	0.15	0.05	1	1	0.48			0.00	0.00
NC	3100	3105	Energy Recovery Ventilation (ERV)	School	2014	2054	8.69	2.09	0.48	5.28	38%	0.17	0.63	23%	0.56	0.10	2	1	0.16			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	School	2014	2054	7.39	1.64	1.30	6.58	47%	0.45	1.09	40%	2.26	0.53	6	3	0.04			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	School	2014	2054	5.82	1.14	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.82	1.14	0.00	0.00
NC	3200	3202	Variable Speed Drive Control, 40 HP	School	2014	2054	4.97	1.09	0.85	0.85	15%	0.04	0.04	4%	0.01	0.01	0	0	9.91			0.85	0.04
NC	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	School	2014	2054	4.96	1.09	0.01	0.86	15%	0.00	0.04	4%	0.03	0.01	0	0	2.75			0.01	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	School	2014	2054	4.48	1.07	0.48	1.34	23%	0.02	0.07	6%	0.05	0.02	1	0	0.94			0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	School	2014	2054	3.81	0.83	0.67	2.01	35%	0.23	0.30	27%	1.83	0.62	5	4	0.05			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	School	2014	2054	7.25	1.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.25	1.00	0.00	0.00
NC	4100	4103	Night covers for display cases (self-contained)	School	2014	2054	7.24	1.00	0.01	0.01	0%	0.00	0.00	0%	0.00	0.00	0	0	23.21			0.01	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	School	2014	2054	7.14	0.99	0.10	0.11	1%	0.01	0.01	1%	0.00	0.00	0	0	14.95			0.10	0.01
NC	4100	4109	Energy-Star Freezer, glass door	School	2014	2054	7.08	0.98	0.06	0.16	2%	0.01	0.02	2%	0.01	0.00	0	0	9.34			0.06	0.01
NC	4100	4106	Energy-Star Refrigerator, solid door	School	2014	2054	6.95	0.96	0.13	0.30	4%	0.02	0.04	4%	0.01	0.01	0	0	5.64			0.13	0.02
NC	4100	4107	Energy-Star Freezer, solid door	School	2014	2054	6.92	0.96	0.02	0.32	4%	0.00	0.04	4%	0.01	0.01	0	0	3.70			0.02	0.00
NC	4100	4108	Energy-Star Refrigerator, glass door	School	2014	2054	6.88	0.95	0.04	0.36	5%	0.01	0.05	5%	0.02	0.01	0	0	3.06			0.04	0.01
NC	4100	4110	Energy Star Ice Machines	School	2014	2054	6.77	0.94	0.11	0.48	7%	0.02	0.07	7%	0.03	0.01	0	0	2.03			0.11	0.02
NC	4100	4112	Reach-in unit occupancy sensors	School	2014	2054	6.77	0.94	0.00	0.48	7%	0.00	0.07	7%	0.25	0.01	2	0	0.22			0.00	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	School	2014	2054	6.76	0.93	0.01	0.49	7%	0.00	0.07	7%	0.29	0.02	2	0	0.18			0.00	0.00
NC	4100	4101	Strip curtains for walk-ins (self-contained)	School	2014	2054	6.74	0.93	0.02	0.51	7%	0.00	0.07	7%	0.93	0.05	7	0	0.05			0.00	0.00
NC	5000	5000	Base Desktop PC	School	2014	2054	2.19	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.19	0.19	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	School	2014	2054	1.20	0.14	0.99	0.99	45%	0.04	0.04	23%	0.01	0.01	0	0	3.81			0.99	0.04
NC	5000	5002	Energy Star or Better PC	School	2014	2054	0.85	0.11	0.35	1.33	61%	0.03	0.07	39%	0.02	0.02	0	0	1.96			0.35	0.03
NC	5100	5100	Base Laptop PC	School	2014	2054	0.30	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.30	0.03	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	School	2014	2054	0.24	0.02	0.06	0.06	19%	0.00	0.00	19%	0.01	0.01	0	0	5.20			0.06	0.00
NC	5100	5101	Laptop Network Power Management Enabling	School	2014	2054	0.24	0.02	0.01	0.06	21%	0.00	0.01	21%	1.13	0.10	13	1	0.04			0.00	0.00
NC	5200	5200	Base Monitor, CRT	School	2014	2054	1.28	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.28	0.11	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	School	2014	2054	0.56	0.05	0.72	0.72	56%	0.06	0.06	56%	0.00	0.00	0	0	41.34			0.72	0.06
NC	5200	5202	Monitor Power Management Enabling - CRT	School	2014	2054	0.40	0.04	0.16	0.87	68%	0.01	0.07	62%	0.02	0.00	0	0	2.61			0.16	0.01
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	School	2014	2054	0.37	0.04	0.03	0.90	71%	0.00	0.07	65%	0.20	0.01	2	0	0.24			0.00	0.00
NC	5300	5300	Base Monitor, LCD	School	2014	2054	0.31	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.31	0.03	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	School	2014	2054	0.26	0.02	0.06	0.06	18%	0.00	0.00	18%	0.01	0.01	0	0	4.68			0.06	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	School	2014	2054	0.25	0.02	0.01	0.06	20%	0.00	0.01	19%	0.09	0.02	2	0	0.48			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	School	2014	2054	0.23	0.02	0.02	0.08	26%	0.00	0.01	20%	0.27	0.08	12	1	0.16			0.00	0.00
NC	5400	5400	Base Copier	School	2014	2054	0.61	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.61	0.05	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	School	2014	2054	0.57	0.05	0.03	0.03	6%	0.00	0.00	6%	0.00	0.00	0	0	33.22			0.03	0.00
NC	5400	5402	Copier Power Management Enabling	School	2014	2054	0.55	0.05	0.02	0.06	10%	0.00	0.00	8%	0.08	0.03	2	0	0.60			0.00	0.00
NC	5500	5500	Base Multifunction	School	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	School	2014	2054	0.05	0.00	0.02	0.02	25%	0.00	0.00	25%	0.01	0.01	0	0	8.70			0.02	0.00
NC	5500	5501	Multifunction Power Management Enabling	School	2014	2054	0.04	0.00	0.01	0.03	39%	0.00	0.00	32%	0.24	0.09	6	1	0.19			0.00	0.00
NC	5600	5600	Base Printer	School	2014	2054	1.02	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.02	0.09	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	School	2014	2054	0.66	0.06	0.35	0.35	35%	0.03	0.03	35%	0.00	0.00	0	0	39.98			0.35	0.03
NC	5600	5601	Printer Power Management Enabling	School	2014	2054	0.54	0.05	0.12	0.48	47%	0.01	0.04	41%	0.05	0.01	1	0	0.88			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	School	2014	2054	7.34	0.63	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.34	0.63	0.00	0.00
NC	5700	5701	Data Center Improved Operations	School	2014	2054	6.61	0.57	0.73	0.73	10%	0.06	0.06	10%	0.00	0.00	0	0	99.28			0.73	0.06
NC	5700	5702	Data Center Best Practices	School	2014	2054	5.77	0.50	0.84	1.58	21%	0.07	0.14	21%	0.00	0.00	0	0	40.42			0.84	0.07
NC	5700	5703	Data Center State of the Art practices	School	2014	2054	5.45	0.47	0.32	1.90	26%	0.03	0.16	26%	0.00	0.00	0	0	20.96			0.32	0.03
NC	6000	6000	Base Water Heating	School	2014	2054	2.13	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.13	0.17	0.00	0.00
NC	6000	6007	Heat Trap	School	2014	2054	2.02	0.16	0.11	0.11	5%	0.01	0.01	5%	0.04	0.04	1	1	1.41			0.11	0.01
NC	6000	6002	High Efficiency Water Heater (electric)	School	2014	2054	1.98	0.15	0.04	0.15	7%	0.00	0.01	7%	0.08	0.05	1	1	0.75			0.00	0.00
NC	6000	6006	Heat Recovery Unit	School	2014	2054	1.79	0.14	0.19	0.34	16%	0.02	0.03	16%	0.08	0.07	1	1	0.70			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	School	2014	2054	1.72	0.13	0.07	0.41	19%	0.01	0.03	19%	0.11	0.07	1	1	0.57			0.00	0.00
NC	6000	6004	Tankless Water Heater	School	2014	2054	1.59	0.12	0.13	0.54	25%	0.01	0.04	25%	0.14	0.09	2	1	0.46			0.00	0.00
NC	6000	6008	Solar Water Heater	School	2014	2054	1.48	0.12	0.11	0.65	31%	0.01	0.05	31%	0.17	0.10	2	1	0.39			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	School	2014	2054	1.47	0.11	0.02	0.67	31%	0.00	0.05	31%	0.18	0.10	2	1	0.33			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	School	2014	2054	1.48	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.48	0.13	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	School	2014	2054	1.25	0.12	0.23	0.23	15%	0.01	0.01	8%	0.03	0.03	1	1	1.81			0.23	0.01
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	School	2014	2054	1.13	0.11	0.12	0.35	24%	0.01	0.02	12%	0.05	0.03	1	1	0.99			0.00	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	School	2014	2054	0.05	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.00	0.00	0.00
NC	7100	7101	Vending Misers (Non-Refrigerated)	School	2014	2054	0.03	0.00	0.02	0.02	44%	0.00	0.00	22%	0.43	0.43	10	10	0.11			0.00	0.00
NC	7200	7200	Base Oven	School	2014	2054	2.21	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.21	0.16	0.00	0.00
NC	7200	7201	Convection Oven	School	2014	2054	1.70	0.13	0.51	0.51	23%	0.04	0.04	23%	0.41	0.41	5	5	0.14			0.00	0.00
NC	7300	7300	Base Fryer	School	2014	2054	0.06	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.00	0.00	0.00
NC	7400	7400	Base Steamer	School	2014	2054	0.48	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.48	0.04	0.00	0.00
NC	7400	7401	Efficient Steamer	School	2014	2054	0.18	0.01	0.31	0.31	63%	0.02	0.02	63%	0.17	0.17	2	2	0.34			0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	School	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	2014	2054	0.02	0.00	0.00	0.00	6%	0.00	0.00	0%	0.06	0.06	N/A	N/A	0.99			0.00	0.00
NC	8100	8100	Base Heating, Other Electric	School	2014	2054	1.64	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.64	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	School	2014	2054	8.43	0.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.43	0.73	0.00	0.00
NC	9500	9501	Xmisc	School	2014	2054	8.43	0.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Health	2020	2054	3.92	0.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.92	0.60	0.00	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Health	2020	2054	3.90	0.60	0.01	0.01	0%	0.00	0.00	0%	0.02	0.02	0	0	2.05			0.01	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Health	2020	2054	3.60	0.56	0.30	0.31	8%	0.04	0.04	6%	0.04	0.03	0	0	1.75			0.30	0.04
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Health	2020	2054	3.23	0.50	0.37	0.69	18%	0.06	0.09	16%	0.04	0.04	0	0	1.37			0.37	0.06
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Health	2020	2054	2.82	0.44	0.41	1.10	28%	0.06	0.16	26%	0.08	0.05	1	0	0.66			0.00	0.00
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Health	2020	2054	2.62	0.43	0.20	1.30	33%	0.01	0.16	27%	0.14	0.07	4	1	0.34			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Health	2020	2054	2.19	0.37	0.42	1.72	44%	0.06	0.23	38%	0.50	0.17	3	1	0.12			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Health	2020	2054	2.01	0.34	0.19	1.91	49%	0.03	0.26	43%	0.42	0.20	3	1	0.15			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Health	2020	2054	0.47	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.47	0.07	0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Health	2020	2054	0.42	0.06	0.05	0.05	10%	0.01	0.01	10%	0.05	0.05	0	0	1.18			0.05	0.01
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Health	2020	2054	0.42	0.06	0.00	0.05	11%	0.00	0.01	11%	0.05	0.05	1	0	0.87			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Health	2020	2054	0.39	0.06	0.03	0.08	18%	0.00	0.01	16%	0.08	0.06	1	0	0.74			0.00	0.00
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Health	2020	2054	0.34	0.05	0.05	0.13	28%	0.01	0.02	26%	0.10	0.08	1	1	0.52			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Health	2020	2054	0.32	0.05	0.02	0.15	32%	0.00	0.02	30%	0.38	0.11	3	1	0.16			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Health	2020	2054	0.30	0.05	0.03	0.18	37%	0.00	0.03	36%	0.48	0.17	3	1	0.13			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Health	2020	2054	0.27	0.05	0.02	0.20	42%	0.00	0.03	37%	0.29	0.18	8	1	0.17			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Health	2014	2054	0.13	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.02	0.00	0.00
NC	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Health	2014	2054	0.13	0.02	0.00	0.00	1%	0.00	0.00	1%	0.01	0.01	0	0	5.52			0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Health	2014	2054	0.12	0.02	0.01	0.01	9%	0.00	0.00	7%	0.09	0.08	1	1	0.65			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Health	2014	2054	0.10	0.02	0.01	0.02	18%	0.00	0.00	16%	0.16	0.12	1	1	0.34			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Health	2014	2054	0.08	0.02	0.02	0.04	34%	0.00	0.00	20%	0.17	0.14	5	2	0.29			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Health	2020	2054	0.24	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.24	0.04	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Health	2020	2054	0.04	0.01	0.20	0.20	83%	0.03	0.03	83%	0.01	0.01	0	0	5.09			0.20	0.03
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Health	2020	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.01	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Health	2020	2054	0.02	0.00	0.07	0.07	82%	0.01	0.01	82%	0.01	0.01	0	0	4.30			0.07	0.01
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Health	2020	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Health	2020	2054	0.02	0.00	0.05	0.05	75%	0.01	0.01	75%	0.02	0.02	0	0	3.20			0.05	0.01
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Health	2020	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.01	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Health	2020	2054	0.07	0.01	0.03	0.03	28%	0.00	0.00	28%	0.11	0.11	1	1	0.52			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Health	2020	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Health	2020	2054	0.09	0.01	0.03	0.03	26%	0.00	0.00	26%	0.08	0.08	1	1	0.69			0.00	0.00
NC	1800	1800	BaseMetal Halide, 465W	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Health	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	1850	1851	LED Exit Sign	Health	2014	2054	0.09	0.01	0.01	0.01	12%	0.00	0.00	12%	0.03	0.03	0	0	1.71			0.01	0.00
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Health	2014	2054	0.35	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.35	0.00	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Health	2014	2054	0.32	0.00	0.03	0.03	8%	0.00	0.00	25%	0.08	0.08	3	3	0.78			0.00	0.00
NC	1900	1902	LED Outdoor Area Lighting	Health	2014	2054	0.16	0.00	0.17	0.19	56%	0.00	0.00	73%	0.17	0.15	18	12	0.34			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Health	2014	2054	0.11	0.00	0.05	0.24	69%	0.00	0.00	85%	1.07	0.33	127	28	0.05			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Health	2014	2054	2.64	1.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.64	1.45	0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Health	2014	2054	2.03	1.12	0.61	0.61	23%	0.33	0.33	23%	0.03	0.03	0	0	2.75			0.61	0.33
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	Health	2014	2054	2.00	1.11	0.03	0.64	24%	0.01	0.34	24%	0.11	0.04	0	0	0.57			0.00	0.00
NC	2100	2108	Optimize Controls - DX	Health	2014	2054	1.97	1.10	0.04	0.67	25%	0.00	0.35	24%	0.09	0.04	1	0	0.56			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Health	2014	2054	1.92	1.10	0.04	0.71	27%	0.01	0.35	24%	0.11	0.04	1	0	0.48			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Health	2014	2054	1.81	1.03	0.12	0.83	31%	0.06	0.42	29%	0.23	0.07	0	0	0.43			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	Health	2014	2054	1.80	1.03	0.01	0.84	32%	0.01	0.42	29%	0.29	0.07	1	0	0.27			0.00	0.00
NC	2100	2107	Cool Roof - DX	Health	2014	2054	1.79	1.03	0.01	0.84	32%	0.00	0.42	29%	0.77	0.08	1	0	0.10			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Health	2014	2054	1.77	1.01	0.02	0.86	33%	0.01	0.43	30%	3.01	0.14	5	0	0.03			0.00	0.00
NC	2100	2111	Economizer Repair - DX	Health	2014	2054	1.77	1.01	0.00	0.86	33%	0.00	0.43	30%	27206.90	0.15	32,812	0	0.00			0.00	0.00
NC	2100	2109	Economizer - DX	Health	2014	2054	1.77	1.01	0.00	0.86	33%	0.00	0.43	30%	31674.79	0.18	246,502	0	0.00			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Health	2014	2054	5.27	2.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.27	2.90	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	2014	2054	4.62	2.54	0.65	0.65	12%	0.36	0.36	12%	0.03	0.03	0	0	3.21			0.65	0.36
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Health	2014	2054	0.45	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.25	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Health	2014	2054	1.45	0.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.45	0.29	0.00	0.00
NC	3000	3002	Variable Speed Drive Control, 5 HP	Health	2014	2054	1.00	0.27	0.46	0.46	31%	0.02	0.02	8%	0.02	0.02	0	0	3.53			0.46	0.02
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Health	2014	2054	0.98	0.27	0.02	0.47	33%	0.00	0.03	9%	0.03	0.02	0	0	2.33			0.02	0.00
NC	3000	3003	Demand Controlled Ventilation	Health	2014	2054	0.89	0.23	0.09	0.57	39%	0.04	0.06	22%	1.01	0.18	2	2	0.08			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Health	2014	2054	5.05	1.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.05	1.02	0.00	0.00
NC	3100	3102	Variable Speed Drive Control, 15 HP	Health	2014	2054	3.46	0.95	1.58	1.58	31%	0.08	0.08	7%	0.01	0.01	0	0	10.20			1.58	0.08
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Health	2014	2054	3.46	0.95	0.01	1.59	32%	0.00	0.08	8%	0.02	0.01	0	0	4.13			0.01	0.00
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Health	2014	2054	2.95	0.85	0.50	2.09	41%	0.09	0.17	17%	0.03	0.01	0	0	2.23			0.50	0.09
NC	3100	3105	Energy Recovery Ventilation (ERV)	Health	2014	2054	2.76	0.78	0.19	2.28	45%	0.08	0.25	24%	0.31	0.04	1	0	0.30			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	Health	2014	2054	2.50	0.67	0.26	2.55	50%	0.11	0.36	35%	1.24	0.16	3	1	0.07			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Health	2014	2054	5.36	1.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.36	1.09	0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	Health	2014	2054	4.85	0.88	0.51	0.51	10%	0.21	0.21	20%	0.68	0.68	2	2	0.13			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Health	2014	2054	1.30	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.30	0.19	0.00	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Health	2014	2054	1.28	0.18	0.02	0.02	2%	0.00	0.00	2%	0.01	0.01	0	0	9.11			0.02	0.00
NC	4100	4108	Energy-Star Refrigerator, glass door	Health	2014	2054	1.27	0.18	0.00	0.02	2%	0.00	0.00	2%	0.02	0.01	0	0	3.04			0.00	0.00
NC	4100	4106	Energy-Star Refrigerator, solid door	Health	2014	2054	1.27	0.18	0.00	0.03	2%	0.00	0.00	2%	0.02	0.01	0	0	2.96			0.00	0.00
NC	4100	4110	Energy Star Ice Machines	Health	2014	2054	1.26	0.18	0.01	0.03	3%	0.00	0.01	3%	0.05	0.02	0	0	1.09			0.01	0.00
NC	4100	4112	Reach-in unit occupancy sensors	Health	2014	2054	1.26	0.18	0.00	0.03	3%	0.00	0.01	3%	0.31	0.02	2	0	0.18			0.00	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Health	2014	2054	1.26	0.18	0.00	0.04	3%	0.00	0.01	3%	0.36	0.02	2	0	0.15			0.00	0.00
NC	5000	5000	Base Desktop PC	Health	2014	2054	0.63	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.63	0.09	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Health	2014	2054	0.34	0.07	0.29	0.29	46%	0.02	0.02	23%	0.02	0.02	0	0	2.15			0.29	0.02
NC	5000	5002	Energy Star or Better PC	Health	2014	2054	0.23	0.05	0.11	0.40	63%	0.02	0.04	40%	0.05	0.03	0	0	1.03			0.11	0.02

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	5100	5100	Base Laptop PC	Health	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Health	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.02	0.02	0	0	2.91			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Health	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	2.07	0.18	15	1	0.02			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Health	2014	2054	0.19	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.03	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Health	2014	2054	0.08	0.01	0.10	0.10	55%	0.01	0.01	55%	0.00	0.00	0	0	23.75			0.10	0.01
NC	5200	5202	Monitor Power Management Enabling - CRT	Health	2014	2054	0.06	0.01	0.03	0.13	70%	0.00	0.02	62%	0.03	0.01	0	0	1.39			0.03	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Health	2014	2054	0.05	0.01	0.00	0.13	72%	0.00	0.02	65%	0.38	0.02	3	0	0.13			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Health	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Health	2014	2054	0.09	0.01	0.02	0.02	20%	0.00	0.00	20%	0.02	0.02	0	0	2.56			0.02	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Health	2014	2054	0.09	0.01	0.00	0.03	24%	0.00	0.00	22%	0.18	0.05	3	0	0.26			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Health	2014	2054	0.08	0.01	0.01	0.03	30%	0.00	0.00	23%	0.50	0.14	14	1	0.09			0.00	0.00
NC	5400	5400	Base Copier	Health	2014	2054	0.32	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.05	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Health	2014	2054	0.27	0.04	0.05	0.05	17%	0.01	0.01	17%	0.00	0.00	0	0	16.39			0.05	0.01
NC	5400	5402	Copier Power Management Enabling	Health	2014	2054	0.25	0.04	0.02	0.07	22%	0.00	0.01	19%	0.17	0.04	2	0	0.29			0.00	0.00
NC	5500	5500	Base Multifunction	Health	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Health	2014	2054	0.04	0.01	0.02	0.02	25%	0.00	0.00	25%	0.01	0.01	0	0	4.86			0.02	0.00
NC	5500	5501	Multifunction Power Management Enabling	Health	2014	2054	0.04	0.01	0.01	0.02	36%	0.00	0.00	31%	0.40	0.13	6	1	0.12			0.00	0.00
NC	5600	5600	Base Printer	Health	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Health	2014	2054	0.04	0.01	0.02	0.02	35%	0.00	0.00	35%	0.00	0.00	0	0	22.34			0.02	0.00
NC	5600	5601	Printer Power Management Enabling	Health	2014	2054	0.04	0.01	0.01	0.03	44%	0.00	0.00	40%	0.09	0.02	1	0	0.54			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Health	2014	2054	3.19	0.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.19	0.45	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Health	2014	2054	2.87	0.41	0.32	0.32	10%	0.05	0.05	10%	0.00	0.00	0	0	77.29			0.32	0.05
NC	5700	5702	Data Center Best Practices	Health	2014	2054	2.51	0.36	0.37	0.68	21%	0.05	0.10	21%	0.00	0.00	0	0	31.47			0.37	0.05
NC	5700	5703	Data Center State of the Art practices	Health	2014	2054	2.37	0.34	0.14	0.82	26%	0.02	0.12	26%	0.00	0.00	0	0	16.32			0.14	0.02
NC	6000	6000	Base Water Heating	Health	2014	2054	0.58	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.58	0.07	0.00	0.00
NC	6000	6001	Demand controlled circulating systems	Health	2014	2054	0.56	0.07	0.02	0.02	4%	0.00	0.00	4%	0.04	0.04	0	0	1.42			0.02	0.00
NC	6000	6007	Heat Trap	Health	2014	2054	0.53	0.07	0.03	0.05	9%	0.00	0.01	9%	0.05	0.04	0	0	1.25			0.03	0.00
NC	6000	6002	High Efficiency Water Heater (electric)	Health	2014	2054	0.52	0.07	0.01	0.06	11%	0.00	0.01	11%	0.09	0.05	1	0	0.67			0.00	0.00
NC	6000	6006	Heat Recovery Unit	Health	2014	2054	0.25	0.03	0.27	0.33	57%	0.03	0.04	57%	0.09	0.08	1	1	0.64			0.00	0.00
NC	6000	6004	Tankless Water Heater	Health	2014	2054	0.23	0.03	0.02	0.35	60%	0.00	0.04	60%	0.30	0.09	2	1	0.23			0.00	0.00
NC	6000	6008	Solar Water Heater	Health	2014	2054	0.20	0.03	0.03	0.38	66%	0.00	0.05	66%	0.35	0.11	3	1	0.20			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	Health	2014	2054	0.19	0.02	0.00	0.38	67%	0.00	0.05	67%	0.41	0.12	3	1	0.15			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Health	2014	2054	0.55	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.55	0.08	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Health	2014	2054	0.46	0.07	0.09	0.09	16%	0.01	0.01	8%	0.03	0.03	0	0	1.83			0.09	0.01
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Health	2014	2054	0.41	0.07	0.05	0.14	25%	0.00	0.01	12%	0.05	0.03	1	0	1.00			0.00	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7100	7101	Vending Misers (Non-Refrigerated)	Health	2014	2054	0.00	0.00	0.00	0.00	47%	0.00	0.00	23%	0.43	0.43	6	6	0.11			0.00	0.00
NC	7200	7200	Base Oven	Health	2014	2054	0.09	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.02	0.00	0.00
NC	7300	7300	Base Fryer	Health	2014	2054	0.13	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.02	0.00	0.00
NC	7300	7301	Efficient Fryer	Health	2014	2054	0.12	0.02	0.01	0.01	6%	0.00	0.00	6%	1.32	1.32	7	7	0.05			0.00	0.00
NC	7400	7400	Base Steamer	Health	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Health	2014	2054	1.32	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.32	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	2014	2054	1.25	0.00	0.07	0.07	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	2.56			0.07	0.00
NC	8100	8100	Base Heating, Other Electric	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Health	2014	2054	10.03	1.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.03	1.40	0.00	0.00
NC	9500	9501	Xmisc	Health	2014	2054	10.03	1.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Lodging	2020	2054	0.14	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.14	0.02	0.00	0.00
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Lodging	2020	2054	0.12	0.02	0.01	0.01	10%	0.00	0.00	10%	0.03	0.03	0	0	2.28			0.01	0.00
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Lodging	2020	2054	0.11	0.02	0.02	0.03	22%	0.00	0.00	22%	0.06	0.04	0	0	1.09			0.02	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Lodging	2020	2054	0.11	0.01	0.00	0.03	22%	0.00	0.00	22%	0.05	0.04	1	0	0.90			0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Lodging	2020	2054	0.10	0.01	0.01	0.04	28%	0.00	0.01	27%	0.08	0.05	1	0	0.76			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Lodging	2020	2054	0.08	0.01	0.02	0.05	40%	0.00	0.01	38%	0.39	0.15	3	1	0.18			0.00	0.00
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Lodging	2020	2054	0.08	0.01	0.00	0.06	41%	0.00	0.01	39%	0.20	0.15	6	1	0.25			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Lodging	2020	2054	0.07	0.01	0.01	0.06	46%	0.00	0.01	44%	0.34	0.17	2	1	0.21			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Lodging	2020	2054	0.55	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.55	0.08	0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Lodging	2020	2054	0.49	0.07	0.06	0.06	10%	0.01	0.01	10%	0.03	0.03	0	0	1.80			0.06	0.01
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Lodging	2020	2054	0.43	0.06	0.06	0.12	22%	0.01	0.02	22%	0.07	0.05	1	0	0.86			0.00	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Lodging	2020	2054	0.43	0.06	0.00	0.12	22%	0.00	0.02	22%	0.07	0.05	1	0	0.64			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Lodging	2020	2054	0.40	0.06	0.03	0.15	28%	0.00	0.02	27%	0.11	0.07	1	0	0.55			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Lodging	2020	2054	0.38	0.05	0.02	0.17	32%	0.00	0.02	30%	0.32	0.09	2	1	0.22			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Lodging	2020	2054	0.34	0.05	0.03	0.21	37%	0.00	0.03	36%	0.41	0.14	3	1	0.17			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Lodging	2020	2054	0.33	0.05	0.01	0.22	39%	0.00	0.03	36%	0.33	0.15	10	1	0.14			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Lodging	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Lodging	2014	2054	0.01	0.00	0.00	0.00	2%	0.00	0.00	1%	0.02	0.02	0	0	2.19			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Lodging	2014	2054	0.01	0.00	0.00	0.00	12%	0.00	0.00	11%	0.11	0.10	1	1	0.55			0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Lodging	2014	2054	0.01	0.00	0.00	0.00	29%	0.00	0.00	27%	0.26	0.18	2	1	0.24			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Lodging	2014	2054	0.01	0.00	0.00	0.00	35%	0.00	0.00	28%	0.22	0.19	7	2	0.22			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Lodging	2020	2054	1.11	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.11	0.16	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Lodging	2020	2054	0.19	0.03	0.92	0.92	83%	0.13	0.13	83%	0.01	0.01	0	0	6.28			0.92	0.13
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Lodging	2020	2054	0.40	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.40	0.06	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Lodging	2020	2054	0.07	0.01	0.33	0.33	82%	0.05	0.05	82%	0.01	0.01	0	0	5.30			0.33	0.05
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Lodging	2020	2054	0.29	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.29	0.04	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Lodging	2020	2054	0.08	0.01	0.22	0.22	75%	0.03	0.03	75%	0.02	0.02	0	0	3.95			0.22	0.03
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Lodging	2020	2054	0.43	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.43	0.06	0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Lodging	2020	2054	0.31	0.04	0.12	0.12	28%	0.02	0.02	28%	0.10	0.10	1	1	0.64			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Lodging	2020	2054	0.55	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.55	0.08	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Lodging	2020	2054	0.41	0.06	0.14	0.14	26%	0.02	0.02	26%	0.08	0.08	1	1	0.86			0.00	0.00
NC	1800	1800	BaseMetal Halide, 465W	Lodging	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	1800	1801	T5 (240W) (base metal halide)	Lodging	2014	2054	0.07	0.01	0.04	0.04	34%	0.01	0.01	34%	0.02	0.02	0	0	3.21			0.04	0.01
NC	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Lodging	2014	2054	0.06	0.01	0.01	0.04	39%	0.00	0.01	38%	0.05	0.03	0	0	1.12			0.01	0.00
NC	1800	1806	Occupancy Sensor, High Bay T5	Lodging	2014	2054	0.06	0.01	0.00	0.04	41%	0.00	0.01	38%	0.06	0.03	2	0	0.85			0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Lodging	2014	2054	0.16	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.02	0.00	0.00
NC	1850	1851	LED Exit Sign	Lodging	2014	2054	0.09	0.01	0.07	0.07	44%	0.01	0.01	44%	0.03	0.03	0	0	1.63			0.07	0.01
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Lodging	2014	2054	1.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.05	0.01	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Lodging	2014	2054	1.01	0.01	0.04	0.04	4%	0.00	0.00	13%	0.05	0.05	2	2	1.21			0.04	0.00
NC	1900	1902	LED Outdoor Area Lighting	Lodging	2014	2054	0.49	0.00	0.52	0.57	54%	0.00	0.01	63%	0.11	0.10	12	10	0.52			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Lodging	2014	2054	0.34	0.00	0.14	0.71	67%	0.00	0.01	75%	0.69	0.22	89	23	0.08			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Lodging	2014	2054	10.34	6.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.34	6.22	0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	Lodging	2014	2054	9.81	5.91	0.53	0.53	5%	0.32	0.32	5%	0.03	0.03	0	0	2.38			0.53	0.32
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Lodging	2014	2054	7.55	4.55	2.26	2.79	27%	1.36	1.68	27%	0.05	0.05	0	0	1.91			2.26	1.36
NC	2100	2108	Optimize Controls - DX	Lodging	2014	2054	7.41	4.53	0.14	2.92	28%	0.02	1.70	27%	0.09	0.05	1	0	0.53			0.00	0.00
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	Lodging	2014	2054	7.31	4.50	0.11	3.03	29%	0.03	1.73	28%	0.17	0.05	1	0	0.38			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Lodging	2014	2054	7.09	4.47	0.21	3.25	31%	0.03	1.76	28%	0.16	0.06	1	0	0.32			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Lodging	2014	2054	6.66	4.21	0.43	3.68	36%	0.26	2.02	32%	0.35	0.09	1	0	0.29			0.00	0.00
NC	2100	2111	Economizer Repair - DX	Lodging	2014	2054	6.63	4.18	0.03	3.71	36%	0.03	2.05	33%	0.99	0.10	1	0	0.08			0.00	0.00
NC	2100	2107	Cool Roof - DX	Lodging	2014	2054	6.61	4.17	0.01	3.72	36%	0.01	2.06	33%	1.35	0.11	2	0	0.06			0.00	0.00
NC	2100	2109	Economizer - DX	Lodging	2014	2054	6.50	4.15	0.11	3.83	37%	0.02	2.07	33%	1.17	0.14	8	0	0.05			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Lodging	2014	2054	6.50	4.15	0.00	3.83	37%	0.00	2.07	33%	1.97	0.14	14	0	0.03			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Lodging	2014	2054	6.43	4.11	0.07	3.90	38%	0.04	2.11	34%	3.30	0.19	5	0	0.02			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Lodging	2014	2054	9.53	5.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.53	5.74	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	2014	2054	8.35	5.03	1.18	1.18	12%	0.71	0.71	12%	0.03	0.03	0	0	3.29			1.18	0.71
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Lodging	2014	2054	8.66	5.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.66	5.22	0.00	0.00
NC	2300	2301	HE PTAC, EER=9.6, 1 ton	Lodging	2014	2054	7.49	4.51	1.17	1.17	14%	0.71	0.71	14%	0.09	0.09	0	0	1.12			1.17	0.71
NC	2300	2302	Occupancy Sensor (hotels)	Lodging	2014	2054	6.41	3.63	1.08	2.26	26%	0.88	1.59	30%	0.29	0.18	0	0	0.33			0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Lodging	2014	2054	5.98	1.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.98	1.27	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Lodging	2014	2054	5.88	1.24	0.10	0.10	2%	0.02	0.02	2%	0.03	0.03	0	0	2.13			0.10	0.02
NC	3000	3003	Demand Controlled Ventilation	Lodging	2014	2054	5.06	0.89	0.81	0.92	15%	0.35	0.38	30%	1.07	0.96	2	2	0.08			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Lodging	2014	2054	1.03	0.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.03	0.22	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	Lodging	2014	2054	0.93	0.21	0.11	0.11	10%	0.01	0.01	3%	0.03	0.03	1	1	1.80			0.11	0.01
NC	3200	3204	Demand Controlled Ventilation	Lodging	2014	2054	0.80	0.16	0.13	0.24	23%	0.06	0.06	28%	1.18	0.65	3	3	0.07			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Lodging	2014	2054	3.43	0.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.43	0.50	0.00	0.00
NC	4100	4103	Night covers for display cases (self-contained)	Lodging	2014	2054	3.33	0.49	0.10	0.10	3%	0.02	0.02	3%	0.00	0.00	0	0	62.63			0.10	0.02
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Lodging	2014	2054	3.28	0.48	0.04	0.15	4%	0.01	0.02	4%	0.00	0.00	0	0	24.36			0.04	0.01
NC	4100	4109	Energy-Star Freezer, glass door	Lodging	2014	2054	3.23	0.47	0.05	0.20	6%	0.01	0.03	6%	0.00	0.00	0	0	18.17			0.05	0.01
NC	4100	4107	Energy-Star Freezer, solid door	Lodging	2014	2054	3.21	0.47	0.02	0.22	6%	0.00	0.03	6%	0.01	0.00	0	0	7.23			0.02	0.00
NC	4100	4106	Energy-Star Refrigerator, solid door	Lodging	2014	2054	3.19	0.47	0.01	0.24	7%	0.00	0.03	7%	0.01	0.00	0	0	5.74			0.01	0.00
NC	4100	4110	Energy Star Ice Machines	Lodging	2014	2054	3.17	0.46	0.03	0.26	8%	0.00	0.04	8%	0.03	0.01	0	0	2.13			0.03	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Lodging	2014	2054	3.17	0.46	0.00	0.26	8%	0.00	0.04	8%	0.36	0.01	2	0	0.15			0.00	0.00
NC	4100	4101	Strip curtains for walk-ins (self-contained)	Lodging	2014	2054	3.15	0.46	0.01	0.28	8%	0.00	0.04	8%	0.39	0.02	3	0	0.13			0.00	0.00
NC	5000	5000	Base Desktop PC	Lodging	2014	2054	0.42	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.42	0.06	0.00	0.00
NC	5000	5002	Energy Star or Better PC	Lodging	2014	2054	0.33	0.05	0.09	0.09	21%	0.01	0.01	21%	0.02	0.02	0	0	3.34			0.09	0.01
NC	5000	5001	PC Network Power Management Enabling	Lodging	2014	2054	0.18	0.04	0.15	0.24	58%	0.01	0.02	39%	0.02	0.02	0	0	2.56			0.15	0.01
NC	5100	5100	Base Laptop PC	Lodging	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Lodging	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	4.38			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Lodging	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.38	0.12	9	1	0.04			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Lodging	2014	2054	0.24	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.24	0.04	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Lodging	2014	2054	0.10	0.02	0.13	0.13	56%	0.02	0.02	56%	0.00	0.00	0	0	34.86			0.13	0.02
NC	5200	5202	Monitor Power Management Enabling - CRT	Lodging	2014	2054	0.08	0.01	0.03	0.16	67%	0.00	0.02	61%	0.02	0.00	0	0	2.45			0.03	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Lodging	2014	2054	0.07	0.01	0.01	0.17	69%	0.00	0.02	64%	0.23	0.01	2	0	0.22			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Lodging	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Lodging	2014	2054	0.10	0.01	0.01	0.01	10%	0.00	0.00	10%	0.01	0.01	0	0	4.32			0.01	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Lodging	2014	2054	0.09	0.01	0.01	0.02	20%	0.00	0.00	15%	0.12	0.07	2	1	0.39			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Lodging	2014	2054	0.08	0.01	0.01	0.03	27%	0.00	0.00	17%	0.32	0.13	9	1	0.14			0.00	0.00
NC	5400	5400	Base Copier	Lodging	2014	2054	0.17	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.17	0.03	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Lodging	2014	2054	0.16	0.02	0.02	0.02	10%	0.00	0.00	10%	0.00	0.00	0	0	26.81			0.02	0.00
NC	5400	5402	Copier Power Management Enabling	Lodging	2014	2054	0.15	0.02	0.01	0.02	13%	0.00	0.00	12%	0.10	0.03	1	0	0.49			0.00	0.00
NC	5500	5500	Base Multifunction	Lodging	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Lodging	2014	2054	0.02	0.00	0.01	0.01	25%	0.00	0.00	25%	0.01	0.01	0	0	7.32			0.01	0.00
NC	5500	5501	Multifunction Power Management Enabling	Lodging	2014	2054	0.01	0.00	0.00	0.01	39%	0.00	0.00	32%	0.28	0.11	4	1	0.17			0.00	0.00
NC	5600	5600	Base Printer	Lodging	2014	2054	0.14	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.14	0.02	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Lodging	2014	2054	0.09	0.01	0.05	0.05	35%	0.01	0.01	35%	0.00	0.00	0	0	33.66			0.05	0.01
NC	5600	5601	Printer Power Management Enabling	Lodging	2014	2054	0.07	0.01	0.02	0.07	47%	0.00	0.01	41%	0.06	0.02	1	0	0.76			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Lodging	2014	2054	2.94	0.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.94	0.44	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Lodging	2014	2054	2.65	0.39	0.29	0.29	10%	0.04	0.04	10%	0.00	0.00	0	0	103.65			0.29	0.04
NC	5700	5702	Data Center Best Practices	Lodging	2014	2054	2.31	0.34	0.34	0.63	21%	0.05	0.09	21%	0.00	0.00	0	0	42.20			0.34	0.05

Base Avoided Costs

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	5700	5703	Data Center State of the Art practices	Lodging	2014	2054	2.18	0.32	0.13	0.76	26%	0.02	0.11	26%	0.00	0.00	0	0	21.88			0.13	0.02
NC	6000	6000	Base Water Heating	Lodging	2014	2054	2.12	0.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.12	0.29	0.00	0.00
NC	6000	6007	Heat Trap	Lodging	2014	2054	2.01	0.27	0.11	0.11	5%	0.01	0.01	5%	0.01	0.01	0	0	3.83			0.11	0.01
NC	6000	6006	Heat Recovery Unit	Lodging	2014	2054	1.75	0.24	0.26	0.37	18%	0.04	0.05	18%	0.02	0.02	0	0	2.86			0.26	0.04
NC	6000	6001	Demand controlled circulating systems	Lodging	2014	2054	1.68	0.23	0.07	0.44	21%	0.01	0.06	21%	0.03	0.02	0	0	1.96			0.07	0.01
NC	6000	6002	High Efficiency Water Heater (electric)	Lodging	2014	2054	1.65	0.22	0.03	0.47	22%	0.00	0.06	22%	0.04	0.02	0	0	1.71			0.03	0.00
NC	6000	6004	Tankless Water Heater	Lodging	2014	2054	1.53	0.21	0.12	0.59	28%	0.02	0.08	28%	0.06	0.03	0	0	1.21			0.12	0.02
NC	6000	6008	Solar Water Heater	Lodging	2014	2054	1.31	0.18	0.21	0.81	38%	0.03	0.11	38%	0.07	0.04	0	0	1.04			0.21	0.03
NC	6000	6003	Hot Water Pipe Insulation	Lodging	2014	2054	1.29	0.17	0.02	0.83	39%	0.00	0.11	39%	0.08	0.04	1	0	0.81			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Lodging	2014	2054	0.62	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.62	0.10	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Lodging	2014	2054	0.52	0.09	0.10	0.10	16%	0.01	0.01	8%	0.03	0.03	0	0	1.84			0.10	0.01
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Lodging	2014	2054	0.46	0.09	0.06	0.16	25%	0.00	0.01	12%	0.05	0.03	1	0	1.00			0.06	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7100	7101	Vending Misers (Non-Refrigerated)	Lodging	2014	2054	0.00	0.00	0.00	0.00	47%	0.00	0.00	23%	0.43	0.43	5	5	0.11			0.00	0.00
NC	7200	7200	Base Oven	Lodging	2014	2054	0.15	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.15	0.03	0.00	0.00
NC	7300	7300	Base Fryer	Lodging	2014	2054	0.18	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.04	0.00	0.00
NC	7400	7400	Base Steamer	Lodging	2014	2054	0.09	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.02	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Lodging	2014	2054	1.37	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.37	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	2014	2054	1.29	0.00	0.08	0.08	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	1.90			0.08	0.00
NC	8100	8100	Base Heating, Other Electric	Lodging	2014	2054	0.66	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.66	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Lodging	2014	2054	7.41	1.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.41	1.21	0.00	0.00
NC	9500	9501	Xmisc	Lodging	2014	2054	7.41	1.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Data Centers	2020	2054	0.32	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.06	0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Data Centers	2020	2054	0.30	0.05	0.02	0.02	7%	0.00	0.00	6%	0.02	0.02	0	0	3.67			0.02	0.00
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Data Centers	2020	2054	0.27	0.05	0.03	0.05	17%	0.01	0.01	15%	0.03	0.02	0	0	2.11			0.03	0.01
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	2020	2054	0.24	0.04	0.03	0.09	27%	0.01	0.01	26%	0.06	0.04	0	0	1.01			0.03	0.01
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Data Centers	2020	2054	0.22	0.04	0.02	0.11	33%	0.00	0.02	28%	0.08	0.04	2	0	0.58			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Data Centers	2020	2054	0.18	0.03	0.03	0.14	44%	0.01	0.02	38%	0.36	0.12	2	1	0.19			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Data Centers	2020	2054	0.17	0.03	0.02	0.16	49%	0.00	0.02	43%	0.30	0.14	2	1	0.22			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Data Centers	2020	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Data Centers	2020	2054	0.01	0.00	0.00	0.00	7%	0.00	0.00	6%	0.03	0.03	0	0	2.13			0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Data Centers	2020	2054	0.00	0.00	0.00	0.00	17%	0.00	0.00	16%	0.03	0.03	0	0	1.67			0.00	0.00
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	2020	2054	0.00	0.00	0.00	0.00	28%	0.00	0.00	26%	0.07	0.05	0	0	0.80			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Data Centers	2020	2054	0.00	0.00	0.00	0.00	31%	0.00	0.00	30%	0.27	0.07	2	0	0.25			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Data Centers	2020	2054	0.00	0.00	0.00	0.00	37%	0.00	0.00	31%	0.16	0.09	3	1	0.31			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Data Centers	2020	2054	0.00	0.00	0.00	0.00	42%	0.00	0.00	37%	0.37	0.12	2	1	0.18			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Data Centers	2014	2054	0.01	0.00	0.00	0.00	7%	0.00	0.00	6%	0.04	0.04	0	0	1.72			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Data Centers	2014	2054	0.01	0.00	0.00	0.00	17%	0.00	0.00	16%	0.11	0.08	1	0	0.52			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Data Centers	2014	2054	0.01	0.00	0.00	0.00	28%	0.00	0.00	19%	0.15	0.11	3	1	0.33			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Data Centers	2020	2054	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Data Centers	2020	2054	0.02	0.00	0.08	0.08	83%	0.01	0.01	83%	0.01	0.01	0	0	7.36			0.08	0.01
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Data Centers	2020	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Data Centers	2020	2054	0.01	0.00	0.03	0.03	82%	0.01	0.01	82%	0.01	0.01	0	0	6.22			0.03	0.01
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Data Centers	2020	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Data Centers	2020	2054	0.01	0.00	0.02	0.02	75%	0.00	0.00	75%	0.01	0.01	0	0	4.63			0.02	0.00
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Data Centers	2020	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Data Centers	2020	2054	0.01	0.00	0.01	0.01	28%	0.00	0.00	28%	0.07	0.07	0	0	0.75			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Data Centers	2020	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Data Centers	2020	2054	0.02	0.00	0.01	0.01	26%	0.00	0.00	26%	0.06	0.06	0	0	1.00			0.01	0.00
NC	1800	1800	BaseMetal Halide, 465W	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	1850	1851	LED Exit Sign	Data Centers	2014	2054	0.00	0.00	0.00	0.00	44%	0.00	0.00	44%	0.03	0.03	0	0	1.61			0.00	0.00
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Data Centers	2014	2054	0.08	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.00	0.00	0.00
NC	1900	1902	LED Outdoor Area Lighting	Data Centers	2014	2054	0.04	0.00	0.04	0.04	52%	0.00	0.00	52%	0.11	0.11	10	10	0.55			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Data Centers	2014	2054	0.03	0.00	0.01	0.05	66%	0.00	0.00	65%	0.72	0.24	70	22	0.08			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Data Centers	2014	2054	0.66	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.66	0.16	0.00	0.00
NC	2000	2010	Ceiling/roof Insulation - Chiller	Data Centers	2014	2054	0.65	0.16	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0	0	20.15			0.00	0.00
NC	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Data Centers	2014	2054	0.60	0.15	0.06	0.06	9%	0.01	0.01	9%	0.02	0.02	0	0	4.58			0.06	0.01
NC	2000	2006	VSD for Chiller Pumps and Towers	Data Centers	2014	2054	0.59	0.15	0.00	0.06	10%	0.00	0.01	9%	0.02	0.02	0	0	3.34			0.00	0.00
NC	2000	2013	High Efficiency Chiller Motors	Data Centers	2014	2054	0.59	0.15	0.00	0.06	10%	0.00	0.02	9%	0.03	0.02	0	0	2.98			0.00	0.00
NC	2000	2003	EMS - Chiller	Data Centers	2014	2054	0.58	0.15	0.02	0.08	12%	0.00	0.02	10%	0.03	0.02	0	0	2.23			0.02	0.00
NC	2000	2008	New Economizer - Chiller	Data Centers	2014	2054	0.54	0.14	0.04	0.12	18%	0.00	0.02	11%	0.03	0.02	1	0	1.76			0.04	0.00
NC	2000	2002	Window Film (Standard) - Chiller	Data Centers	2014	2054	0.54	0.14	0.00	0.12	18%	0.00	0.02	11%	0.05	0.02	0	0	1.19			0.00	0.00
NC	2000	2012	Duct Testing/Sealing	Data Centers	2014	2054	0.43	0.12	0.10	0.22	34%	0.03	0.04	27%	0.09	0.05	0	0	0.84			0.00	0.00
NC	2000	2004	Cool Roof - Chiller	Data Centers	2014	2054	0.43	0.12	0.00	0.22	34%	0.00	0.04	27%	0.14	0.05	1	0	0.47			0.00	0.00
NC	2000	2011	Duct/Pipe Insulation - Chiller	Data Centers	2014	2054	0.43	0.12	0.00	0.23	34%	0.00	0.04	27%	1.13	0.06	5	0	0.06			0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Data Centers	2014	2054	0.37	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.37	0.09	0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Data Centers	2014	2054	0.29	0.07	0.09	0.09	23%	0.02	0.02	23%	0.01	0.01	0	0	4.89			0.09	0.02
NC	2100	2111	Economizer Repair - DX	Data Centers	2014	2054	0.28	0.07	0.00	0.09	24%	0.00	0.02	25%	0.04	0.02	0	0	1.56			0.00	0.00
NC	2100	2108	Optimize Controls - DX	Data Centers	2014	2054	0.28	0.07	0.01	0.10	26%	0.00	0.02	25%	0.03	0.02	1	0	1.50			0.01	0.00
NC	2100	2109	Economizer - DX	Data Centers	2014	2054	0.24	0.07	0.03	0.13	35%	0.00	0.03	28%	0.04	0.02	1	0	1.28			0.03	0.00
NC	2100	2115	Window Film (Standard) - DX	Data Centers	2014	2054	0.24	0.07	0.01	0.13	36%	0.00	0.03	29%	0.07	0.02	0	0	0.93			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Data Centers	2014	2054	0.23	0.06	0.01	0.15	39%	0.00	0.03	30%	0.06	0.03	1	0	0.90			0.00	0.00

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	2100	2112	Aerosol Duct Sealing - DX	Data Centers	2014	2054	0.21	0.06	0.01	0.16	43%	0.00	0.03	33%	0.12	0.04	0	0	0.63			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Data Centers	2014	2054	0.21	0.06	0.00	0.16	43%	0.00	0.03	33%	0.12	0.04	2	0	0.45			0.00	0.00
NC	2100	2107	Cool Roof - DX	Data Centers	2014	2054	0.21	0.06	0.00	0.16	43%	0.00	0.03	34%	0.16	0.04	1	0	0.41			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Data Centers	2014	2054	0.21	0.06	0.00	0.16	44%	0.00	0.03	34%	1.32	0.05	5	0	0.05			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Data Centers	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Data Centers	2014	2054	0.04	0.01	0.01	0.01	12%	0.00	0.00	12%	0.01	0.01	0	0	6.85			0.01	0.00
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Data Centers	2014	2054	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Data Centers	2014	2054	0.09	0.02	0.00	0.00	2%	0.00	0.00	2%	0.02	0.02	0	0	4.50			0.00	0.00
NC	3000	3002	Variable Speed Drive Control, 5 HP	Data Centers	2014	2054	0.07	0.02	0.02	0.02	26%	0.00	0.00	8%	0.01	0.01	0	0	4.25			0.02	0.00
NC	3000	3003	Demand Controlled Ventilation	Data Centers	2014	2054	0.07	0.02	0.00	0.03	30%	0.00	0.00	15%	0.55	0.09	1	1	0.16			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Data Centers	2014	2054	0.33	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.33	0.08	0.00	0.00
NC	3100	3102	Variable Speed Drive Control, 15 HP	Data Centers	2014	2054	0.25	0.08	0.08	0.08	24%	0.01	0.01	6%	0.00	0.00	0	0	15.63			0.08	0.01
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Data Centers	2014	2054	0.25	0.08	0.00	0.08	25%	0.00	0.01	7%	0.01	0.00	0	0	7.49			0.00	0.00
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Data Centers	2014	2054	0.23	0.07	0.02	0.10	30%	0.00	0.01	11%	0.02	0.01	0	0	3.30			0.02	0.00
NC	3100	3103	Air Handler Optimization, 15 HP	Data Centers	2014	2054	0.21	0.07	0.02	0.12	36%	0.00	0.01	13%	0.02	0.01	0	0	2.61			0.02	0.00
NC	3100	3105	Energy Recovery Ventilation (ERV)	Data Centers	2014	2054	0.21	0.07	0.01	0.13	38%	0.00	0.01	16%	0.21	0.02	0	0	0.46			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	Data Centers	2014	2054	0.20	0.06	0.01	0.14	42%	0.01	0.02	22%	0.65	0.07	1	1	0.14			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Data Centers	2014	2054	0.36	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.36	0.09	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	Data Centers	2014	2054	0.32	0.09	0.03	0.03	9%	0.00	0.00	2%	0.01	0.01	0	0	3.71			0.03	0.00
NC	3200	3202	Variable Speed Drive Control, 40 HP	Data Centers	2014	2054	0.24	0.08	0.08	0.11	32%	0.00	0.01	8%	0.02	0.02	0	0	2.81			0.08	0.00
NC	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Data Centers	2014	2054	0.24	0.08	0.00	0.11	32%	0.00	0.01	8%	0.09	0.02	0	0	0.84			0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	Data Centers	2014	2054	0.23	0.07	0.01	0.13	36%	0.01	0.01	15%	0.60	0.08	1	1	0.15			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Data Centers	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Data Centers	2014	2054	0.07	0.01	0.00	0.00	2%	0.00	0.00	2%	0.00	0.00	0	0	21.30			0.00	0.00
NC	5000	5000	Base Desktop PC	Data Centers	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Data Centers	2014	2054	0.01	0.00	0.01	0.01	44%	0.00	0.00	23%	0.02	0.02	0	0	3.01			0.01	0.00
NC	5000	5002	Energy Star or Better PC	Data Centers	2014	2054	0.01	0.00	0.00	0.01	56%	0.00	0.00	35%	0.03	0.02	0	0	1.67			0.00	0.00
NC	5100	5100	Base Laptop PC	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Data Centers	2014	2054	0.00	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	4.36			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Data Centers	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	1.46	0.13	8	1	0.04			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Data Centers	2014	2054	0.01	0.00	0.01	0.01	43%	0.00	0.00	43%	0.00	0.00	0	0	45.38			0.01	0.00
NC	5200	5202	Monitor Power Management Enabling - CRT	Data Centers	2014	2054	0.01	0.00	0.00	0.01	50%	0.00	0.00	46%	0.01	0.00	0	0	3.50			0.00	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Data Centers	2014	2054	0.01	0.00	0.00	0.01	54%	0.00	0.00	50%	0.16	0.01	1	0	0.33			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Data Centers	2014	2054	0.00	0.00	0.00	0.00	13%	0.00	0.00	13%	0.01	0.01	0	0	4.15			0.00	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Data Centers	2014	2054	0.00	0.00	0.00	0.00	19%	0.00	0.00	16%	0.13	0.05	1	0	0.38			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Data Centers	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	18%	0.37	0.12	8	1	0.12			0.00	0.00
NC	5400	5400	Base Copier	Data Centers	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Data Centers	2014	2054	0.02	0.00	0.00	0.00	10%	0.00	0.00	10%	0.00	0.00	0	0	26.53			0.00	0.00
NC	5400	5402	Copier Power Management Enabling	Data Centers	2014	2054	0.02	0.00	0.00	0.00	14%	0.00	0.00	12%	0.11	0.03	1	0	0.45			0.00	0.00
NC	5500	5500	Base Multifunction	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Data Centers	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	7.27			0.00	0.00
NC	5500	5501	Multifunction Power Management Enabling	Data Centers	2014	2054	0.00	0.00	0.00	0.00	38%	0.00	0.00	32%	0.32	0.11	4	1	0.15			0.00	0.00
NC	5600	5600	Base Printer	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Data Centers	2014	2054	18.10	3.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.10	3.15	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Data Centers	2014	2054	16.29	2.83	1.81	1.81	10%	0.31	0.31	10%	0.00	0.00	0	0	115.96			1.81	0.31
NC	5700	5702	Data Center Best Practices	Data Centers	2014	2054	14.22	2.47	2.07	3.88	21%	0.36	0.68	21%	0.00	0.00	0	0	47.21			2.07	0.36
NC	5700	5703	Data Center State of the Art practices	Data Centers	2014	2054	13.42	2.33	0.80	4.68	26%	0.14	0.81	26%	0.00	0.00	0	0	24.48			0.80	0.14
NC	6000	6000	Base Water Heating	Data Centers	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	6000	6007	Heat Trap	Data Centers	2014	2054	0.01	0.00	0.00	0.00	5%	0.00	0.00	5%	0.04	0.04	0	0	1.42			0.00	0.00
NC	6000	6002	High Efficiency Water Heater (electric)	Data Centers	2014	2054	0.01	0.00	0.00	0.00	7%	0.00	0.00	7%	0.09	0.05	1	0	0.76			0.00	0.00
NC	6000	6004	Tankless Water Heater	Data Centers	2014	2054	0.01	0.00	0.00	0.00	14%	0.00	0.00	14%	0.13	0.09	1	1	0.54			0.00	0.00
NC	6000	6008	Solar Water Heater	Data Centers	2014	2054	0.01	0.00	0.01	0.01	60%	0.00	0.00	60%	0.16	0.14	1	1	0.46			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	Data Centers	2014	2054	0.01	0.00	0.00	0.01	60%	0.00	0.00	60%	0.34	0.14	2	1	0.20			0.00	0.00
NC	6000	6006	Heat Recovery Unit	Data Centers	2014	2054	0.01	0.00	0.00	0.01	63%	0.00	0.00	63%	0.35	0.15	2	1	0.17			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	Data Centers	2014	2054	0.01	0.00	0.00	0.01	64%	0.00	0.00	64%	1.05	0.17	6	1	0.06			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7200	7200	Base Oven	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7300	7300	Base Fryer	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7400	7400	Base Steamer	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8100	8100	Base Heating, Other Electric	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Data Centers	2014	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.01	0.00	0.00
NC	9500	9501	Xmisc	Data Centers	2014	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	eligious Worsh	2020	2054	0.79	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.79	0.13	0.00	0.00
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	eligious Worsh	2020	2054	0.71	0.12	0.08	0.08	10%	0.01	0.01	10%	0.05	0.05	0	0	1.21			0.08	0.01
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	eligious Worsh	2020	2054	0.71	0.12	0.00	0.08	10%	0.00	0.01	10%	0.05	0.05	1	0	0.87			0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	eligious Worsh	2020	2054	0.66	0.11	0.05	0.14	17%	0.01	0.02	16%	0.08	0.06	1	0	0.77			0.00	0.00
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	eligious Worsh	2020	2054	0.57	0.10	0.08	0.22	28%	0.01	0.04	26%	0.11	0.08	1	1	0.54			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	eligious Worsh	2020	2054	0.48	0.08	0.09	0.31	39%	0.02	0.05	38%	0.70	0.26	4	2	0.10			0.00	0.00

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Year Measure Start Year	Year Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	eligious Worsh	2020	2054	0.47	0.08	0.01	0.33	41%	0.00	0.05	38%	0.35	0.27	8	2	0.14			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	eligious Worsh	2020	2054	0.43	0.08	0.04	0.37	46%	0.01	0.06	43%	0.60	0.30	4	2	0.12			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	eligious Worsh	2020	2054	0.61	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.61	0.10	0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	eligious Worsh	2020	2054	0.55	0.09	0.06	0.06	9%	0.01	0.01	9%	0.06	0.06	0	0	0.97			0.00	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	eligious Worsh	2020	2054	0.55	0.09	0.00	0.06	9%	0.00	0.01	9%	0.07	0.06	1	0	0.71			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	eligious Worsh	2020	2054	0.51	0.09	0.04	0.10	16%	0.01	0.02	15%	0.10	0.08	1	1	0.63			0.00	0.00
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	eligious Worsh	2020	2054	0.44	0.08	0.06	0.16	27%	0.01	0.03	26%	0.14	0.10	1	1	0.43			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	eligious Worsh	2020	2054	0.42	0.07	0.02	0.19	30%	0.00	0.03	29%	0.56	0.16	3	1	0.13			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	eligious Worsh	2020	2054	0.39	0.07	0.04	0.22	36%	0.01	0.04	35%	0.72	0.25	4	2	0.10			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	eligious Worsh	2020	2054	0.37	0.07	0.01	0.23	38%	0.00	0.04	35%	0.59	0.26	14	2	0.08			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	eligious Worsh	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	eligious Worsh	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	0.04	0.04	0	0	1.24			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	eligious Worsh	2014	2054	0.01	0.00	0.00	0.00	8%	0.00	0.00	8%	0.20	0.20	1	1	0.31			0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	eligious Worsh	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	24%	0.43	0.35	3	2	0.15			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	eligious Worsh	2014	2054	0.01	0.00	0.00	0.00	31%	0.00	0.00	26%	0.39	0.36	9	3	0.13			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	eligious Worsh	2020	2054	1.41	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.41	0.24	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	eligious Worsh	2020	2054	0.24	0.04	1.17	1.17	83%	0.20	0.20	83%	0.02	0.02	0	0	3.99			1.17	0.20
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	eligious Worsh	2020	2054	0.51	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.51	0.09	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	eligious Worsh	2020	2054	0.09	0.02	0.41	0.41	82%	0.07	0.07	82%	0.02	0.02	0	0	3.37			0.41	0.07
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	eligious Worsh	2020	2054	0.37	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.37	0.06	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	eligious Worsh	2020	2054	0.10	0.02	0.28	0.28	75%	0.05	0.05	75%	0.02	0.02	0	0	2.51			0.28	0.05
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	eligious Worsh	2020	2054	0.35	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.35	0.06	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	eligious Worsh	2020	2054	0.25	0.04	0.10	0.10	28%	0.02	0.02	28%	0.15	0.15	1	1	0.41			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	eligious Worsh	2020	2054	0.44	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.08	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	eligious Worsh	2020	2054	0.33	0.06	0.12	0.12	26%	0.02	0.02	26%	0.11	0.11	1	1	0.54			0.00	0.00
NC	1800	1800	BaseMetal Halide, 465W	eligious Worsh	2014	2054	1.77	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.77	0.30	0.00	0.00
NC	1800	1801	T5 (240W) (base metal halide)	eligious Worsh	2014	2054	1.17	0.20	0.60	0.60	34%	0.10	0.10	34%	0.03	0.03	0	0	1.99			0.60	0.10
NC	1800	1806	Occupancy Sensor, High Bay T5	eligious Worsh	2014	2054	1.13	0.20	0.04	0.64	36%	0.00	0.10	34%	0.09	0.04	2	0	0.53			0.00	0.00
NC	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	eligious Worsh	2014	2054	1.05	0.19	0.09	0.72	41%	0.01	0.11	38%	0.17	0.05	1	0	0.36			0.00	0.00
NC	1850	1850	Base CFL Exit Sign	eligious Worsh	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
NC	1850	1851	LED Exit Sign	eligious Worsh	2014	2054	0.02	0.00	0.02	0.02	46%	0.00	0.00	46%	0.07	0.07	0	0	0.83			0.00	0.00
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	eligious Worsh	2014	2054	0.56	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.56	0.04	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	eligious Worsh	2014	2054	0.50	0.03	0.05	0.05	10%	0.01	0.01	28%	0.09	0.09	0	0	0.89			0.00	0.00
NC	1900	1902	LED Outdoor Area Lighting	eligious Worsh	2014	2054	0.24	0.01	0.26	0.32	57%	0.02	0.03	75%	0.22	0.19	3	2	0.28			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	eligious Worsh	2014	2054	0.17	0.01	0.07	0.39	69%	0.00	0.04	86%	1.41	0.42	20	4	0.04			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	eligious Worsh	2014	2054	4.00	3.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.00	3.10	0.00	0.00
NC	2100	2113	Ceiling/roof Insulation - DX	eligious Worsh	2014	2054	4.00	3.10	0.00	0.00	0%	0.00	0.00	0%	0.05	0.05	0	0	2.58			0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	eligious Worsh	2014	2054	3.08	2.38	0.92	0.92	23%	0.71	0.71	23%	0.08	0.08	0	0	1.37			0.92	0.71
NC	2100	2112	Aerosol Duct Sealing - DX	eligious Worsh	2014	2054	2.90	2.24	0.18	1.10	28%	0.14	0.85	28%	0.51	0.15	1	0	0.23			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	eligious Worsh	2014	2054	2.83	2.23	0.07	1.17	29%	0.01	0.87	28%	0.29	0.16	1	0	0.19			0.00	0.00
NC	2100	2108	Optimize Controls - DX	eligious Worsh	2014	2054	2.79	2.22	0.05	1.21	30%	0.01	0.87	28%	0.30	0.16	2	0	0.17			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	eligious Worsh	2014	2054	2.78	2.21	0.01	1.23	31%	0.01	0.88	29%	1.43	0.18	2	0	0.06			0.00	0.00
NC	2100	2107	Cool Roof - DX	eligious Worsh	2014	2054	2.77	2.21	0.01	1.23	31%	0.00	0.89	29%	7.28	0.21	9	0	0.01			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	eligious Worsh	2014	2054	2.75	2.19	0.02	1.25	31%	0.01	0.90	29%	8.70	0.33	11	0	0.01			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	eligious Worsh	2014	2054	3.33	2.57	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.33	2.57	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	eligious Worsh	2014	2054	2.92	2.26	0.41	0.41	12%	0.32	0.32	12%	0.09	0.09	0	0	1.28			0.41	0.32
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	eligious Worsh	2014	2054	0.06	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.04	0.00	0.00
NC	2300	2301	HE PTAC, EER=9.6, 1 ton	eligious Worsh	2014	2054	0.05	0.04	0.01	0.01	14%	0.01	0.01	14%	0.20	0.20	0	0	0.55			0.00	0.00
NC	2300	2302	Occupancy Sensor (hotels)	eligious Worsh	2014	2054	0.04	0.03	0.01	0.02	27%	0.01	0.01	30%	0.63	0.41	1	0	0.17			0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	eligious Worsh	2014	2054	1.61	0.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.61	0.46	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	eligious Worsh	2014	2054	1.59	0.45	0.03	0.03	2%	0.01	0.01	2%	0.15	0.15	1	1	0.53			0.00	0.00
NC	3000	3002	Variable Speed Drive Control, 5 HP	eligious Worsh	2014	2054	1.11	0.42	0.48	0.51	31%	0.03	0.04	9%	0.12	0.12	2	1	0.49			0.00	0.00
NC	3000	3003	Demand Controlled Ventilation	eligious Worsh	2014	2054	1.09	0.41	0.02	0.53	33%	0.01	0.05	12%	3.72	0.27	7	3	0.03			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	eligious Worsh	2014	2054	1.29	0.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.29	0.37	0.00	0.00
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	eligious Worsh	2014	2054	1.10	0.32	0.19	0.19	14%	0.05	0.05	13%	0.07	0.07	0	0	1.00			0.19	0.05
NC	3100	3103	Air Handler Optimization, 15 HP	eligious Worsh	2014	2054	1.03	0.31	0.08	0.26	20%	0.01	0.05	14%	0.09	0.08	1	0	0.53			0.00	0.00
NC	3100	3102	Variable Speed Drive Control, 15 HP	eligious Worsh	2014	2054	0.72	0.29	0.31	0.57	44%	0.02	0.07	20%	0.16	0.12	2	1	0.36			0.00	0.00
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	eligious Worsh	2014	2054	0.71	0.29	0.01	0.58	45%	0.00	0.08	21%	0.50	0.13	2	1	0.16			0.00	0.00
NC	3100	3105	Energy Recovery Ventilation (ERV)	eligious Worsh	2014	2054	0.70	0.28	0.01	0.59	46%	0.00	0.08	23%	1.04	0.14	2	1	0.10			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	eligious Worsh	2014	2054	0.68	0.28	0.01	0.60	47%	0.01	0.09	25%	4.72	0.25	9	2	0.02			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	eligious Worsh	2014	2054	1.02	0.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.02	0.29	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	eligious Worsh	2014	2054	0.95	0.29	0.07	0.07	7%	0.00	0.00	2%	0.08	0.08	1	1	0.62			0.00	0.00
NC	3200	3202	Variable Speed Drive Control, 40 HP	eligious Worsh	2014	2054	0.67	0.27	0.29	0.36	35%	0.02	0.03	9%	0.25	0.22	4	3	0.23			0.00	0.00
NC	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	eligious Worsh	2014	2054	0.66	0.26	0.00	0.36	35%	0.00	0.03	9%	1.22	0.22	4	3	0.07			0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	eligious Worsh	2014	2054	0.65	0.26	0.01	0.37	36%	0.01	0.03	11%	3.94	0.35	7	4	0.02			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	eligious Worsh	2014	2054	2.27	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.27	0.34	0.00	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	eligious Worsh	2014	2054	2.24	0.34	0.03	0.03	1%	0.00	0.00	1%	0.00	0.00	0	0	14.88			0.03	0.00
NC	4100	4110	Energy Star Ice Machines	eligious Worsh	2014	2054	2.23	0.34	0.01	0.04	2%	0.00	0.01	2%	0.03	0.01	0	0	1.75			0.01	0.00
NC	5000	5000	Base Desktop PC	eligious Worsh	2014	2054	0.96	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.96	0.15	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	eligious Worsh	2014	2054	0.53	0.11	0.43	0.43	45%	0.03	0.03	23%	0.03	0.03	0	0	1.63			0.43	0.03
NC	5000	5002	Energy Star or Better PC	eligious Worsh	2014	2054	0.36	0.09	0.17	0.60	62%	0.03	0.06	40%	0.06	0.04	0	0	0.83			0.00	0.00
NC	5100	5100	Base Laptop PC	eligious Worsh	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	5100	5102	Energy Star or Better Laptop	eligious Worsh	2014	2054	0.02	0.00	0.00	0.00	19%	0.00	0.00	19%	0.02	0.02	0	0	2.27			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	eligious Worsh	2014	2054	0.02	0.00	0.00	0.00	21%	0.00	0.00	21%	2.69	0.24	18	2	0.02			0.00	0.00
NC	5200	5200	Base Monitor, CRT	eligious Worsh	2014	2054	0.26	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.26	0.04	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	eligious Worsh	2014	2054	0.11	0.02	0.14	0.14	56%	0.02	0.02	56%	0.00	0.00	0	0	18.09			0.14	0.02
NC	5200	5202	Monitor Power Management Enabling - CRT	eligious Worsh	2014	2054	0.08	0.01	0.03	0.17	67%	0.00	0.02	62%	0.04	0.01	1	0	1.18			0.03	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	eligious Worsh	2014	2054	0.08	0.01	0.01	0.18	70%	0.00	0.02	64%	0.46	0.03	3	0	0.11			0.00	0.00
NC	5300	5300	Base Monitor, LCD	eligious Worsh	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	eligious Worsh	2014	2054	0.04	0.01	0.01	0.01	18%	0.00	0.00	18%	0.03	0.03	0	0	2.04			0.01	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	eligious Worsh	2014	2054	0.04	0.01	0.00	0.01	21%	0.00	0.00	19%	0.23	0.05	3	0	0.20			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	eligious Worsh	2014	2054	0.03	0.01	0.00	0.01	27%	0.00	0.00	21%	0.66	0.19	17	2	0.07			0.00	0.00
NC	5400	5400	Base Copier	eligious Worsh	2014	2054	1.02	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.02	0.15	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	eligious Worsh	2014	2054	0.88	0.13	0.14	0.14	13%	0.02	0.02	13%	0.00	0.00	0	0	13.32			0.14	0.02
NC	5400	5402	Copier Power Management Enabling	eligious Worsh	2014	2054	0.84	0.13	0.04	0.18	18%	0.00	0.02	16%	0.21	0.05	3	0	0.23			0.00	0.00
NC	5500	5500	Base Multifunction	eligious Worsh	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	eligious Worsh	2014	2054	0.02	0.00	0.01	0.01	25%	0.00	0.00	25%	0.01	0.01	0	0	3.79			0.01	0.00
NC	5500	5501	Multifunction Power Management Enabling	eligious Worsh	2014	2054	0.01	0.00	0.00	0.01	37%	0.00	0.00	31%	0.56	0.19	7	2	0.08			0.00	0.00
NC	5600	5600	Base Printer	eligious Worsh	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	eligious Worsh	2014	2054	0.02	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00	0.00	0	0	17.44			0.01	0.00
NC	5600	5601	Printer Power Management Enabling	eligious Worsh	2014	2054	0.02	0.00	0.00	0.02	45%	0.00	0.00	40%	0.12	0.03	2	0	0.39			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	eligious Worsh	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00	0.00
NC	5700	5701	Data Center Improved Operations	eligious Worsh	2014	2054	0.08	0.01	0.01	0.01	10%	0.00	0.00	10%	0.00	0.00	0	0	60.38			0.01	0.00
NC	5700	5702	Data Center Best Practices	eligious Worsh	2014	2054	0.07	0.01	0.01	0.02	21%	0.00	0.00	21%	0.00	0.00	0	0	24.58			0.01	0.00
NC	5700	5703	Data Center State of the Art practices	eligious Worsh	2014	2054	0.06	0.01	0.00	0.02	26%	0.00	0.00	26%	0.00	0.00	0	0	12.75			0.00	0.00
NC	6000	6000	Base Water Heating	eligious Worsh	2014	2054	0.37	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.37	0.06	0.00	0.00
NC	6000	6007	Heat Trap	eligious Worsh	2014	2054	0.35	0.05	0.02	0.02	5%	0.00	0.00	5%	0.03	0.03	0	0	1.67			0.02	0.00
NC	6000	6002	High Efficiency Water Heater (electric)	eligious Worsh	2014	2054	0.35	0.05	0.01	0.03	7%	0.00	0.00	7%	0.07	0.04	0	0	0.89			0.00	0.00
NC	6000	6004	Tankless Water Heater	eligious Worsh	2014	2054	0.32	0.05	0.03	0.05	14%	0.00	0.01	14%	0.11	0.08	1	1	0.63			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	eligious Worsh	2014	2054	0.31	0.05	0.01	0.06	16%	0.00	0.01	16%	0.13	0.08	1	1	0.49			0.00	0.00
NC	6000	6006	Heat Recovery Unit	eligious Worsh	2014	2054	0.30	0.04	0.01	0.07	18%	0.00	0.01	18%	0.13	0.09	1	1	0.46			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	eligious Worsh	2014	2054	0.29	0.04	0.01	0.08	22%	0.00	0.01	22%	0.37	0.13	2	1	0.18			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7200	7200	Base Oven	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7300	7300	Base Fryer	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7400	7400	Base Steamer	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	eligious Worsh	2014	2054	0.13	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	eligious Worsh	2014	2054	0.12	0.00	0.01	0.01	6%	0.00	0.00	0%	0.07	0.07	N/A	N/A	0.79			0.00	0.00
NC	8100	8100	Base Heating, Other Electric	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	eligious Worsh	2014	2054	8.84	1.47	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.84	1.47	0.00	0.00
NC	9500	9501	Xmisc	eligious Worsh	2014	2054	8.84	1.47	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Misc	2020	2054	5.29	0.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.29	0.90	0.00	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Misc	2020	2054	5.29	0.90	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	3.68			0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Misc	2020	2054	4.89	0.84	0.40	0.40	8%	0.05	0.05	6%	0.02	0.02	0	0	3.24			0.40	0.05
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Misc	2020	2054	4.38	0.76	0.51	0.91	17%	0.09	0.14	16%	0.02	0.02	0	0	2.76			0.51	0.09
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Misc	2020	2054	3.82	0.66	0.56	1.46	28%	0.09	0.23	26%	0.04	0.03	0	0	1.32			0.56	0.09
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Misc	2020	2054	3.71	0.66	0.11	1.58	30%	0.00	0.24	27%	0.08	0.03	2	0	0.63			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Misc	2020	2054	3.11	0.56	0.60	2.17	41%	0.10	0.34	38%	0.25	0.09	1	1	0.25			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Misc	2020	2054	2.85	0.51	0.27	2.44	46%	0.05	0.39	43%	0.20	0.10	1	1	0.31			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Misc	2020	2054	4.05	0.69	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.05	0.69	0.00	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Misc	2020	2054	4.05	0.69	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	2.99			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Misc	2020	2054	3.74	0.65	0.31	0.31	8%	0.04	0.04	6%	0.02	0.02	0	0	2.63			0.31	0.04
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Misc	2020	2054	3.39	0.59	0.35	0.66	16%	0.06	0.10	15%	0.02	0.02	0	0	2.20			0.35	0.06
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Misc	2020	2054	2.96	0.51	0.43	1.09	27%	0.07	0.17	25%	0.05	0.04	0	0	1.06			0.43	0.07
NC	1130	1134	ROB 2L4' LED Tube, 2020	Misc	2020	2054	2.81	0.49	0.14	1.23	31%	0.02	0.20	29%	0.19	0.05	1	0	0.33			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Misc	2020	2054	2.57	0.45	0.24	1.47	36%	0.04	0.24	35%	0.24	0.08	1	1	0.26			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Misc	2020	2054	2.50	0.44	0.07	1.55	38%	0.00	0.24	35%	0.15	0.09	4	1	0.31			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Misc	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Misc	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	4.71			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Misc	2014	2054	0.05	0.01	0.00	0.00	8%	0.00	0.00	8%	0.07	0.07	0	0	0.76			0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Misc	2014	2054	0.05	0.01	0.00	0.01	15%	0.00	0.00	13%	0.10	0.08	1	1	0.64			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Misc	2014	2054	0.04	0.01	0.00	0.01	21%	0.00	0.00	15%	0.09	0.09	2	1	0.55			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Misc	2020	2054	24.26	4.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.26	4.12	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Misc	2020	2054	4.12	0.70	20.13	20.13	83%	3.42	3.42	83%	0.01	0.01	0	0	10.21			20.13	3.42
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Misc	2020	2054	8.73	1.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.73	1.48	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Misc	2020	2054	1.62	0.27	7.12	7.12	82%	1.21	1.21	82%	0.01	0.01	0	0	8.62			7.12	1.21
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Misc	2020	2054	6.43	1.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.43	1.09	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Misc	2020	2054	1.64	0.28	4.79	4.79	75%	0.81	0.81	75%	0.01	0.01	0	0	6.43			4.79	0.81
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Misc	2020	2054	0.78	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.78	0.13	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Misc	2020	2054	0.56	0.10	0.22	0.22	28%	0.04	0.04	28%	0.05	0.05	0	0	1.05			0.22	0.04
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Misc	2020	2054	0.99	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.99	0.17	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Misc	2020	2054	0.73	0.12	0.26	0.26	26%	0.04	0.04	26%	0.04	0.04	0	0	1.39			0.26	0.04
NC	1800	1800	BaseMetal Halide, 465W	Misc	2014	2054	3.54	0.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.54	0.60	0.00	0.00
NC	1800	1801	T5 (240W) (base metal halide)	Misc	2014	2054	2.34	0.40	1.20	1.20	34%	0.20	0.20	34%	0.01	0.01	0	0	7.55			1.20	0.20
NC	1800	1806	Occupancy Sensor, High Bay T5	Misc	2014	2054	2.27	0.39	0.08	1.27	36%	0.00	0.21	34%	0.02	0.01	1	0	2.00			0.08	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Misc	2014	2054	2.09	0.37	0.17	1.44	41%	0.02	0.23	38%	0.05	0.01	0	0	1.38			0.17	0.02
NC	1850	1850	Base CFL Exit Sign	Misc	2014	2054	0.26	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.26	0.04	0.00	0.00
NC	1850	1851	LED Exit Sign	Misc	2014	2054	0.14	0.02	0.12	0.12	46%	0.02	0.02	46%	0.03	0.03	0	0	1.95			0.12	0.02
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Misc	2014	2054	1.53	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.53	0.12	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Misc	2014	2054	1.40	0.09	0.13	0.13	9%	0.03	0.03	25%	0.04	0.04	0	0	2.12			0.13	0.03
NC	1900	1902	LED Outdoor Area Lighting	Misc	2014	2054	0.68	0.03	0.73	0.86	56%	0.06	0.09	72%	0.09	0.08	1	1	0.67			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Misc	2014	2054	0.48	0.02	0.20	1.06	69%	0.01	0.10	84%	0.59	0.18	8	2	0.10			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Misc	2014	2054	3.24	2.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.24	2.51	0.00	0.00
NC	2100	2113	Ceiling/roof Insulation - DX	Misc	2014	2054	3.24	2.51	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	6.16			0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Misc	2014	2054	2.49	1.93	0.75	0.75	23%	0.58	0.58	23%	0.03	0.03	0	0	3.27			0.75	0.58
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	Misc	2014	2054	2.49	1.93	0.00	0.75	23%	0.00	0.58	23%	0.11	0.03	0	0	0.61			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Misc	2014	2054	2.35	1.82	0.15	0.89	28%	0.11	0.69	28%	0.21	0.06	0	0	0.54			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Misc	2014	2054	2.30	1.81	0.04	0.94	29%	0.01	0.70	28%	0.12	0.07	1	0	0.46			0.00	0.00
NC	2100	2108	Optimize Controls - DX	Misc	2014	2054	2.26	1.80	0.04	0.98	30%	0.01	0.71	28%	0.13	0.07	1	0	0.40			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	Misc	2014	2054	2.25	1.79	0.01	0.98	30%	0.01	0.71	28%	0.59	0.07	1	0	0.15			0.00	0.00
NC	2100	2107	Cool Roof - DX	Misc	2014	2054	2.25	1.79	0.00	0.99	31%	0.00	0.72	29%	3.03	0.09	4	0	0.03			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Misc	2014	2054	2.24	1.78	0.01	1.00	31%	0.01	0.73	29%	3.63	0.14	5	0	0.03			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Misc	2014	2054	17.26	13.35	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.26	13.35	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	2014	2054	15.13	11.70	2.14	2.14	12%	1.65	1.65	12%	0.04	0.04	0	0	3.05			2.14	1.65
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Misc	2014	2054	4.26	3.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.26	3.30	0.00	0.00
NC	2300	2301	HE PTAC, EER=9.6, 1 ton	Misc	2014	2054	3.69	2.85	0.58	0.58	14%	0.45	0.45	14%	0.08	0.08	0	0	1.33			0.58	0.45
NC	2300	2302	Occupancy Sensor (hotels)	Misc	2014	2054	3.13	2.29	0.55	1.13	27%	0.56	1.00	30%	0.26	0.17	0	0	0.40			0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Misc	2014	2054	9.78	2.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.78	2.78	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Misc	2014	2054	9.61	2.73	0.17	0.17	2%	0.05	0.05	2%	0.06	0.06	0	0	1.26			0.17	0.05
NC	3000	3002	Variable Speed Drive Control, 5 HP	Misc	2014	2054	6.72	2.53	2.89	3.06	31%	0.20	0.25	9%	0.05	0.05	1	1	1.17			2.89	0.20
NC	3000	3003	Demand Controlled Ventilation	Misc	2014	2054	6.59	2.45	0.13	3.19	33%	0.07	0.32	12%	1.56	0.11	3	1	0.06			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Misc	2014	2054	7.79	2.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.79	2.21	0.00	0.00
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Misc	2014	2054	6.67	1.93	1.12	1.12	14%	0.29	0.29	13%	0.03	0.03	0	0	2.40			1.12	0.29
NC	3100	3103	Air Handler Optimization, 15 HP	Misc	2014	2054	6.21	1.90	0.46	1.58	20%	0.03	0.32	14%	0.04	0.03	1	0	1.26			0.46	0.03
NC	3100	3102	Variable Speed Drive Control, 15 HP	Misc	2014	2054	4.34	1.76	1.87	3.45	44%	0.13	0.45	20%	0.07	0.05	1	0	0.86			0.00	0.00
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Misc	2014	2054	4.28	1.74	0.06	3.52	45%	0.02	0.47	21%	0.21	0.05	1	0	0.38			0.00	0.00
NC	3100	3105	Energy Recovery Ventilation (ERV)	Misc	2014	2054	4.22	1.71	0.05	3.57	46%	0.03	0.50	23%	0.43	0.06	1	0	0.24			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	Misc	2014	2054	4.14	1.67	0.08	3.65	47%	0.05	0.55	25%	1.97	0.10	4	1	0.05			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Misc	2014	2054	6.19	1.76	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.19	1.76	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	Misc	2014	2054	5.76	1.73	0.42	0.42	7%	0.03	0.03	2%	0.03	0.03	0	0	1.47			0.42	0.03
NC	3200	3202	Variable Speed Drive Control, 40 HP	Misc	2014	2054	4.03	1.60	1.73	2.16	35%	0.12	0.15	9%	0.10	0.09	1	1	0.55			0.00	0.00
NC	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Misc	2014	2054	4.01	1.60	0.02	2.17	35%	0.00	0.16	9%	0.51	0.09	2	1	0.16			0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	Misc	2014	2054	3.93	1.56	0.08	2.25	36%	0.04	0.20	11%	1.65	0.15	3	2	0.06			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Misc	2014	2054	10.36	1.56	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.36	1.56	0.00	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Misc	2014	2054	10.21	1.54	0.15	0.15	1%	0.02	0.02	1%	0.00	0.00	0	0	35.57			0.15	0.02
NC	4100	4108	Energy-Star Refrigerator, glass door	Misc	2014	2054	10.20	1.54	0.01	0.15	1%	0.00	0.02	1%	0.00	0.00	0	0	11.48			0.01	0.00
NC	4100	4106	Energy-Star Refrigerator, solid door	Misc	2014	2054	10.19	1.53	0.01	0.17	2%	0.00	0.03	2%	0.01	0.00	0	0	11.32			0.01	0.00
NC	4100	4110	Energy Star Ice Machines	Misc	2014	2054	10.17	1.53	0.02	0.18	2%	0.00	0.03	2%	0.01	0.00	0	0	4.18			0.02	0.00
NC	4100	4112	Reach-in unit occupancy sensors	Misc	2014	2054	10.17	1.53	0.00	0.18	2%	0.00	0.03	2%	0.26	0.00	2	0	0.22			0.00	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Misc	2014	2054	10.17	1.53	0.00	0.18	2%	0.00	0.03	2%	0.30	0.00	2	0	0.18			0.00	0.00
NC	5000	5000	Base Desktop PC	Misc	2014	2054	0.72	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.72	0.11	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Misc	2014	2054	0.40	0.08	0.33	0.33	45%	0.03	0.03	23%	0.01	0.01	0	0	3.90			0.33	0.03
NC	5000	5002	Energy Star or Better PC	Misc	2014	2054	0.27	0.07	0.12	0.45	62%	0.02	0.04	40%	0.03	0.02	0	0	1.98			0.12	0.02
NC	5100	5100	Base Laptop PC	Misc	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Misc	2014	2054	0.02	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	5.43			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Misc	2014	2054	0.02	0.00	0.00	0.01	21%	0.00	0.00	21%	1.13	0.10	7	1	0.05			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Misc	2014	2054	0.24	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.24	0.04	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Misc	2014	2054	0.11	0.02	0.13	0.13	56%	0.02	0.02	56%	0.00	0.00	0	0	43.26			0.13	0.02
NC	5200	5202	Monitor Power Management Enabling - CRT	Misc	2014	2054	0.08	0.01	0.03	0.16	67%	0.00	0.02	62%	0.02	0.00	0	0	2.81			0.03	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Misc	2014	2054	0.07	0.01	0.01	0.17	70%	0.00	0.02	64%	0.19	0.01	1	0	0.26			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Misc	2014	2054	0.10	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.01	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Misc	2014	2054	0.08	0.01	0.02	0.02	18%	0.00	0.00	18%	0.01	0.01	0	0	4.88			0.02	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Misc	2014	2054	0.08	0.01	0.00	0.02	21%	0.00	0.00	19%	0.10	0.02	1	0	0.48			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Misc	2014	2054	0.07	0.01	0.01	0.03	27%	0.00	0.00	21%	0.28	0.08	7	1	0.16			0.00	0.00
NC	5400	5400	Base Copier	Misc	2014	2054	0.23	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.23	0.04	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Misc	2014	2054	0.20	0.03	0.03	0.03	13%	0.00	0.00	13%	0.00	0.00	0	0	31.86			0.03	0.00
NC	5400	5402	Copier Power Management Enabling	Misc	2014	2054	0.19	0.03	0.01	0.04	18%	0.00	0.01	16%	0.09	0.02	1	0	0.55			0.00	0.00
NC	5500	5500	Base Multifunction	Misc	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Misc	2014	2054	0.02	0.00	0.01	0.01	25%	0.00	0.00	25%	0.01	0.01	0	0	9.07			0.01	0.00
NC	5500	5501	Multifunction Power Management Enabling	Misc	2014	2054	0.01	0.00	0.00	0.01	37%	0.00	0.00	31%	0.23	0.08	3	1	0.20			0.00	0.00
NC	5600	5600	Base Printer	Misc	2014	2054	0.16	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.02	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Misc	2014	2054	0.10	0.02	0.06	0.06	35%	0.01	0.01	35%	0.00	0.00	0	0	41.71			0.06	0.01
NC	5600	5601	Printer Power Management Enabling	Misc	2014	2054	0.09	0.01	0.02	0.07	45%	0.00	0.01	40%	0.05	0.01	1	0	0.93			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Misc	2014	2054	2.15	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.15	0.33	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Misc	2014	2054	1.94	0.29	0.22	0.22	10%	0.03	0.03	10%	0.00	0.00	0	0	105.02			0.22	0.03
NC	5700	5702	Data Center Best Practices	Misc	2014	2054	1.69	0.26	0.25	0.46	21%	0.04	0.07	21%	0.00	0.00	0	0	42.75			0.25	0.04
NC	5700	5703	Data Center State of the Art practices	Misc	2014	2054	1.60	0.24	0.09	0.56	26%	0.01	0.08	26%	0.00	0.00	0	0	22.17			0.09	0.01

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	6000	6000	Base Water Heating	Misc	2014	2054	4.94	0.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.94	0.73	0.00	0.00
NC	6000	6007	Heat Trap	Misc	2014	2054	4.68	0.69	0.26	0.26	5%	0.04	0.04	5%	0.01	0.01	0	0	3.99			0.26	0.04
NC	6000	6002	High Efficiency Water Heater (electric)	Misc	2014	2054	4.59	0.68	0.09	0.35	7%	0.01	0.05	7%	0.03	0.02	0	0	2.13			0.09	0.01
NC	6000	6004	Tankless Water Heater	Misc	2014	2054	4.24	0.63	0.34	0.69	14%	0.05	0.10	14%	0.05	0.03	0	0	1.52			0.34	0.05
NC	6000	6003	Hot Water Pipe Insulation	Misc	2014	2054	4.16	0.61	0.08	0.78	16%	0.01	0.11	16%	0.05	0.03	0	0	1.18			0.08	0.01
NC	6000	6006	Heat Recovery Unit	Misc	2014	2054	4.02	0.59	0.14	0.91	18%	0.02	0.13	18%	0.05	0.04	0	0	1.10			0.14	0.02
NC	6000	6001	Demand controlled circulating systems	Misc	2014	2054	3.87	0.57	0.15	1.06	22%	0.02	0.16	22%	0.15	0.05	1	0	0.42			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Misc	2014	2054	0.60	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.60	0.10	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Misc	2014	2054	0.51	0.09	0.09	0.09	16%	0.01	0.01	8%	0.03	0.03	0	0	1.85			0.09	0.01
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Misc	2014	2054	0.46	0.09	0.05	0.15	24%	0.00	0.01	12%	0.05	0.03	1	0	1.01			0.05	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Misc	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	7100	7101	Vending Misers (Non-Refrigerated)	Misc	2014	2054	0.00	0.00	0.00	0.00	45%	0.00	0.00	23%	0.43	0.43	5	5	0.11			0.00	0.00
NC	7200	7200	Base Oven	Misc	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	7300	7300	Base Fryer	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7300	7301	Efficient Fryer	Misc	2014	2054	0.00	0.00	0.00	0.00	6%	0.00	0.00	6%	0.46	0.46	3	3	0.13			0.00	0.00
NC	7400	7400	Base Steamer	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Misc	2014	2054	3.96	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.96	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	2014	2054	3.73	0.00	0.22	0.22	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	1.89			0.22	0.00
NC	8100	8100	Base Heating, Other Electric	Misc	2014	2054	0.12	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Misc	2014	2054	22.38	3.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	22.38	3.72	0.00	0.00
NC	9500	9501	Xmisc	Misc	2014	2054	22.38	3.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00

Commercial Electric New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020 Year 2014

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	100	100	Base Bldg Design - 15%	Office	2014	2053	45.23	10.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	45.23	10.30	0.00	0.00
VA	100	101	High Performance Building/Int Design - Tier 1 15% - Office	Office	2014	2053	38.32	8.29	6.91	6.91	15%	2.01	2.01	20%	0.04	0.04	0	0	1.93			6.91	2.01
VA	200	200	Base Bldg Design - 30%	Office	2014	2053	36.18	8.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	36.18	8.24	0.00	0.00
VA	200	201	High Performance Building/Int Design - Tier 2 30% - Office	Office	2014	2053	25.13	5.03	11.05	11.05	31%	3.21	3.21	39%	0.03	0.03	0	0	2.71			11.05	3.21
VA	300	300	Base Bldg Design - 50%	Office	2014	2053	8.14	1.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.14	1.85	0.00	0.00
VA	300	301	High Performance Building/Int Design - Tier 3 50% - Office	Office	2014	2053	4.00	0.65	4.14	4.14	51%	1.21	1.21	65%	0.03	0.03	0	0	2.58			4.14	1.21
VA	400	400	Base Bldg Design - 70%	Office	2014	2053	0.90	0.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.90	0.21	0.00	0.00
VA	400	401	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Office	Office	2014	2053	0.26	0.02	0.64	0.64	71%	0.19	0.19	91%	0.04	0.04	0	0	2.30			0.64	0.19
NC	100	100	Base Bldg Design - 15%	Office	2014	2053	1.89	0.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.89	0.43	0.00	0.00
NC	100	101	High Performance Building/Int Design - Tier 1 15% - Office	Office	2014	2053	1.60	0.35	0.29	0.29	15%	0.08	0.08	20%	0.04	0.04	0	0	2.30			0.29	0.08
NC	200	200	Base Bldg Design - 30%	Office	2014	2053	1.51	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.51	0.34	0.00	0.00
NC	200	201	High Performance Building/Int Design - Tier 2 30% - Office	Office	2014	2053	1.05	0.21	0.46	0.46	31%	0.13	0.13	39%	0.03	0.03	0	0	3.22			0.46	0.13
NC	300	300	Base Bldg Design - 50%	Office	2014	2053	0.34	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.34	0.08	0.00	0.00
NC	300	301	High Performance Building/Int Design - Tier 3 50% - Office	Office	2014	2053	0.17	0.03	0.17	0.17	51%	0.05	0.05	65%	0.03	0.03	0	0	3.07			0.17	0.05
NC	400	400	Base Bldg Design - 70%	Office	2014	2053	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
NC	400	401	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Office	Office	2014	2053	0.01	0.00	0.03	0.03	71%	0.01	0.01	91%	0.03	0.03	0	0	2.74			0.03	0.01
VA	100	100	Base Bldg Design - 15%	Restaurant	2014	2053	19.73	4.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.73	4.18	0.00	0.00
VA	100	102	High Performance Building/Int Design - Tier 1 15% - Restaurant	Restaurant	2014	2053	16.73	3.36	3.00	3.00	15%	0.81	0.81	20%	0.05	0.05	0	0	1.60			3.00	0.81
VA	200	200	Base Bldg Design - 30%	Restaurant	2014	2053	15.79	3.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.79	3.34	0.00	0.00
VA	200	202	High Performance Building/Int Design - Tier 2 30% - Restaurant	Restaurant	2014	2053	10.98	2.04	4.80	4.80	30%	1.30	1.30	39%	0.04	0.04	0	0	2.24			4.80	1.30
VA	300	300	Base Bldg Design - 50%	Restaurant	2014	2053	3.55	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.55	0.75	0.00	0.00
VA	300	302	High Performance Building/Int Design - Tier 3 50% - Restaurant	Restaurant	2014	2053	1.75	0.26	1.80	1.80	51%	0.49	0.49	65%	0.04	0.04	0	0	2.13			1.80	0.49
VA	400	400	Base Bldg Design - 70%	Restaurant	2014	2053	0.39	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.08	0.00	0.00
VA	400	402	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Restaurant	Restaurant	2014	2053	0.11	0.01	0.28	0.28	71%	0.08	0.08	91%	0.04	0.04	0	0	1.90			0.28	0.08
NC	100	100	Base Bldg Design - 15%	Restaurant	2014	2053	0.52	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.52	0.11	0.00	0.00
NC	100	102	High Performance Building/Int Design - Tier 1 15% - Restaurant	Restaurant	2014	2053	0.44	0.09	0.08	0.08	15%	0.02	0.02	20%	0.04	0.04	0	0	1.90			0.08	0.02
NC	200	200	Base Bldg Design - 30%	Restaurant	2014	2053	0.42	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.42	0.09	0.00	0.00
NC	200	202	High Performance Building/Int Design - Tier 2 30% - Restaurant	Restaurant	2014	2053	0.29	0.05	0.13	0.13	30%	0.03	0.03	39%	0.03	0.03	0	0	2.67			0.13	0.03
NC	300	300	Base Bldg Design - 50%	Restaurant	2014	2053	0.09	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.02	0.00	0.00
NC	300	302	High Performance Building/Int Design - Tier 3 50% - Restaurant	Restaurant	2014	2053	0.05	0.01	0.05	0.05	51%	0.01	0.01	65%	0.03	0.03	0	0	2.54			0.05	0.01
NC	400	400	Base Bldg Design - 70%	Restaurant	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	400	402	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Restaurant	Restaurant	2014	2053	0.00	0.00	0.01	0.01	71%	0.00	0.00	91%	0.04	0.04	0	0	2.26			0.01	0.00
VA	100	100	Base Bldg Design - 15%	Retail	2014	2053	40.98	9.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	40.98	9.62	0.00	0.00
VA	100	103	High Performance Building/Int Design - Tier 1 15% - Retail	Retail	2014	2053	34.72	7.74	6.26	6.26	15%	1.88	1.88	20%	0.09	0.09	0	0	0.93			0.00	0.00
VA	200	200	Base Bldg Design - 30%	Retail	2014	2053	32.78	7.69	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	32.78	7.69	0.00	0.00
VA	200	203	High Performance Building/Int Design - Tier 2 30% - Retail	Retail	2014	2053	22.77	4.69	10.01	10.01	31%	3.00	3.00	39%	0.06	0.06	0	0	1.30			10.01	3.00
VA	300	300	Base Bldg Design - 50%	Retail	2014	2053	7.38	1.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.38	1.73	0.00	0.00
VA	300	303	High Performance Building/Int Design - Tier 3 50% - Retail	Retail	2014	2053	3.62	0.61	3.75	3.75	51%	1.13	1.13	65%	0.07	0.07	0	0	1.24			3.75	1.13
VA	400	400	Base Bldg Design - 70%	Retail	2014	2053	0.82	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.82	0.19	0.00	0.00
VA	400	403	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Retail	Retail	2014	2053	0.24	0.02	0.58	0.58	71%	0.18	0.18	91%	0.07	0.07	0	0	1.10			0.58	0.18
NC	100	100	Base Bldg Design - 15%	Retail	2014	2053	1.09	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.09	0.25	0.00	0.00
NC	100	103	High Performance Building/Int Design - Tier 1 15% - Retail	Retail	2014	2053	0.92	0.21	0.17	0.17	15%	0.05	0.05	20%	0.07	0.07	0	0	1.10			0.17	0.05
NC	200	200	Base Bldg Design - 30%	Retail	2014	2053	0.87	0.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.87	0.20	0.00	0.00
NC	200	203	High Performance Building/Int Design - Tier 2 30% - Retail	Retail	2014	2053	0.60	0.12	0.27	0.27	31%	0.08	0.08	39%	0.05	0.05	0	0	1.55			0.27	0.08
NC	300	300	Base Bldg Design - 50%	Retail	2014	2053	0.20	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.05	0.00	0.00
NC	300	303	High Performance Building/Int Design - Tier 3 50% - Retail	Retail	2014	2053	0.10	0.02	0.10	0.10	51%	0.03	0.03	65%	0.06	0.06	0	0	1.47			0.10	0.03
NC	400	400	Base Bldg Design - 70%	Retail	2014	2053	0.02	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.01	0.00	0.00
NC	400	403	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Retail	Retail	2014	2053	0.01	0.00	0.02	0.02	71%	0.00	0.00	91%	0.06	0.06	0	0	1.31			0.02	0.00
VA	100	100	Base Bldg Design - 15%	Grocery	2014	2053	8.82	1.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.82	1.49	0.00	0.00
VA	100	104	High Performance Building/Int Design - Tier 1 15% - Grocery	Grocery	2014	2053	7.49	1.20	1.33	1.33	15%	0.29	0.29	20%	0.03	0.03	0	0	2.38			1.33	0.29
VA	200	200	Base Bldg Design - 30%	Grocery	2014	2053	7.06	1.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.06	1.19	0.00	0.00
VA	200	204	High Performance Building/Int Design - Tier 2 30% - Grocery	Grocery	2014	2053	4.93	0.73	2.13	2.13	30%	0.46	0.46	39%	0.02	0.02	0	0	3.33			2.13	0.46
VA	300	300	Base Bldg Design - 50%	Grocery	2014	2053	1.59	0.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.59	0.27	0.00	0.00
VA	300	304	High Performance Building/Int Design - Tier 3 50% - Grocery	Grocery	2014	2053	0.79	0.09	0.80	0.80	50%	0.17	0.17	65%	0.02	0.02	0	0	3.17			0.80	0.17
VA	400	400	Base Bldg Design - 70%	Grocery	2014	2053	0.18	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.03	0.00	0.00
VA	400	404	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Grocery	Grocery	2014	2053	0.05	0.00	0.12	0.12	70%	0.03	0.03	91%	0.03	0.03	0	0	2.83			0.12	0.03
NC	100	100	Base Bldg Design - 15%	Grocery	2014	2053	0.23	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.23	0.04	0.00	0.00
NC	100	104	High Performance Building/Int Design - Tier 1 15% - Grocery	Grocery	2014	2053	0.20	0.03	0.04	0.04	15%	0.01	0.01	20%	0.03	0.03	0	0	2.84			0.04	0.01
NC	200	200	Base Bldg Design - 30%	Grocery	2014	2053	0.19	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.03	0.00	0.00
NC	200	204	High Performance Building/Int Design - Tier 2 30% - Grocery	Grocery	2014	2053	0.13	0.02	0.06	0.06	30%	0.01	0.01	39%	0.02	0.02	0	0	3.97			0.06	0.01
NC	300	300	Base Bldg Design - 50%	Grocery	2014	2053	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
NC	300	304	High Performance Building/Int Design - Tier 3 50% - Grocery	Grocery	2014	2053	0.02	0.00	0.02	0.02	50%	0.00	0.00	65%	0.02	0.02	0	0	3.78			0.02	0.00
NC	400	400	Base Bldg Design - 70%	Grocery	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	400	404	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Grocery	Grocery	2014	2053	0.00	0.00	0.00	0.00	70%	0.00	0.00	91%	0.02	0.02	0	0	3.37			0.00	0.00
VA	100	100	Base Bldg Design - 15%	Warehouse	2014	2053	16.15	3.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.15	3.16	0.00	0.00
VA	100	105	High Performance Building/Int Design - Tier 1 15% - Warehouse	Warehouse	2014	2053	13.70	2.54	2.45	2.45	15%	0.62	0.62	20%	0.10	0.10	0	0	0.75			0.00	0.00
VA	200	200	Base Bldg Design - 30%	Warehouse	2014	2053	12.92	2.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.92	2.53	0.00	0.00
VA	200	205	High Performance Building/Int Design - Tier 2 30% - Warehouse	Warehouse	2014	2053	8.99	1.54	3.93	3.93	30%	0.98	0.98	39%	0.07	0.07	0	0	1.05			3.93	0.98
VA	300	300	Base Bldg Design - 50%	Warehouse	2014	2053	2.91	0.57	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.91	0.57	0.00	0.00
VA	300	305	High Performance Building/Int Design - Tier 3 50% - Warehouse	Warehouse	2014	2053	1.43	0.20	1.47	1.47	51%	0.37	0.37	65%	0.08	0.08	0	0	1.00			1.47	0.37
VA	400	400	Base Bldg Design - 70%	Warehouse	2014	2053	0.32	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.06	0.00	0.00
VA	400	405	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Warehouse	Warehouse	2014	2053	0.09	0.01	0.23	0.23	71%	0.06	0.06	91%	0.09	0.09	0	0	0.89			0.00	0.00
NC	100	100	Base Bldg Design - 15%	Warehouse	2014	2053	0.40	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.40	0.08	0.00	0.00
NC	100	105	High Performance Building/Int Design - Tier 1 15% - Warehouse	Warehouse	2014	2053	0.34	0.06	0.06	0.06	15%	0.02	0.02	20%	0.09	0.09	0	0	0.90			0.00	0.00

Base Avoided Costs

Commercial Electric New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020 Year 2014

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	200	200	Base Bldg Design - 30%	Warehouse	2014	2053	0.32	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.06	0.00	0.00
NC	200	205	High Performance Building/Int Design - Tier 2 30% - Warehouse	Warehouse	2014	2053	0.22	0.04	0.10	0.10	30%	0.02	0.02	39%	0.06	0.06	0	0	1.25			0.10	0.02
NC	300	300	Base Bldg Design - 50%	Warehouse	2014	2053	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	300	305	High Performance Building/Int Design - Tier 3 50% - Warehouse	Warehouse	2014	2053	0.04	0.00	0.04	0.04	51%	0.01	0.01	65%	0.07	0.07	0	0	1.19			0.04	0.01
NC	400	400	Base Bldg Design - 70%	Warehouse	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	400	405	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Warehouse	Warehouse	2014	2053	0.00	0.00	0.01	0.01	71%	0.00	0.00	91%	0.07	0.07	0	0	1.06			0.01	0.00
VA	100	100	Base Bldg Design - 15%	School	2014	2053	10.20	1.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.20	1.55	0.00	0.00
VA	100	106	High Performance Building/Int Design - Tier 1 15% - School	School	2014	2053	8.64	1.25	1.56	1.56	15%	0.30	0.30	20%	0.12	0.12	1	1	0.61			0.00	0.00
VA	200	200	Base Bldg Design - 30%	School	2014	2053	8.16	1.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.16	1.24	0.00	0.00
VA	200	206	High Performance Building/Int Design - Tier 2 30% - School	School	2014	2053	5.67	0.76	2.49	2.49	31%	0.48	0.48	39%	0.09	0.09	0	0	0.86			0.00	0.00
VA	300	300	Base Bldg Design - 50%	School	2014	2053	1.84	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.84	0.28	0.00	0.00
VA	300	306	High Performance Building/Int Design - Tier 3 50% - School	School	2014	2053	0.90	0.10	0.93	0.93	51%	0.18	0.18	65%	0.09	0.09	0	0	0.82			0.00	0.00
VA	400	400	Base Bldg Design - 70%	School	2014	2053	0.20	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.03	0.00	0.00
VA	400	406	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - School	School	2014	2053	0.06	0.00	0.15	0.15	71%	0.03	0.03	91%	0.10	0.10	1	1	0.73			0.00	0.00
NC	100	100	Base Bldg Design - 15%	School	2014	2053	0.92	0.14	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.92	0.14	0.00	0.00
NC	100	106	High Performance Building/Int Design - Tier 1 15% - School	School	2014	2053	0.78	0.11	0.14	0.14	15%	0.03	0.03	20%	0.10	0.10	1	1	0.73			0.00	0.00
NC	200	200	Base Bldg Design - 30%	School	2014	2053	0.73	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.73	0.11	0.00	0.00
NC	200	206	High Performance Building/Int Design - Tier 2 30% - School	School	2014	2053	0.51	0.07	0.22	0.22	31%	0.04	0.04	39%	0.07	0.07	0	0	1.02			0.22	0.04
NC	300	300	Base Bldg Design - 50%	School	2014	2053	0.16	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.03	0.00	0.00
NC	300	306	High Performance Building/Int Design - Tier 3 50% - School	School	2014	2053	0.08	0.01	0.08	0.08	51%	0.02	0.02	65%	0.08	0.08	0	0	0.98			0.00	0.00
NC	400	400	Base Bldg Design - 70%	School	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	400	406	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - School	School	2014	2053	0.01	0.00	0.01	0.01	71%	0.00	0.00	91%	0.09	0.09	0	0	0.87			0.00	0.00
VA	100	100	Base Bldg Design - 15%	Health	2014	2053	13.16	2.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.16	2.46	0.00	0.00
VA	100	107	High Performance Building/Int Design - Tier 1 15% - Health	Health	2014	2053	11.17	1.98	1.99	1.99	15%	0.48	0.48	20%	0.12	0.12	1	1	0.62			0.00	0.00
VA	200	200	Base Bldg Design - 30%	Health	2014	2053	10.53	1.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.53	1.97	0.00	0.00
VA	200	207	High Performance Building/Int Design - Tier 2 30% - Health	Health	2014	2053	7.34	1.20	3.19	3.19	30%	0.77	0.77	39%	0.09	0.09	0	0	0.87			0.00	0.00
VA	300	300	Base Bldg Design - 50%	Health	2014	2053	2.37	0.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.37	0.44	0.00	0.00
VA	300	307	High Performance Building/Int Design - Tier 3 50% - Health	Health	2014	2053	1.17	0.15	1.19	1.19	50%	0.29	0.29	65%	0.09	0.09	0	0	0.83			0.00	0.00
VA	400	400	Base Bldg Design - 70%	Health	2014	2053	0.26	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.26	0.05	0.00	0.00
VA	400	407	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Health	Health	2014	2053	0.08	0.00	0.19	0.19	71%	0.04	0.04	91%	0.10	0.10	0	0	0.74			0.00	0.00
NC	100	100	Base Bldg Design - 15%	Health	2014	2053	0.35	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.35	0.07	0.00	0.00
NC	100	107	High Performance Building/Int Design - Tier 1 15% - Health	Health	2014	2053	0.30	0.05	0.05	0.05	15%	0.01	0.01	20%	0.10	0.10	0	0	0.74			0.00	0.00
NC	200	200	Base Bldg Design - 30%	Health	2014	2053	0.28	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.05	0.00	0.00
NC	200	207	High Performance Building/Int Design - Tier 2 30% - Health	Health	2014	2053	0.19	0.03	0.08	0.08	30%	0.02	0.02	39%	0.07	0.07	0	0	1.04			0.08	0.02
NC	300	300	Base Bldg Design - 50%	Health	2014	2053	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	300	307	High Performance Building/Int Design - Tier 3 50% - Health	Health	2014	2053	0.03	0.00	0.03	0.03	50%	0.01	0.01	65%	0.08	0.08	0	0	0.99			0.00	0.00
NC	400	400	Base Bldg Design - 70%	Health	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	400	407	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Health	Health	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.09	0.09	0	0	0.88			0.00	0.00
VA	100	100	Base Bldg Design - 15%	Lodging	2014	2053	17.04	3.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.04	3.30	0.00	0.00
VA	100	108	High Performance Building/Int Design - Tier 1 15% - Lodging	Lodging	2014	2053	14.46	2.66	2.58	2.58	15%	0.64	0.64	20%	0.09	0.09	0	0	0.84			0.00	0.00
VA	200	200	Base Bldg Design - 30%	Lodging	2014	2053	13.63	2.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.63	2.64	0.00	0.00
VA	200	208	High Performance Building/Int Design - Tier 2 30% - Lodging	Lodging	2014	2053	9.51	1.61	4.12	4.12	30%	1.03	1.03	39%	0.07	0.07	0	0	1.17			4.12	1.03
VA	300	300	Base Bldg Design - 50%	Lodging	2014	2053	3.07	0.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.07	0.59	0.00	0.00
VA	300	308	High Performance Building/Int Design - Tier 3 50% - Lodging	Lodging	2014	2053	1.52	0.21	1.55	1.55	50%	0.39	0.39	65%	0.07	0.07	0	0	1.12			1.55	0.39
VA	400	400	Base Bldg Design - 70%	Lodging	2014	2053	0.34	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.34	0.07	0.00	0.00
VA	400	408	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Lodging	Lodging	2014	2053	0.10	0.01	0.24	0.24	71%	0.06	0.06	91%	0.08	0.08	0	0	1.00			0.00	0.00
NC	100	100	Base Bldg Design - 15%	Lodging	2014	2053	0.45	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.09	0.00	0.00
NC	100	108	High Performance Building/Int Design - Tier 1 15% - Lodging	Lodging	2014	2053	0.38	0.07	0.07	0.07	15%	0.02	0.02	20%	0.08	0.08	0	0	1.00			0.00	0.00
NC	200	200	Base Bldg Design - 30%	Lodging	2014	2053	0.36	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.36	0.07	0.00	0.00
NC	200	208	High Performance Building/Int Design - Tier 2 30% - Lodging	Lodging	2014	2053	0.25	0.04	0.11	0.11	30%	0.03	0.03	39%	0.06	0.06	0	0	1.40			0.11	0.03
NC	300	300	Base Bldg Design - 50%	Lodging	2014	2053	0.08	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.02	0.00	0.00
NC	300	308	High Performance Building/Int Design - Tier 3 50% - Lodging	Lodging	2014	2053	0.04	0.01	0.04	0.04	50%	0.01	0.01	65%	0.06	0.06	0	0	1.33			0.04	0.01
NC	400	400	Base Bldg Design - 70%	Lodging	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	400	408	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Lodging	Lodging	2014	2053	0.00	0.00	0.01	0.01	71%	0.00	0.00	91%	0.07	0.07	0	0	1.19			0.01	0.00
VA	100	100	Base Bldg Design - 15%	Data Centers	2014	2053	7.21	1.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.21	1.26	0.00	0.00
VA	100	109	High Performance Building/Int Design - Tier 1 15% - Data Centers	Data Centers	2014	2053	6.13	1.01	1.09	1.09	15%	0.24	0.24	20%	0.01	0.01	0	0	6.12			1.09	0.24
VA	200	200	Base Bldg Design - 30%	Data Centers	2014	2053	5.77	1.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.77	1.00	0.00	0.00
VA	200	209	High Performance Building/Int Design - Tier 2 30% - Data Centers	Data Centers	2014	2053	4.03	0.61	1.74	1.74	30%	0.39	0.39	39%	0.01	0.01	0	0	8.56			1.74	0.39
VA	300	300	Base Bldg Design - 50%	Data Centers	2014	2053	1.30	0.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.30	0.23	0.00	0.00
VA	300	309	High Performance Building/Int Design - Tier 3 50% - Data Centers	Data Centers	2014	2053	0.65	0.08	0.65	0.65	50%	0.15	0.15	65%	0.01	0.01	0	0	8.16			0.65	0.15
VA	400	400	Base Bldg Design - 70%	Data Centers	2014	2053	0.14	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.14	0.03	0.00	0.00
VA	400	409	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Data Centers	Data Centers	2014	2053	0.04	0.00	0.10	0.10	70%	0.02	0.02	91%	0.01	0.01	0	0	7.27			0.10	0.02
NC	100	100	Base Bldg Design - 15%	Data Centers	2014	2053	0.16	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.03	0.00	0.00
NC	100	109	High Performance Building/Int Design - Tier 1 15% - Data Centers	Data Centers	2014	2053	0.14	0.02	0.02	0.02	15%	0.01	0.01	20%	0.01	0.01	0	0	7.29			0.02	0.01
NC	200	200	Base Bldg Design - 30%	Data Centers	2014	2053	0.13	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.02	0.00	0.00
NC	200	209	High Performance Building/Int Design - Tier 2 30% - Data Centers	Data Centers	2014	2053	0.09	0.01	0.04	0.04	30%	0.01	0.01	39%	0.01	0.01	0	0	10.21			0.04	0.01
NC	300	300	Base Bldg Design - 50%	Data Centers	2014	2053	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
NC	300	309	High Performance Building/Int Design - Tier 3 50% - Data Centers	Data Centers	2014	2053	0.01	0.00	0.01	0.01	50%	0.00	0.00	65%	0.01	0.01	0	0	9.72			0.01	0.00
NC	400	400	Base Bldg Design - 70%	Data Centers	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	400	409	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Data Centers	Data Centers	2014	2053	0.00	0.00	0.00	0.00	70%	0.00	0.00	91%	0.01	0.01	0	0	8.66			0.00	0.00
VA	100	100	Base Bldg Design - 15%	eligious Worsh	2014	2053	9.51	1.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.51	1.87	0.00	0.00
VA	100	111	High Performance Building/Int Design - Tier 1 15% - Religious Worship	eligious Worsh	2014	2053	8.06	1.50	1.45	1.45	15%	0.36	0.36	20%	0.17	0.17	1	1	0.47			0.00	0.00
VA	200	200	Base Bldg Design - 30%	eligious Worsh	2014	2053	7.61	1.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.61	1.49	0.00	0.00
VA	200	211	High Performance Building/Int Design - Tier 2 30% - Religious Worship	eligious Worsh	2014	2053	5.30	0.91	2.31	2.31	30%	0.58	0.58	39%	0.12	0.12	0	0	0.66			0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020 Year 2014

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	300	300	Base Bldg Design - 50%	eligious Worsh	2014	2053	1.71	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.71	0.34	0.00	0.00
VA	300	311	High Performance Building/Int Design - Tier 3 50% - Religious Worship	eligious Worsh	2014	2053	0.84	0.12	0.87	0.87	51%	0.22	0.22	65%	0.13	0.13	0	0	0.62			0.00	0.00
VA	400	400	Base Bldg Design - 70%	eligious Worsh	2014	2053	0.19	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.04	0.00	0.00
VA	400	411	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Religious Wo	eligious Worsh	2014	2053	0.06	0.00	0.13	0.13	71%	0.03	0.03	91%	0.14	0.14	1	1	0.56			0.00	0.00
NC	100	100	Base Bldg Design - 15%	eligious Worsh	2014	2053	0.25	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.25	0.05	0.00	0.00
NC	100	111	High Performance Building/Int Design - Tier 1 15% - Religious Worship	eligious Worsh	2014	2053	0.21	0.04	0.04	0.04	15%	0.01	0.01	20%	0.14	0.14	1	1	0.56			0.00	0.00
NC	200	200	Base Bldg Design - 30%	eligious Worsh	2014	2053	0.20	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.04	0.00	0.00
NC	200	211	High Performance Building/Int Design - Tier 2 30% - Religious Worship	eligious Worsh	2014	2053	0.14	0.02	0.06	0.06	30%	0.02	0.02	39%	0.10	0.10	0	0	0.78			0.00	0.00
NC	300	300	Base Bldg Design - 50%	eligious Worsh	2014	2053	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
NC	300	311	High Performance Building/Int Design - Tier 3 50% - Religious Worship	eligious Worsh	2014	2053	0.02	0.00	0.02	0.02	51%	0.01	0.01	65%	0.11	0.11	0	0	0.74			0.00	0.00
NC	400	400	Base Bldg Design - 70%	eligious Worsh	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	400	411	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Religious Wo	eligious Worsh	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.12	0.12	0	0	0.66			0.00	0.00
VA	100	100	Base Bldg Design - 15%	Misc	2014	2053	39.46	7.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	39.46	7.74	0.00	0.00
VA	100	112	High Performance Building/Int Design - Tier 1 15% - Miscellaneous	Misc	2014	2053	33.46	6.23	6.00	6.00	15%	1.51	1.51	20%	0.09	0.09	0	0	0.83			0.00	0.00
VA	200	200	Base Bldg Design - 30%	Misc	2014	2053	31.57	6.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	31.57	6.19	0.00	0.00
VA	200	212	High Performance Building/Int Design - Tier 2 30% - Miscellaneous	Misc	2014	2053	21.97	3.78	9.59	9.59	30%	2.42	2.42	39%	0.07	0.07	0	0	1.16			9.59	2.42
VA	300	300	Base Bldg Design - 50%	Misc	2014	2053	7.10	1.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.10	1.39	0.00	0.00
VA	300	312	High Performance Building/Int Design - Tier 3 50% - Miscellaneous	Misc	2014	2053	3.50	0.49	3.60	3.60	51%	0.91	0.91	65%	0.07	0.07	0	0	1.11			3.60	0.91
VA	400	400	Base Bldg Design - 70%	Misc	2014	2053	0.79	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.79	0.15	0.00	0.00
VA	400	412	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Miscellaneou	Misc	2014	2053	0.23	0.01	0.56	0.56	71%	0.14	0.14	91%	0.08	0.08	0	0	0.99			0.00	0.00
NC	100	100	Base Bldg Design - 15%	Misc	2014	2053	1.10	0.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.10	0.22	0.00	0.00
NC	100	112	High Performance Building/Int Design - Tier 1 15% - Miscellaneous	Misc	2014	2053	0.93	0.17	0.17	0.17	15%	0.04	0.04	20%	0.08	0.08	0	0	0.99			0.00	0.00
NC	200	200	Base Bldg Design - 30%	Misc	2014	2053	0.88	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.88	0.17	0.00	0.00
NC	200	212	High Performance Building/Int Design - Tier 2 30% - Miscellaneous	Misc	2014	2053	0.61	0.11	0.27	0.27	30%	0.07	0.07	39%	0.06	0.06	0	0	1.38			0.27	0.07
NC	300	300	Base Bldg Design - 50%	Misc	2014	2053	0.20	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.04	0.00	0.00
NC	300	312	High Performance Building/Int Design - Tier 3 50% - Miscellaneous	Misc	2014	2053	0.10	0.01	0.10	0.10	51%	0.03	0.03	65%	0.06	0.06	0	0	1.32			0.10	0.03
NC	400	400	Base Bldg Design - 70%	Misc	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	400	412	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Miscellaneou	Misc	2014	2053	0.01	0.00	0.02	0.02	71%	0.00	0.00	91%	0.07	0.07	0	0	1.18			0.02	0.00

Base Avoided Costs

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Office	2020	2054	151.74	28.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	151.74	28.25	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Office	2020	2054	150.56	28.14	1.18	1.18	1%	0.11	0.11	0%	0.01	0.01	0	0	6.08			1.18
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	2020	2054	139.27	26.46	11.29	12.47	8%	1.68	1.79	6%	0.01	0.01	0	0	5.43			11.29
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Office	2020	2054	125.08	23.81	14.19	26.66	18%	2.64	4.43	16%	0.02	0.02	0	0	3.07			14.19
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	2020	2054	113.50	21.66	11.58	38.24	25%	2.16	6.59	23%	0.05	0.03	0	0	1.07			11.58
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Office	2020	2054	103.97	21.22	9.53	47.77	31%	0.44	7.03	25%	0.05	0.03	1	0	0.93			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Office	2020	2054	87.22	18.10	16.75	64.52	43%	3.12	10.15	36%	0.24	0.08	1	1	0.28			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Office	2020	2054	79.77	16.71	7.45	71.97	47%	1.39	11.54	41%	0.20	0.10	1	1	0.34			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Office	2020	2054	2.57	0.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.57	0.48	0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Office	2020	2054	2.55	0.48	0.02	0.02	1%	0.00	0.00	0%	0.01	0.01	0	0	3.53			0.02
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Office	2020	2054	2.35	0.45	0.19	0.21	8%	0.03	0.03	6%	0.02	0.02	0	0	3.16			0.19
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Office	2020	2054	2.11	0.40	0.24	0.46	18%	0.05	0.08	16%	0.02	0.02	0	0	2.42			0.24
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Office	2020	2054	1.84	0.35	0.27	0.72	28%	0.05	0.13	26%	0.05	0.03	0	0	1.16			0.27
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Office	2020	2054	1.75	0.34	0.09	0.81	32%	0.02	0.14	30%	0.18	0.05	1	0	0.36			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Office	2020	2054	1.60	0.33	0.15	0.96	37%	0.01	0.15	31%	0.10	0.06	2	0	0.48			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Office	2020	2054	1.47	0.30	0.14	1.10	43%	0.03	0.17	37%	0.25	0.08	1	1	0.26			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Office	2014	2054	5.57	1.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.57	1.04	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Office	2014	2054	5.30	1.01	0.27	0.27	5%	0.02	0.02	2%	0.00	0.00	0	0	17.09			0.27
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Office	2014	2054	4.90	0.95	0.40	0.66	12%	0.06	0.08	8%	0.03	0.02	0	0	2.44			0.40
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Office	2014	2054	4.39	0.86	0.51	1.17	21%	0.09	0.18	17%	0.08	0.04	0	0	0.73			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	2014	2054	3.75	0.83	0.64	1.81	33%	0.03	0.21	20%	0.10	0.06	2	1	0.48			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Office	2020	2054	51.51	9.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	51.51	9.59	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Office	2020	2054	12.41	2.31	39.10	39.10	76%	7.28	7.28	76%	0.00	0.00	0	0	15.29			39.10
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Office	2020	2054	18.54	3.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.54	3.45	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Office	2020	2054	4.83	0.90	13.72	13.72	74%	2.55	2.55	74%	0.00	0.00	0	0	12.82			13.72
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Office	2020	2054	13.65	2.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.65	2.54	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Office	2020	2054	4.73	0.88	8.92	8.92	65%	1.66	1.66	65%	0.01	0.01	0	0	9.23			8.92
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Office	2020	2054	3.37	0.63	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.37	0.63	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Office	2020	2054	2.43	0.45	0.93	0.93	28%	0.17	0.17	28%	0.05	0.05	0	0	1.11			0.93
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Office	2020	2054	4.30	0.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.30	0.80	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Office	2020	2054	3.18	0.59	1.12	1.12	26%	0.21	0.21	26%	0.04	0.04	0	0	1.47			1.12
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Office	2014	2054	1.80	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.80	0.33	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Office	2014	2054	1.01	0.19	0.79	0.79	44%	0.15	0.15	44%	0.02	0.02	0	0	2.36			0.79
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Office	2014	2054	12.31	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.31	0.17	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Office	2014	2054	9.85	0.06	2.46	2.46	20%	0.11	0.11	66%	0.05	0.05	1	1	1.42			2.46
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Office	2014	2054	4.74	-0.01	5.11	7.57	61%	0.07	0.18	108%	0.09	0.08	7	3	0.61			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Office	2014	2054	3.35	-0.03	1.39	8.96	73%	0.02	0.20	118%	0.59	0.16	48	7	0.09			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Office	2014	2054	19.03	13.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.03	13.31	0.00
Opt-Out/Ex	2000	2010	Ceiling/roof Insulation - Chiller	Office	2014	2054	18.94	13.25	0.08	0.08	0%	0.06	0.06	0%	0.01	0.01	0	0	18.40			0.08
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	2014	2054	17.32	12.12	1.62	1.70	9%	1.13	1.19	9%	0.03	0.03	0	0	4.19			1.62
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Office	2014	2054	17.29	12.10	0.03	1.73	9%	0.02	1.21	9%	0.04	0.03	0	0	2.74			0.03
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Office	2014	2054	17.18	12.06	0.11	1.85	10%	0.04	1.25	9%	0.03	0.03	0	0	2.45			0.11
Opt-Out/Ex	2000	2003	EMS - Chiller	Office	2014	2054	15.98	11.85	1.20	3.05	16%	0.21	1.46	11%	0.05	0.03	0	0	1.37			1.20
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Office	2014	2054	14.95	11.67	1.03	4.08	21%	0.18	1.64	12%	0.05	0.04	0	0	1.04			1.03
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Office	2014	2054	14.94	11.67	0.00	4.08	21%	0.00	1.65	12%	0.09	0.04	0	0	0.99			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Office	2014	2054	12.10	9.68	2.84	6.92	36%	1.99	3.63	27%	0.15	0.08	0	0	0.73			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Office	2014	2054	12.07	9.65	0.04	6.96	37%	0.03	3.66	27%	0.22	0.09	0	0	0.39			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Office	2014	2054	12.03	9.63	0.04	7.00	37%	0.03	3.68	28%	1.86	0.10	3	0	0.05			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Office	2014	2054	86.33	60.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	86.33	60.40	0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Office	2014	2054	66.48	46.51	19.86	19.86	23%	13.89	13.89	23%	0.02	0.02	0	0	4.41			19.86
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Office	2014	2054	63.48	43.37	2.99	22.85	26%	3.14	17.03	28%	0.05	0.03	0	0	1.61			2.99
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Office	2014	2054	62.40	43.18	1.08	23.93	28%	0.19	17.22	29%	0.06	0.03	0	0	0.90			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Office	2014	2054	61.11	42.27	1.29	25.22	29%	0.90	18.12	30%	0.10	0.03	0	0	0.88			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	Office	2014	2054	54.39	41.10	6.72	31.94	37%	1.17	19.30	32%	0.07	0.04	0	0	0.77			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Office	2014	2054	51.08	38.79	3.31	35.25	41%	2.31	21.61	36%	0.19	0.05	0	0	0.59			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Office	2014	2054	50.00	38.60	1.09	36.33	42%	0.19	21.80	36%	0.10	0.06	1	0	0.53			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Office	2014	2054	49.57	38.30	0.43	36.76	43%	0.30	22.10	37%	0.25	0.06	0	0	0.35			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Office	2014	2054	49.56	38.30	0.01	36.77	43%	0.00	22.10	37%	0.20	0.06	1	0	0.29			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Office	2014	2054	49.24	38.07	0.32	37.09	43%	0.22	22.33	37%	2.07	0.08	3	0	0.04			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Office	2014	2054	58.94	41.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	58.94	41.24	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014	2054	51.65	36.14	7.29	7.29	12%	5.10	5.10	12%	0.02	0.02	0	0	6.17			7.29
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Office	2014	2054	9.44	6.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.44	6.61	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Office	2014	2054	46.72	14.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	46.72	14.10	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Office	2014	2054	45.96	13.88	0.76	0.76	2%	0.23	0.23	2%	0.02	0.02	0	0	4.26			0.76
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Office	2014	2054	34.57	13.02	11.39	12.15	26%	0.86	1.09	8%	0.01	0.02	0	0	3.89			11.39
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Office	2014	2054	32.69	11.94	1.88	14.03	30%	1.08	2.17	15%	0.64	0.10	1	1	0.15			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Office	2014	2054	8.09	2.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.09	2.44	0.00
Opt-Out/Ex	3100	3102	Variable Speed Drive Control, 15 HP	Office	2014	2054	6.09	2.29	2.01	2.01	25%	0.15	0.15	6%	0.00	0.00	0	0	14.31			2.01
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Office	2014	2054	6.05	2.28	0.04	2.04	25%	0.01	0.16	7%	0.01	0.00	0	0	7.06			0.04
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Office	2014	2054	5.65	2.17	0.40	2.44	30%	0.11	0.27	11%	0.02	0.01	0	0	3.12			0.40
Opt-Out/Ex	3100	3103	Air Handler Optimization, 15 HP	Office	2014	2054	5.11	2.13	0.54	2.98	37%	0.04	0.31	13%	0.02	0.01	0	0	2.36			0.54
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	Office	2014	2054	4.99	2.06	0.12	3.10	38%	0.07	0.38	16%	0.25	0.02	0	0	0.43			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	Office	2014	2054	4.72	1.91	0.27	3.37	42%	0.16	0.54	22%	0.77	0.08	1	0	0.13			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Office	2014	2054	5.10	1.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.10	1.54	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Office	2014	2054	4.62	1.50	0.49	0.49	10%	0.04	0.04	2%	0.01	0.01	0	0	3.38			0.49
Opt-Out/Ex	3200	3202	Variable Speed Drive Control, 40 HP	Office	2014	2054	3.47	1.42	1.14	1.63	32%	0.09	0.12	8%	0.02	0.02	0	0	2.57			1.14
Opt-Out/Ex	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Office	2014	2054	3.46	1.41	0.02	1.65	32%	0.00	0.13	8%	0.10	0.02	0	0	0.80			0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Office	2014	2054	3.27	1.31	0.19	1.83	36%	0.11	0.24	15%	0.70	0.09	1	1	0.14			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Office	2014	2054	13.71	1.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.71	1.92	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	Office	2014	2054	13.58	1.90	0.13	0.13	1%	0.02	0.02	1%	0.00	0.00	0	0	48.88			0.13
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	Office	2014	2054	13.56	1.90	0.02	0.15	1%	0.00	0.02	1%	0.00	0.00	0	0	24.94			0.02
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Office	2014	2054	13.31	1.87	0.25	0.40	3%	0.03	0.06	3%	0.00	0.00	0	0	23.92			0.25
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	Office	2014	2054	13.30	1.86	0.01	0.41	3%	0.00	0.06	3%	0.01	0.00	0	0	9.98			0.01
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Office	2014	2054	13.22	1.85	0.08	0.49	4%	0.01	0.07	4%	0.01	0.00	0	0	8.40			0.08
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Office	2014	2054	13.19	1.85	0.03	0.52	4%	0.00	0.07	4%	0.01	0.00	0	0	8.01			0.03
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Office	2014	2054	13.14	1.84	0.05	0.57	4%	0.01	0.08	4%	0.02	0.00	0	0	2.97			0.05
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Office	2014	2054	13.14	1.84	0.00	0.57	4%	0.00	0.08	4%	0.27	0.00	2	0	0.21			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Office	2014	2054	13.14	1.84	0.00	0.57	4%	0.00	0.08	4%	0.31	0.01	2	0	0.17			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Office	2014	2054	13.13	1.84	0.01	0.58	4%	0.00	0.08	4%	6.66	0.11	47	1	0.01			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Office	2014	2054	5.60	0.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.60	0.78	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Office	2014	2054	3.02	0.60	2.58	2.58	46%	0.18	0.18	23%	0.01	0.01	0	0	4.47			2.58
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Office	2014	2054	2.35	0.51	0.67	3.25	58%	0.09	0.27	35%	0.02	0.01	0	0	2.22			0.67
Opt-Out/Ex	5100	5100	Base Laptop PC	Office	2014	2054	0.51	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.51	0.07	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Office	2014	2054	0.41	0.06	0.10	0.10	19%	0.01	0.01	19%	0.01	0.01	0	0	6.06			0.10
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Office	2014	2054	0.40	0.06	0.01	0.10	21%	0.00	0.01	21%	0.99	0.09	7	1	0.05			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Office	2014	2054	1.19	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.19	0.16	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Office	2014	2054	0.68	0.09	0.51	0.51	43%	0.07	0.07	43%	0.00	0.00	0	0	63.11			0.51
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Office	2014	2054	0.59	0.09	0.09	0.60	50%	0.01	0.08	46%	0.01	0.00	0	0	5.32			0.09
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Office	2014	2054	0.55	0.08	0.05	0.64	54%	0.01	0.08	50%	0.11	0.01	1	0	0.45			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Office	2014	2054	1.06	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.06	0.15	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Office	2014	2054	0.92	0.13	0.14	0.14	13%	0.02	0.02	13%	0.01	0.01	0	0	7.50			0.14
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Office	2014	2054	0.86	0.12	0.07	0.21	20%	0.00	0.02	16%	0.06	0.03	1	0	0.72			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Office	2014	2054	0.79	0.12	0.07	0.28	26%	0.00	0.03	18%	0.18	0.06	5	1	0.24			0.00
Opt-Out/Ex	5400	5400	Base Copier	Office	2014	2054	1.95	0.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.95	0.27	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Office	2014	2054	1.75	0.24	0.19	0.19	10%	0.03	0.03	10%	0.00	0.00	0	0	36.97			0.19
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Office	2014	2054	1.68	0.24	0.08	0.27	14%	0.01	0.03	12%	0.07	0.02	1	0	0.67			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Office	2014	2054	0.33	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.33	0.05	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Office	2014	2054	0.25	0.03	0.08	0.08	25%	0.01	0.01	25%	0.01	0.01	0	0	10.13			0.08
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Office	2014	2054	0.20	0.03	0.05	0.13	39%	0.00	0.01	32%	0.21	0.08	3	1	0.23			0.00
Opt-Out/Ex	5600	5600	Base Printer	Office	2014	2054	1.93	0.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.93	0.27	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Office	2014	2054	1.26	0.17	0.67	0.67	35%	0.09	0.09	35%	0.00	0.00	0	0	46.55			0.67
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Office	2014	2054	1.03	0.16	0.23	0.90	47%	0.02	0.11	41%	0.04	0.01	1	0	1.05			0.23
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Office	2014	2054	12.60	1.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.60	1.75	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Office	2014	2054	11.34	1.57	1.26	1.26	10%	0.17	0.17	10%	0.00	0.00	0	0	160.89			1.26
Opt-Out/Ex	5700	5702	Data Center Best Practices	Office	2014	2054	9.90	1.37	1.44	2.70	21%	0.20	0.38	21%	0.00	0.00	0	0	65.50			1.44
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Office	2014	2054	9.34	1.30	0.55	3.26	26%	0.08	0.45	26%	0.00	0.00	0	0	33.97			0.55
Opt-Out/Ex	6000	6000	Base Water Heating	Office	2014	2054	11.55	1.56	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.55	1.56	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Office	2014	2054	10.96	1.48	0.60	0.60	5%	0.08	0.08	5%	0.01	0.01	0	0	4.24			0.60
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Office	2014	2054	10.74	1.45	0.22	0.82	7%	0.03	0.11	7%	0.03	0.02	0	0	2.26			0.22
Opt-Out/Ex	6000	6004	Tankless Water Heater	Office	2014	2054	9.93	1.34	0.81	1.62	14%	0.11	0.22	14%	0.04	0.03	0	0	1.61			0.81
Opt-Out/Ex	6000	6008	Solar Water Heater	Office	2014	2054	4.65	0.63	5.28	6.91	60%	0.71	0.93	60%	0.05	0.05	0	0	1.38			5.28
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Office	2014	2054	4.59	0.62	0.05	6.96	60%	0.01	0.94	60%	0.11	0.05	1	0	0.58			0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Office	2014	2054	4.30	0.58	0.30	7.26	63%	0.04	0.98	63%	0.11	0.05	1	0	0.51			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Office	2014	2054	4.17	0.56	0.13	7.39	64%	0.02	1.00	64%	0.33	0.05	2	0	0.19			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Office	2014	2054	2.10	0.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.10	0.31	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Office	2014	2054	1.77	0.28	0.34	0.34	16%	0.02	0.02	8%	0.03	0.03	0	0	1.81			0.34
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Office	2014	2054	1.58	0.27	0.19	0.52	25%	0.01	0.04	12%	0.05	0.03	1	0	0.99			0.00
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Office	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Office	2014	2054	0.03	0.01	0.03	0.03	46%	0.00	0.00	23%	0.44	0.44	6	6	0.11			0.00
Opt-Out/Ex	7200	7200	Base Oven	Office	2014	2054	0.62	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.62	0.09	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Office	2014	2054	0.39	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.06	0.00
Opt-Out/Ex	7400	7400	Base Steamer	Office	2014	2054	0.81	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.81	0.12	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Office	2014	2054	8.56	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.56	0.00	0.00
Opt-Out/Ex	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014	2054	8.08	0.00	0.48	0.48	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	3.24			0.48
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Office	2014	2054	8.65	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.65	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Office	2014	2054	74.29	10.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	74.29	10.81	0.00
Opt-Out/Ex	9500	9501	Xmisc	Office	2014	2054	74.29	10.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Retail	2020	2054	17.68	3.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.68	3.20	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Retail	2020	2054	17.64	3.20	0.04	0.04	0%	0.00	0.00	0%	0.01	0.01	0	0	4.09			0.04
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Retail	2020	2054	16.30	3.00	1.34	1.38	8%	0.19	0.20	6%	0.02	0.02	0	0	3.61			1.34
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Retail	2020	2054	14.61	2.70	1.70	3.07	17%	0.31	0.50	16%	0.03	0.02	0	0	2.18			1.70
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Retail	2020	2054	14.25	2.63	0.36	3.43	19%	0.07	0.57	18%	0.27	0.05	1	0	0.20			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Retail	2020	2054	14.04	2.62	0.21	3.64	21%	0.01	0.58	18%	0.09	0.05	2	0	0.56			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Retail	2020	2054	11.78	2.21	2.26	5.90	33%	0.41	0.99	31%	0.28	0.14	2	1	0.23			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Retail	2020	2054	10.77	2.03	1.01	6.91	39%	0.18	1.17	36%	0.23	0.15	1	1	0.27			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Retail	2020	2054	3.53	0.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.53	0.64	0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Retail	2020	2054	3.52	0.64	0.01	0.01	0%	0.00	0.00	0%	0.02	0.02	0	0	2.40			0.01
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Retail	2020	2054	3.26	0.60	0.27	0.28	8%	0.04	0.04	6%	0.03	0.03	0	0	2.12			0.27
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Retail	2020	2054	2.92	0.54	0.34	0.61	17%	0.06	0.10	16%	0.03	0.03	0	0	1.72			0.34
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Retail	2020	2054	2.55	0.47	0.37	0.99	28%	0.07	0.17	26%	0.07	0.04	0	0	0.83			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Retail	2020	2054	2.42	0.45	0.12	1.11	31%	0.02	0.19	30%	0.25	0.07	1	0	0.26			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Retail	2020	2054	2.22	0.41	0.21	1.32	37%	0.04	0.23	36%	0.31	0.11	2	1	0.20			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Retail	2020	2054	2.18	0.41	0.03	1.35	38%	0.00	0.23	36%	0.20	0.11	5	1	0.25			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Retail	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Retail	2014	2054	0.03	0.00	0.00	0.00	1%	0.00	0.00	1%	0.01	0.01	0	0	7.41			0.00
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Retail	2014	2054	0.03	0.00	0.00	0.00	9%	0.00	0.00	7%	0.06	0.05	0	0	1.08			0.00
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Retail	2014	2054	0.02	0.00	0.00	0.01	18%	0.00	0.00	16%	0.10	0.08	1	0	0.53			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Retail	2014	2054	0.02	0.00	0.00	0.01	21%	0.00	0.00	17%	0.12	0.08	3	1	0.41			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Retail	2020	2054	6.70	1.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.70	1.21	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Retail	2020	2054	1.17	0.21	5.52	5.52	82%	1.00	1.00	82%	0.01	0.01	0	0	8.61			5.52
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Retail	2020	2054	2.41	0.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.41	0.44	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Retail	2020	2054	0.46	0.08	1.95	1.95	81%	0.35	0.35	81%	0.01	0.01	0	0	7.27			1.95
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Retail	2020	2054	1.77	0.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.77	0.32	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Retail	2020	2054	0.46	0.08	1.31	1.31	74%	0.24	0.24	74%	0.01	0.01	0	0	5.40			1.31
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Retail	2020	2054	1.96	0.35	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.96	0.35	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Retail	2020	2054	1.42	0.26	0.54	0.54	28%	0.10	0.10	28%	0.06	0.06	0	0	0.86			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Retail	2020	2054	2.51	0.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.51	0.45	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Retail	2020	2054	1.85	0.34	0.65	0.65	26%	0.12	0.12	26%	0.05	0.05	0	0	1.14			0.65
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Retail	2014	2054	0.22	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.22	0.04	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Retail	2014	2054	0.10	0.02	0.13	0.13	56%	0.02	0.02	56%	0.04	0.04	0	0	1.31			0.13
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Retail	2014	2054	3.60	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.60	0.24	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Retail	2014	2054	2.79	0.08	0.81	0.81	23%	0.16	0.16	66%	0.06	0.06	0	0	1.36			0.81
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Retail	2014	2054	1.34	-0.01	1.45	2.26	63%	0.09	0.25	106%	0.13	0.10	2	1	0.46			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Retail	2014	2054	0.95	-0.04	0.39	2.65	74%	0.02	0.27	116%	0.86	0.22	14	2	0.07			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Retail	2014	2054	0.48	0.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.48	0.40	0.00
Opt-Out/Ex	2000	2010	Ceiling/roof Insulation - Chiller	Retail	2014	2054	0.47	0.39	0.00	0.00	1%	0.00	0.00	1%	0.03	0.03	0	0	4.57			0.00
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Retail	2014	2054	0.43	0.36	0.04	0.04	9%	0.03	0.04	9%	0.04	0.04	0	0	2.80			0.04
Opt-Out/Ex	2000	2003	EMS - Chiller	Retail	2014	2054	0.40	0.35	0.04	0.08	17%	0.01	0.04	11%	0.08	0.06	0	0	0.84			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Retail	2014	2054	0.32	0.29	0.08	0.16	33%	0.06	0.11	27%	0.23	0.14	0	0	0.52			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Retail	2014	2054	16.88	13.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.88	13.95	0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Retail	2014	2054	13.00	10.74	3.88	3.88	23%	3.21	3.21	23%	0.04	0.04	0	0	2.95			3.88
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Retail	2014	2054	12.09	9.68	0.91	4.79	28%	1.06	4.27	31%	0.08	0.05	0	0	1.08			0.91
Opt-Out/Ex	2100	2107	Cool Roof - DX	Retail	2014	2054	11.56	9.24	0.54	5.33	32%	0.44	4.71	34%	0.12	0.05	0	0	0.81			0.00
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Retail	2014	2054	11.37	9.20	0.19	5.52	33%	0.04	4.76	34%	0.10	0.06	0	0	0.51			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	Retail	2014	2054	10.40	8.99	0.97	6.49	38%	0.21	4.96	36%	0.13	0.07	1	0	0.45			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Retail	2014	2054	9.77	8.47	0.63	7.12	42%	0.52	5.49	39%	0.31	0.09	0	0	0.39			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Retail	2014	2054	9.50	8.41	0.27	7.39	44%	0.06	5.54	40%	0.17	0.09	1	0	0.32			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Retail	2014	2054	9.46	8.38	0.03	7.42	44%	0.03	5.57	40%	0.38	0.09	0	0	0.25			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Retail	2014	2054	9.46	8.38	0.00	7.43	44%	0.00	5.57	40%	0.29	0.09	1	0	0.21			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Retail	2014	2054	9.39	8.32	0.07	7.50	44%	0.06	5.63	40%	3.43	0.12	4	0	0.03			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Retail	2014	2054	6.27	5.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.27	5.18	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	2014	2054	5.50	4.54	0.78	0.78	12%	0.64	0.64	12%	0.03	0.03	0	0	4.14			0.78
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Retail	2014	2054	1.11	0.91	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.11	0.91	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Retail	2014	2054	11.44	3.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.44	3.21	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Retail	2014	2054	11.26	3.15	0.18	0.18	2%	0.05	0.05	2%	0.02	0.02	0	0	3.41			0.18
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Retail	2014	2054	7.88	2.92	3.38	3.56	31%	0.24	0.29	9%	0.02	0.02	0	0	3.15			3.38
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Retail	2014	2054	7.06	2.48	0.83	4.38	38%	0.44	0.73	23%	1.16	0.23	2	1	0.08			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Retail	2014	2054	0.40	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.40	0.11	0.00
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Retail	2014	2054	0.34	0.10	0.06	0.06	14%	0.01	0.01	13%	0.03	0.03	0	0	2.44			0.06
Opt-Out/Ex	3100	3103	Air Handler Optimization, 15 HP	Retail	2014	2054	0.31	0.09	0.03	0.09	23%	0.00	0.02	15%	0.03	0.03	0	0	1.86			0.03
Opt-Out/Ex	3100	3102	Variable Speed Drive Control, 15 HP	Retail	2014	2054	0.22	0.09	0.09	0.18	46%	0.01	0.02	21%	0.07	0.05	1	0	0.85			0.00
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Retail	2014	2054	0.21	0.09	0.00	0.18	46%	0.00	0.02	21%	0.21	0.05	1	0	0.39			0.00
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	Retail	2014	2054	0.20	0.08	0.01	0.20	50%	0.01	0.03	28%	0.46	0.08	1	0	0.23			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	Retail	2014	2054	0.18	0.07	0.02	0.22	55%	0.01	0.04	38%	1.59	0.22	3	1	0.06			0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Retail	2014	2054	0.40	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.40	0.11	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Retail	2014	2054	0.36	0.11	0.04	0.04	10%	0.00	0.00	3%	0.02	0.02	0	0	2.17			0.04
Opt-Out/Ex	3200	3202	Variable Speed Drive Control, 40 HP	Retail	2014	2054	0.25	0.10	0.11	0.15	37%	0.01	0.01	9%	0.06	0.05	1	1	1.02			0.11
Opt-Out/Ex	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Retail	2014	2054	0.25	0.10	0.00	0.15	37%	0.00	0.01	9%	0.28	0.05	1	1	0.29			0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Retail	2014	2054	0.22	0.09	0.03	0.17	44%	0.01	0.02	22%	1.27	0.23	2	2	0.07			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Retail	2014	2054	9.21	1.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.21	1.40	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	Retail	2014	2054	9.03	1.37	0.18	0.18	2%	0.03	0.03	2%	0.01	0.01	0	0	5.36			0.18
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	Retail	2014	2054	9.00	1.37	0.04	0.21	2%	0.01	0.03	2%	0.04	0.01	0	0	1.54			0.04
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Retail	2014	2054	8.80	1.34	0.19	0.41	4%	0.03	0.06	4%	0.04	0.02	0	0	1.40			0.19
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	Retail	2014	2054	8.79	1.34	0.02	0.42	5%	0.00	0.06	5%	0.09	0.03	1	0	0.61			0.00
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Retail	2014	2054	8.64	1.31	0.15	0.57	6%	0.02	0.09	6%	0.11	0.05	1	0	0.52			0.00
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Retail	2014	2054	8.62	1.31	0.02	0.59	6%	0.00	0.09	6%	0.12	0.05	1	0	0.49			0.00
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Retail	2014	2054	8.58	1.30	0.04	0.63	7%	0.01	0.10	7%	0.28	0.06	2	0	0.21			0.00
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Retail	2014	2054	8.56	1.30	0.02	0.65	7%	0.00	0.10	7%	0.32	0.07	2	0	0.18			0.00

APPENDIX H

Base Avoided Costs

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Retail	2014	2054	8.49	1.29	0.07	0.72	8%	0.01	0.11	8%	0.32	0.10	2	1	0.17			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Retail	2014	2054	8.48	1.29	0.01	0.73	8%	0.00	0.11	8%	1.94	0.12	13	1	0.03			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Retail	2014	2054	0.43	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.43	0.08	0.00
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Retail	2014	2054	0.36	0.06	0.06	0.06	15%	0.01	0.01	15%	0.01	0.01	0	0	3.49			0.06
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Retail	2014	2054	0.20	0.05	0.16	0.23	53%	0.01	0.03	35%	0.02	0.02	0	0	2.73			0.16
Opt-Out/Ex	5100	5100	Base Laptop PC	Retail	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Retail	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	4.53			0.00
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Retail	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.38	0.12	8	1	0.04			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Retail	2014	2054	0.14	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.14	0.02	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Retail	2014	2054	0.06	0.01	0.08	0.08	56%	0.01	0.01	56%	0.00	0.00	0	0	36.02			0.08
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Retail	2014	2054	0.05	0.01	0.01	0.09	63%	0.00	0.01	60%	0.02	0.00	0	0	2.75			0.01
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Retail	2014	2054	0.05	0.01	0.00	0.09	66%	0.00	0.02	63%	0.21	0.01	1	0	0.25			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Retail	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Retail	2014	2054	0.05	0.01	0.01	0.01	14%	0.00	0.00	14%	0.01	0.01	0	0	5.55			0.01
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Retail	2014	2054	0.05	0.01	0.00	0.01	17%	0.00	0.00	16%	0.09	0.02	1	0	0.54			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Retail	2014	2054	0.05	0.01	0.00	0.01	24%	0.00	0.00	17%	0.25	0.08	5	1	0.18			0.00
Opt-Out/Ex	5400	5400	Base Copier	Retail	2014	2054	0.21	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.21	0.04	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Retail	2014	2054	0.18	0.03	0.03	0.03	14%	0.01	0.01	14%	0.00	0.00	0	0	26.26			0.03
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Retail	2014	2054	0.17	0.03	0.01	0.04	18%	0.00	0.01	16%	0.11	0.03	1	0	0.45			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Retail	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Retail	2014	2054	0.02	0.00	0.01	0.01	25%	0.00	0.00	25%	0.01	0.01	0	0	7.56			0.01
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Retail	2014	2054	0.02	0.00	0.00	0.01	36%	0.00	0.00	30%	0.28	0.09	3	1	0.17			0.00
Opt-Out/Ex	5600	5600	Base Printer	Retail	2014	2054	0.09	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.02	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Retail	2014	2054	0.06	0.01	0.03	0.03	35%	0.01	0.01	35%	0.00	0.00	0	0	34.75			0.03
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Retail	2014	2054	0.05	0.01	0.01	0.04	44%	0.00	0.01	39%	0.06	0.01	1	0	0.80			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Retail	2014	2054	0.37	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.37	0.07	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Retail	2014	2054	0.33	0.06	0.04	0.04	10%	0.01	0.01	10%	0.00	0.00	0	0	120.93			0.04
Opt-Out/Ex	5700	5702	Data Center Best Practices	Retail	2014	2054	0.29	0.05	0.04	0.08	21%	0.01	0.01	21%	0.00	0.00	0	0	49.23			0.04
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Retail	2014	2054	0.28	0.05	0.02	0.10	26%	0.00	0.02	26%	0.00	0.00	0	0	25.53			0.02
Opt-Out/Ex	6000	6000	Base Water Heating	Retail	2014	2054	1.76	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.76	0.28	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Retail	2014	2054	1.67	0.27	0.09	0.09	5%	0.01	0.01	5%	0.02	0.02	0	0	2.86			0.09
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Retail	2014	2054	1.63	0.26	0.03	0.12	7%	0.01	0.02	7%	0.04	0.03	0	0	1.53			0.03
Opt-Out/Ex	6000	6004	Tankless Water Heater	Retail	2014	2054	1.51	0.24	0.12	0.25	14%	0.02	0.04	14%	0.07	0.05	0	0	1.09			0.12
Opt-Out/Ex	6000	6008	Solar Water Heater	Retail	2014	2054	1.47	0.24	0.04	0.29	16%	0.01	0.05	16%	0.08	0.05	0	0	0.93			0.00
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Retail	2014	2054	1.44	0.23	0.02	0.31	18%	0.00	0.05	18%	0.08	0.05	0	0	0.82			0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Retail	2014	2054	1.40	0.22	0.05	0.36	20%	0.01	0.06	20%	0.09	0.06	1	0	0.64			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Retail	2014	2054	1.38	0.22	0.02	0.38	22%	0.00	0.06	22%	0.13	0.06	1	0	0.50			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Retail	2014	2054	0.44	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.08	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Retail	2014	2054	0.37	0.07	0.07	0.07	16%	0.01	0.01	8%	0.03	0.03	0	0	1.83			0.07
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Retail	2014	2054	0.33	0.07	0.04	0.11	25%	0.00	0.01	12%	0.05	0.03	1	0	1.00			0.04
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Retail	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	23%	0.44	0.44	5	5	0.11			0.00
Opt-Out/Ex	7200	7200	Base Oven	Retail	2014	2054	0.28	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.05	0.00
Opt-Out/Ex	7200	7201	Convection Oven	Retail	2014	2054	0.21	0.04	0.06	0.06	23%	0.01	0.01	23%	0.13	0.13	1	1	0.47			0.00
Opt-Out/Ex	7300	7300	Base Fryer	Retail	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00
Opt-Out/Ex	7300	7301	Efficient Fryer	Retail	2014	2054	0.05	0.01	0.00	0.00	6%	0.00	0.00	6%	0.43	0.43	2	2	0.15			0.00
Opt-Out/Ex	7400	7400	Base Steamer	Retail	2014	2054	0.20	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.04	0.00
Opt-Out/Ex	7400	7401	Efficient Steamer	Retail	2014	2054	0.07	0.01	0.13	0.13	64%	0.02	0.02	64%	0.05	0.05	0	0	1.21			0.13
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Retail	2014	2054	0.31	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.31	0.00	0.00
Opt-Out/Ex	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	2014	2054	0.29	0.00	0.02	0.02	6%	0.00	0.00	0%	0.04	0.04	N/A	N/A	1.44			0.02
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Retail	2014	2054	1.14	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.14	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Retail	2014	2054	27.46	4.91	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	27.46	4.91	0.00
Opt-Out/Ex	9500	9501	Xmisc	Retail	2014	2054	27.46	4.91	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Grocery	2020	2054	0.33	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.33	0.05	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Grocery	2020	2054	0.33	0.05	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	4.44			0.00
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Grocery	2020	2054	0.31	0.05	0.03	0.03	8%	0.00	0.00	6%	0.02	0.02	0	0	3.80			0.03
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Grocery	2020	2054	0.28	0.04	0.03	0.06	17%	0.00	0.01	15%	0.04	0.03	0	0	1.27			0.03
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Grocery	2020	2054	0.25	0.04	0.03	0.08	25%	0.00	0.01	23%	0.11	0.06	1	0	0.45			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Grocery	2020	2054	0.25	0.04	0.00	0.09	26%	0.00	0.01	24%	0.11	0.06	3	0	0.44			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Grocery	2020	2054	0.21	0.03	0.04	0.13	38%	0.01	0.02	35%	0.48	0.19	3	1	0.11			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Grocery	2020	2054	0.19	0.03	0.02	0.14	43%	0.00	0.02	41%	0.40	0.22	3	2	0.14			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	3.71			0.00
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	8%	0.00	0.00	6%	0.02	0.02	0	0	3.18			0.00
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	17%	0.00	0.00	15%	0.05	0.04	0	0	1.01			0.00
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	27%	0.00	0.00	26%	0.11	0.06	1	0	0.48			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	29%	0.00	0.00	26%	0.20	0.07	6	0	0.24			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	32%	0.00	0.00	29%	0.40	0.10	3	1	0.14			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	38%	0.00	0.00	35%	0.51	0.17	3	1	0.11			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Grocery	2020	2054	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Grocery	2020	2054	0.04	0.01	0.06	0.06	62%	0.01	0.01	62%	0.01	0.01	0	0	9.56			0.06
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Grocery	2020	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Grocery	2020	2054	0.01	0.00	0.02	0.02	60%	0.00	0.00	60%	0.01	0.01	0	0	7.90			0.02

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2014

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Grocery	2020	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Grocery	2020	2054	0.01	0.00	0.01	0.01	50%	0.00	0.00	50%	0.01	0.01	0	0	5.36			0.01
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	28%	0.00	0.00	28%	0.12	0.12	1	1	0.44			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	26%	0.00	0.00	26%	0.09	0.09	1	1	0.59			0.00
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Grocery	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Grocery	2014	2054	0.02	0.00	0.00	0.00	8%	0.00	0.00	6%	0.01	0.01	0	0	8.77			0.00
Opt-Out/Ex	1800	1801	T5 (240W) (base metal halide)	Grocery	2014	2054	0.01	0.00	0.01	0.01	39%	0.00	0.00	37%	0.02	0.01	0	0	4.35			0.01
Opt-Out/Ex	1800	1806	Occupancy Sensor, High Bay T5	Grocery	2014	2054	0.01	0.00	0.00	0.01	41%	0.00	0.00	38%	0.04	0.02	1	0	1.23			0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Grocery	2014	2054	0.00	0.00	0.00	0.00	2%	0.00	0.00	2%	0.03	0.03	0	0	1.58			0.00
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Grocery	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Grocery	2014	2054	0.00	0.00	0.00	0.00	20%	0.00	0.00	66%	0.11	0.11	1	1	0.60			0.00
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Grocery	2014	2054	0.00	0.00	0.00	0.00	62%	0.00	0.00	107%	0.23	0.19	10	5	0.25			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Grocery	2014	2054	0.00	0.00	0.00	0.00	73%	0.00	0.00	117%	1.49	0.39	69	10	0.04			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Grocery	2014	2054	0.01	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.01	0.00
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Grocery	2014	2054	0.01	0.01	0.00	0.00	9%	0.00	0.00	9%	0.04	0.04	0	0	2.55			0.00
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Grocery	2014	2054	0.01	0.01	0.00	0.00	11%	0.00	0.00	11%	0.07	0.05	0	0	1.62			0.00
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Grocery	2014	2054	0.01	0.01	0.00	0.00	20%	0.00	0.00	16%	0.05	0.05	0	0	1.39			0.00
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Grocery	2014	2054	0.01	0.00	0.00	0.00	26%	0.00	0.00	21%	0.10	0.06	0	0	0.87			0.00
Opt-Out/Ex	2000	2003	EMS - Chiller	Grocery	2014	2054	0.01	0.00	0.00	0.00	33%	0.00	0.00	23%	0.09	0.07	1	0	0.69			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Grocery	2014	2054	0.01	0.00	0.00	0.00	38%	0.00	0.00	28%	0.15	0.08	0	0	0.58			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Grocery	2014	2054	0.00	0.00	0.00	0.00	50%	0.00	0.00	40%	0.30	0.13	0	0	0.35			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Grocery	2014	2054	0.00	0.00	0.00	0.00	51%	0.00	0.00	41%	4.68	0.20	7	0	0.02			0.00
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Grocery	2014	2054	0.00	0.00	0.00	0.00	51%	0.00	0.00	41%	50270.28	0.20	316,012	0	0.00			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Grocery	2014	2054	0.29	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.29	0.19	0.00
Opt-Out/Ex	2100	2113	Ceiling/roof Insulation - DX	Grocery	2014	2054	0.29	0.19	0.00	0.00	0%	0.00	0.00	0%	0.04	0.04	0	0	3.08			0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Grocery	2014	2054	0.22	0.14	0.07	0.07	23%	0.04	0.04	23%	0.04	0.04	0	0	2.67			0.07
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Grocery	2014	2054	0.21	0.13	0.02	0.08	28%	0.01	0.05	28%	0.10	0.05	0	0	0.84			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Grocery	2014	2054	0.19	0.12	0.02	0.10	34%	0.01	0.06	34%	0.14	0.06	0	0	0.62			0.00
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Grocery	2014	2054	0.19	0.12	0.00	0.10	35%	0.00	0.06	34%	0.12	0.07	1	0	0.42			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Grocery	2014	2054	0.18	0.12	0.00	0.10	36%	0.00	0.06	34%	0.14	0.07	1	0	0.37			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Grocery	2014	2054	0.17	0.12	0.01	0.12	40%	0.01	0.07	38%	0.29	0.09	0	0	0.36			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Grocery	2014	2054	0.17	0.12	0.00	0.12	40%	0.00	0.07	38%	0.84	0.09	5	0	0.07			0.00
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Grocery	2014	2054	0.17	0.11	0.00	0.12	41%	0.00	0.07	39%	1.63	0.11	2	0	0.05			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	Grocery	2014	2054	0.17	0.11	0.00	0.12	41%	0.00	0.07	39%	2.04	0.11	13	0	0.03			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Grocery	2014	2054	0.17	0.11	0.00	0.12	42%	0.00	0.08	40%	3.93	0.20	6	0	0.02			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Grocery	2014	2054	0.03	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.02	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	2014	2054	0.02	0.01	0.00	0.00	12%	0.00	0.00	12%	0.03	0.03	0	0	3.06			0.00
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Grocery	2014	2054	0.01	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.01	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Grocery	2014	2054	0.28	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.06	0.00
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Grocery	2014	2054	0.19	0.06	0.09	0.09	31%	0.00	0.00	7%	0.03	0.03	1	1	1.61			0.09
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Grocery	2014	2054	0.19	0.05	0.00	0.09	32%	0.00	0.01	9%	0.07	0.04	0	1	1.09			0.00
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Grocery	2014	2054	0.16	0.04	0.03	0.12	42%	0.01	0.02	28%	1.37	0.34	3	2	0.06			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Grocery	2014	2054	0.28	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.06	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Grocery	2014	2054	0.25	0.06	0.03	0.03	10%	0.00	0.00	3%	0.02	0.02	0	0	1.98			0.03
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Grocery	2014	2054	0.21	0.04	0.04	0.06	23%	0.02	0.02	28%	1.04	0.58	2	2	0.08			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Grocery	2014	2054	1.40	0.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.40	0.22	0.00
Opt-Out/Ex	4000	4007	Efficient compressor motor	Grocery	2014	2054	1.39	0.22	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	3.52			0.00
Opt-Out/Ex	4000	4011	Demand Hot Gas Defrost	Grocery	2014	2054	1.36	0.22	0.03	0.04	3%	0.01	0.01	3%	0.02	0.02	0	0	3.25			0.03
Opt-Out/Ex	4000	4009	Floating head pressure controls	Grocery	2014	2054	1.36	0.22	0.00	0.04	3%	0.00	0.01	3%	0.02	0.02	0	0	2.94			0.00
Opt-Out/Ex	4000	4006	Electronically commutated evaporator fan motor	Grocery	2014	2054	1.26	0.21	0.10	0.14	10%	0.01	0.01	6%	0.02	0.02	0	0	2.65			0.10
Opt-Out/Ex	4000	4013	Anti-sweat (humidistat) controls	Grocery	2014	2054	1.24	0.21	0.02	0.16	11%	0.00	0.02	7%	0.04	0.02	1	0	1.30			0.02
Opt-Out/Ex	4000	4002	Strip curtains for walk-ins (built-up)	Grocery	2014	2054	1.19	0.20	0.05	0.20	15%	0.01	0.02	10%	0.04	0.03	0	0	1.29			0.05
Opt-Out/Ex	4000	4014	Freezer-Cooler Replacement Gaskets	Grocery	2014	2054	1.15	0.19	0.04	0.25	18%	0.01	0.03	13%	0.06	0.03	0	0	0.90			0.00
Opt-Out/Ex	4000	4018	Oversized Air Cooled Condenser	Grocery	2014	2054	1.10	0.19	0.05	0.29	21%	0.01	0.04	17%	0.08	0.04	0	0	0.82			0.00
Opt-Out/Ex	4000	4001	High-efficiency fan motors	Grocery	2014	2054	1.06	0.18	0.04	0.33	24%	0.01	0.04	20%	0.11	0.05	1	0	0.65			0.00
Opt-Out/Ex	4000	4004	Night covers for display cases	Grocery	2014	2054	1.00	0.18	0.06	0.39	28%	0.00	0.04	20%	0.07	0.05	N/A	0	0.59			0.00
Opt-Out/Ex	4000	4008	Compressor VSD retrofit	Grocery	2014	2054	0.94	0.18	0.06	0.46	33%	0.01	0.05	22%	0.10	0.06	1	1	0.53			0.00
Opt-Out/Ex	4000	4010	Refrigeration Commissioning	Grocery	2014	2054	0.94	0.18	0.00	0.46	33%	0.00	0.05	22%	0.18	0.06	1	1	0.27			0.00
Opt-Out/Ex	4000	4005	Evaporator fan controller for MT walk-ins	Grocery	2014	2054	0.93	0.17	0.00	0.46	33%	0.00	0.05	22%	0.25	0.06	3	1	0.24			0.00
Opt-Out/Ex	4000	4017	Multiplex Compressor System	Grocery	2014	2054	0.92	0.17	0.02	0.48	34%	0.00	0.05	23%	0.27	0.07	2	1	0.23			0.00
Opt-Out/Ex	4000	4016	LED Display Lighting	Grocery	2014	2054	0.84	0.16	0.07	0.55	40%	0.01	0.06	29%	0.45	0.12	3	1	0.12			0.00
Opt-Out/Ex	4000	4015	High R-Value Glass Doors	Grocery	2014	2054	0.83	0.16	0.01	0.57	40%	0.00	0.07	30%	2.02	0.16	13	1	0.03			0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Grocery	2014	2054	0.16	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.03	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	Grocery	2014	2054	0.16	0.02	0.00	0.00	3%	0.00	0.00	3%	0.00	0.00	0	0	159.64			0.00
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Grocery	2014	2054	0.15	0.02	0.00	0.01	4%	0.00	0.00	4%	0.01	0.00	0	0	3.72			0.00
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	Grocery	2014	2054	0.14	0.02	0.01	0.01	9%	0.00	0.00	9%	0.03	0.02	0	0	2.17			0.01
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	Grocery	2014	2054	0.14	0.02	0.00	0.02	11%	0.00	0.00	11%	0.07	0.03	0	0	0.83			0.00
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Grocery	2014	2054	0.14	0.02	0.00	0.02	11%	0.00	0.00	11%	0.09	0.03	1	0	0.65			0.00
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Grocery	2014	2054	0.14	0.02	0.00	0.02	11%	0.00	0.00	11%	0.09	0.03	1	0	0.62			0.00
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Grocery	2014	2054	0.14	0.02	0.00	0.02	11%	0.00	0.00	11%	0.24	0.03	1	0	0.24			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Grocery	2014	2054	0.14	0.02	0.00	0.02	11%	0.00	0.00	11%	0.29	0.03	2	0	0.20			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Grocery	2014	2054	0.14	0.02	0.00	0.02	12%	0.00	0.00	12%	0.34	0.04	2	0	0.16			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Grocery	2014	2054	0.14	0.02	0.00	0.02	13%	0.00	0.00	13%	0.65	0.11	4	1	0.08			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Grocery	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	45%	0.00	0.00	23%	0.03	0.03	0	0	1.80			0.00
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Grocery	2014	2054	0.00	0.00	0.00	0.00	63%	0.00	0.00	41%	0.06	0.04	0	0	0.90			0.00
Opt-Out/Ex	5100	5100	Base Laptop PC	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Grocery	2014	2054	0.00	0.00	0.00	0.00	19%	0.00	0.00	19%	0.02	0.02	0	0	2.52			0.00
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	2.48	0.22	14	1	0.02			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Grocery	2014	2054	0.00	0.00	0.00	0.00	56%	0.00	0.00	56%	0.00	0.00	0	0	20.00			0.00
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Grocery	2014	2054	0.00	0.00	0.00	0.00	73%	0.00	0.00	65%	0.05	0.01	1	0	0.93			0.00
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Grocery	2014	2054	0.00	0.00	0.00	0.00	76%	0.00	0.00	67%	0.52	0.03	3	0	0.10			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Grocery	2014	2054	0.00	0.00	0.00	0.00	20%	0.00	0.00	20%	0.02	0.02	0	0	2.86			0.00
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Grocery	2014	2054	0.00	0.00	0.00	0.00	31%	0.00	0.00	26%	0.19	0.08	2	1	0.24			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Grocery	2014	2054	0.00	0.00	0.00	0.00	36%	0.00	0.00	27%	0.53	0.15	12	1	0.08			0.00
Opt-Out/Ex	5400	5400	Base Copier	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Grocery	2014	2054	0.00	0.00	0.00	0.00	20%	0.00	0.00	20%	0.00	0.00	0	0	13.56			0.00
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	31%	0.00	0.00	26%	0.24	0.09	3	1	0.20			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Grocery	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	4.20			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	36%	0.64	0.30	7	2	0.07			0.00
Opt-Out/Ex	5600	5600	Base Printer	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Grocery	2014	2054	0.00	0.00	0.00	0.00	35%	0.00	0.00	35%	0.00	0.00	0	0	19.30			0.00
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	53%	0.00	0.00	44%	0.14	0.05	2	0	0.34			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Grocery	2014	2054	0.00	0.00	0.00	0.00	10%	0.00	0.00	10%	0.00	0.00	0	0	67.16			0.00
Opt-Out/Ex	5700	5702	Data Center Best Practices	Grocery	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	0.00	0.00	0	0	27.34			0.00
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Grocery	2014	2054	0.00	0.00	0.00	0.00	26%	0.00	0.00	26%	0.00	0.00	0	0	14.18			0.00
Opt-Out/Ex	6000	6000	Base Water Heating	Grocery	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Grocery	2014	2054	0.03	0.00	0.00	0.00	5%	0.00	0.00	5%	0.03	0.03	0	0	1.99			0.00
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Grocery	2014	2054	0.03	0.00	0.00	0.00	7%	0.00	0.00	7%	0.06	0.04	0	0	1.07			0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Grocery	2014	2054	0.01	0.00	0.01	0.02	55%	0.00	0.00	55%	0.07	0.07	0	0	0.82			0.00
Opt-Out/Ex	6000	6004	Tankless Water Heater	Grocery	2014	2054	0.01	0.00	0.00	0.02	59%	0.00	0.00	59%	0.19	0.07	1	0	0.36			0.00
Opt-Out/Ex	6000	6008	Solar Water Heater	Grocery	2014	2054	0.01	0.00	0.00	0.02	65%	0.00	0.00	65%	0.23	0.09	1	1	0.31			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Grocery	2014	2054	0.01	0.00	0.00	0.02	66%	0.00	0.00	66%	0.26	0.09	2	1	0.25			0.00
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Grocery	2014	2054	0.01	0.00	0.00	0.02	66%	0.00	0.00	66%	0.28	0.09	2	1	0.23			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Grocery	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Grocery	2014	2054	0.03	0.00	0.01	0.01	16%	0.00	0.00	8%	0.03	0.03	0	0	1.83			0.01
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Grocery	2014	2054	0.02	0.00	0.00	0.01	25%	0.00	0.00	12%	0.05	0.03	1	0	1.00			0.00
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Grocery	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	23%	0.43	0.43	5	5	0.11			0.00
Opt-Out/Ex	7200	7200	Base Oven	Grocery	2014	2054	0.04	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.00	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Grocery	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00
Opt-Out/Ex	7400	7400	Base Steamer	Grocery	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00
Opt-Out/Ex	7400	7401	Efficient Steamer	Grocery	2014	2054	0.02	0.00	0.05	0.05	69%	0.01	0.01	69%	0.06	0.06	0	0	0.98			0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	2014	2054	0.00	0.00	0.00	0.00	6%	0.00	0.00	0%	0.04	0.04	N/A	N/A	1.19			0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Grocery	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Grocery	2014	2054	0.36	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.36	0.06	0.00
Opt-Out/Ex	9500	9501	Xmisc	Grocery	2014	2054	0.36	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Warehouse	2020	2054	2.87	0.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.87	0.51	0.00
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Warehouse	2020	2054	2.64	0.47	0.24	0.24	8%	0.04	0.04	8%	0.02	0.02	0	0	2.64			0.24
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Warehouse	2020	2054	2.59	0.46	0.04	0.28	10%	0.00	0.05	9%	0.03	0.02	0	0	1.54			0.04
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	2020	2054	2.27	0.41	0.32	0.60	21%	0.06	0.10	20%	0.05	0.03	0	0	1.21			0.32
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Warehouse	2020	2054	2.10	0.38	0.17	0.77	27%	0.02	0.13	25%	0.05	0.04	0	0	1.18			0.17
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Warehouse	2020	2054	2.04	0.38	0.06	0.83	29%	0.00	0.13	26%	0.09	0.04	2	0	0.54			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Warehouse	2020	2054	1.71	0.32	0.33	1.16	40%	0.06	0.19	37%	0.28	0.11	2	1	0.22			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Warehouse	2020	2054	1.57	0.30	0.15	1.31	46%	0.03	0.21	42%	0.24	0.12	1	1	0.27			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Warehouse	2020	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Warehouse	2020	2054	0.02	0.00	0.00	0.00	10%	0.00	0.00	10%	0.03	0.03	0	0	2.04			0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Warehouse	2020	2054	0.02	0.00	0.00	0.00	12%	0.00	0.00	11%	0.03	0.03	0	0	1.45			0.00
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Warehouse	2020	2054	0.02	0.00	0.00	0.00	18%	0.00	0.00	16%	0.05	0.04	0	0	1.27			0.00
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	2020	2054	0.01	0.00	0.00	0.01	29%	0.00	0.00	27%	0.06	0.05	0	0	0.89			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Warehouse	2020	2054	0.01	0.00	0.00	0.01	32%	0.00	0.00	30%	0.23	0.07	1	0	0.27			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Warehouse	2020	2054	0.01	0.00	0.00	0.01	38%	0.00	0.00	36%	0.29	0.10	2	1	0.22			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Warehouse	2020	2054	0.01	0.00	0.00	0.01	40%	0.00	0.00	36%	0.19	0.10	4	1	0.26			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Warehouse	2014	2054	0.00	0.00	0.00	0.00	10%	0.00	0.00	5%	0.00	0.00	0	0	15.20			0.00
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Warehouse	2014	2054	0.00	0.00	0.00	0.00	17%	0.00	0.00	10%	0.03	0.01	0	0	2.04			0.00
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Warehouse	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	19%	0.10	0.05	1	0	0.53			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Warehouse	2014	2054	0.00	0.00	0.00	0.00	31%	0.00	0.00	20%	0.12	0.06	3	1	0.40			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Warehouse	2020	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Warehouse	2020	2054	0.09	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.02	0.00
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Warehouse	2020	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Warehouse	2020	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Warehouse	2020	2054	0.09	0.02	0.03	0.03	28%	0.01	0.01	28%	0.06	0.06	0	0	0.89			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Warehouse	2020	2054	0.15	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.15	0.03	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Warehouse	2020	2054	0.11	0.02	0.04	0.04	26%	0.01	0.01	26%	0.05	0.05	0	0	1.18			0.04
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Warehouse	2014	2054	1.73	0.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.73	0.31	0.00
Opt-Out/Ex	1800	1801	T5 (240W) (base metal halide)	Warehouse	2014	2054	1.15	0.20	0.59	0.59	34%	0.10	0.10	34%	0.01	0.01	0	0	6.53			0.59
Opt-Out/Ex	1800	1806	Occupancy Sensor, High Bay T5	Warehouse	2014	2054	1.11	0.20	0.04	0.62	36%	0.00	0.11	34%	0.03	0.01	1	0	1.67			0.04
Opt-Out/Ex	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Warehouse	2014	2054	1.03	0.19	0.08	0.71	41%	0.01	0.12	38%	0.05	0.02	0	0	1.32			0.08
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Warehouse	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Warehouse	2014	2054	0.00	0.00	0.01	0.01	69%	0.00	0.00	69%	0.05	0.05	0	0	1.04			0.01
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Warehouse	2014	2054	0.64	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.64	0.01	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Warehouse	2014	2054	0.52	0.00	0.13	0.13	20%	0.01	0.01	66%	0.06	0.06	1	1	1.12			0.13
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Warehouse	2014	2054	0.25	0.00	0.27	0.40	61%	0.00	0.01	108%	0.11	0.10	8	4	0.49			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Warehouse	2014	2054	0.18	0.00	0.07	0.47	73%	0.00	0.01	118%	0.74	0.20	61	9	0.07			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Warehouse	2014	2054	1.46	1.38	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.46	1.38	0.00
Opt-Out/Ex	2100	2113	Ceiling/roof Insulation - DX	Warehouse	2014	2054	1.39	1.32	0.07	0.07	5%	0.06	0.06	5%	0.05	0.05	0	0	2.52			0.07
Opt-Out/Ex	2100	2107	Cool Roof - DX	Warehouse	2014	2054	1.29	1.22	0.10	0.17	12%	0.10	0.16	12%	0.12	0.09	0	0	0.86			0.00
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Warehouse	2014	2054	1.27	1.22	0.02	0.19	13%	0.01	0.17	12%	0.15	0.10	1	0	0.36			0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Warehouse	2014	2054	0.97	0.94	0.29	0.48	33%	0.28	0.44	32%	0.48	0.33	0	0	0.26			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Warehouse	2014	2054	0.92	0.88	0.06	0.54	37%	0.06	0.50	36%	3.07	0.62	3	1	0.04			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Warehouse	2014	2054	0.88	0.85	0.04	0.58	40%	0.04	0.54	39%	2.74	0.77	3	1	0.04			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Warehouse	2014	2054	0.85	0.84	0.03	0.60	42%	0.01	0.54	39%	2.02	0.82	7	1	0.03			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Warehouse	2014	2054	0.85	0.84	0.00	0.61	42%	0.00	0.55	39%	5.62	0.83	6	1	0.02			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Warehouse	2014	2054	0.85	0.84	0.00	0.61	42%	0.00	0.55	39%	3.71	0.84	14	1	0.02			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Warehouse	2014	2054	0.79	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.79	0.75	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Warehouse	2014	2054	0.69	0.66	0.10	0.10	12%	0.09	0.09	12%	0.05	0.05	0	0	2.61			0.10
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Warehouse	2014	2054	0.04	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.04	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Warehouse	2014	2054	0.82	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.82	0.25	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Warehouse	2014	2054	0.81	0.25	0.01	0.01	2%	0.00	0.00	2%	0.05	0.05	0	0	1.83			0.01
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Warehouse	2014	2054	0.57	0.23	0.24	0.25	31%	0.02	0.02	9%	0.04	0.04	0	0	1.63			0.24
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Warehouse	2014	2054	0.56	0.23	0.01	0.26	31%	0.00	0.03	11%	1.85	0.09	3	1	0.05			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Warehouse	2014	2054	0.27	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.27	0.08	0.00
Opt-Out/Ex	3200	3202	Variable Speed Drive Control, 40 HP	Warehouse	2014	2054	0.19	0.08	0.08	0.08	29%	0.01	0.01	8%	0.02	0.02	0	0	3.18			0.08
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Warehouse	2014	2054	0.17	0.08	0.02	0.10	36%	0.00	0.01	9%	0.06	0.03	1	0	0.78			0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Warehouse	2014	2054	0.17	0.07	0.00	0.10	37%	0.00	0.01	11%	2.02	0.07	4	1	0.05			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Warehouse	2014	2054	1.96	0.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.96	0.37	0.00
Opt-Out/Ex	4000	4018	Oversized Air Cooled Condenser	Warehouse	2014	2054	1.88	0.36	0.08	0.08	4%	0.02	0.02	4%	0.03	0.03	0	0	2.16			0.08
Opt-Out/Ex	4000	4010	Refrigeration Commissioning	Warehouse	2014	2054	1.87	0.35	0.01	0.09	5%	0.00	0.02	5%	0.06	0.03	0	0	0.84			0.00
Opt-Out/Ex	4000	4006	Electronically commutated evaporator fan motor	Warehouse	2014	2054	1.76	0.34	0.11	0.20	10%	0.01	0.03	8%	0.11	0.07	1	1	0.56			0.00
Opt-Out/Ex	4000	4005	Evaporator fan controller for MT walk-ins	Warehouse	2014	2054	1.75	0.34	0.01	0.21	11%	0.00	0.03	8%	0.19	0.08	2	1	0.32			0.00
Opt-Out/Ex	4000	4002	Strip curtains for walk-ins (built-up)	Warehouse	2014	2054	1.68	0.33	0.07	0.28	14%	0.01	0.04	11%	0.19	0.10	1	1	0.28			0.00
Opt-Out/Ex	4000	4001	High-efficiency fan motors	Warehouse	2014	2054	1.63	0.32	0.05	0.33	17%	0.01	0.05	14%	0.47	0.16	2	1	0.16			0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Warehouse	2014	2054	0.52	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.52	0.10	0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Warehouse	2014	2054	0.52	0.10	0.01	0.01	2%	0.00	0.00	2%	0.16	0.16	1	1	0.32			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Warehouse	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Warehouse	2014	2054	0.07	0.02	0.05	0.05	44%	0.00	0.00	23%	0.01	0.01	0	0	3.53			0.05
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Warehouse	2014	2054	0.05	0.01	0.02	0.08	63%	0.00	0.01	41%	0.03	0.02	0	0	1.82			0.02
Opt-Out/Ex	5100	5100	Base Laptop PC	Warehouse	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Warehouse	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	5.03			0.00
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Warehouse	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.24	0.11	7	1	0.04			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Warehouse	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Warehouse	2014	2054	0.01	0.00	0.01	0.01	56%	0.00	0.00	56%	0.00	0.00	0	0	40.01			0.01
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Warehouse	2014	2054	0.01	0.00	0.00	0.02	70%	0.00	0.00	63%	0.02	0.01	0	0	2.18			0.00
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Warehouse	2014	2054	0.01	0.00	0.00	0.02	73%	0.00	0.00	66%	0.23	0.01	1	0	0.22			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Warehouse	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Warehouse	2014	2054	0.02	0.00	0.00	0.00	20%	0.00	0.00	20%	0.01	0.01	0	0	5.71			0.00
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Warehouse	2014	2054	0.02	0.00	0.00	0.00	21%	0.00	0.00	21%	0.08	0.01	1	0	0.57			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Warehouse	2014	2054	0.01	0.00	0.00	0.01	27%	0.00	0.00	22%	0.24	0.06	5	0	0.18			0.00
Opt-Out/Ex	5400	5400	Base Copier	Warehouse	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Warehouse	2014	2054	0.03	0.00	0.00	0.00	12%	0.00	0.00	12%	0.00	0.00	0	0	29.97			0.00
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Warehouse	2014	2054	0.03	0.00	0.00	0.00	15%	0.00	0.00	14%	0.09	0.02	1	0	0.52			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Warehouse	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Warehouse	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	8.40			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Warehouse	2014	2054	0.00	0.00	0.00	0.00	32%	0.00	0.00	29%	0.24	0.06	3	0	0.20			0.00
Opt-Out/Ex	5600	5600	Base Printer	Warehouse	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Warehouse	2014	2054	0.02	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00	0.00	0	0	38.61			0.01
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Warehouse	2014	2054	0.02	0.00	0.00	0.01	41%	0.00	0.00	38%	0.05	0.01	1	0	0.93			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Warehouse	2014	2054	0.37	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.37	0.06	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Warehouse	2014	2054	0.33	0.05	0.04	0.04	10%	0.01	0.01	10%	0.00	0.00	0	0	107.17			0.04
Opt-Out/Ex	5700	5702	Data Center Best Practices	Warehouse	2014	2054	0.29	0.05	0.04	0.08	21%	0.01	0.01	21%	0.00	0.00	0	0	43.63			0.04

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Warehouse	2014	2054	0.27	0.05	0.02	0.09	26%	0.00	0.02	26%	0.00	0.00	0	0	22.63			0.02
Opt-Out/Ex	6000	6000	Base Water Heating	Warehouse	2014	2054	0.14	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.14	0.02	0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Warehouse	2014	2054	0.13	0.02	0.01	0.01	7%	0.00	0.00	7%	0.25	0.25	2	2	0.23			0.00
Opt-Out/Ex	6000	6007	Heat Trap	Warehouse	2014	2054	0.12	0.02	0.01	0.02	11%	0.00	0.00	11%	0.45	0.33	3	2	0.13			0.00
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Warehouse	2014	2054	0.12	0.02	0.00	0.02	13%	0.00	0.00	13%	0.93	0.42	6	3	0.07			0.00
Opt-Out/Ex	6000	6004	Tankless Water Heater	Warehouse	2014	2054	0.11	0.02	0.01	0.03	20%	0.00	0.00	20%	1.42	0.75	9	5	0.05			0.00
Opt-Out/Ex	6000	6008	Solar Water Heater	Warehouse	2014	2054	0.07	0.01	0.04	0.07	47%	0.01	0.01	47%	1.66	1.28	11	8	0.04			0.00
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Warehouse	2014	2054	0.07	0.01	0.00	0.07	48%	0.00	0.01	48%	2.58	1.31	16	8	0.03			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Warehouse	2014	2054	0.07	0.01	0.00	0.07	49%	0.00	0.01	49%	2.88	1.34	18	9	0.02			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Warehouse	2014	2054	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Warehouse	2014	2054	0.08	0.02	0.02	0.02	16%	0.00	0.00	8%	0.03	0.03	0	0	1.83			0.02
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Warehouse	2014	2054	0.07	0.02	0.01	0.02	25%	0.00	0.00	12%	0.05	0.03	1	0	1.00			0.01
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Warehouse	2014	2054	0.00	0.00	0.00	0.00	45%	0.00	0.00	23%	0.44	0.44	5	5	0.11			0.00
Opt-Out/Ex	7200	7200	Base Oven	Warehouse	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Warehouse	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00
Opt-Out/Ex	7400	7400	Base Steamer	Warehouse	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Warehouse	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Warehouse	2014	2054	0.01	0.00	0.00	0.00	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	1.65			0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Warehouse	2014	2054	0.11	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Warehouse	2014	2054	2.24	0.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.24	0.42	0.00
Opt-Out/Ex	9500	9501	Xmisc	Warehouse	2014	2054	2.24	0.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	School	2020	2054	3.64	0.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.64	0.49	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	School	2020	2054	3.60	0.49	0.04	0.04	1%	0.00	0.00	1%	0.02	0.02	0	0	2.35			0.04
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	School	2020	2054	3.23	0.44	0.37	0.41	11%	0.05	0.05	11%	0.03	0.03	0	0	2.27			0.37
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	School	2020	2054	2.99	0.41	0.24	0.65	18%	0.03	0.08	16%	0.03	0.03	0	0	1.83			0.24
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	School	2020	2054	2.87	0.40	0.12	0.77	21%	0.02	0.09	19%	0.20	0.05	1	0	0.31			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	School	2020	2054	2.41	0.33	0.46	1.23	34%	0.06	0.16	32%	0.35	0.17	3	1	0.20			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	School	2020	2054	2.28	0.33	0.13	1.36	37%	0.00	0.16	33%	0.18	0.17	5	1	0.27			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	School	2020	2054	2.08	0.30	0.19	1.56	43%	0.03	0.19	38%	0.31	0.18	2	2	0.22			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	School	2020	2054	0.23	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.23	0.03	0.00
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	School	2020	2054	0.21	0.03	0.02	0.02	10%	0.00	0.00	10%	0.03	0.03	0	0	1.81			0.02
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	School	2020	2054	0.20	0.03	0.00	0.03	11%	0.00	0.00	11%	0.03	0.03	0	0	1.43			0.00
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	School	2020	2054	0.19	0.03	0.02	0.04	18%	0.00	0.00	16%	0.05	0.04	0	0	1.24			0.02
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	School	2020	2054	0.16	0.02	0.02	0.06	28%	0.00	0.01	27%	0.08	0.05	1	0	0.79			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	School	2020	2054	0.16	0.02	0.01	0.07	32%	0.00	0.01	30%	0.32	0.08	2	1	0.22			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	School	2020	2054	0.14	0.02	0.01	0.09	38%	0.00	0.01	36%	0.40	0.13	3	1	0.17			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	School	2020	2054	0.13	0.02	0.01	0.09	41%	0.00	0.01	37%	0.33	0.15	10	1	0.15			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	School	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	School	2014	2054	0.02	0.00	0.00	0.00	6%	0.00	0.00	3%	0.02	0.02	0	0	1.94			0.00
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	School	2014	2054	0.02	0.00	0.00	0.00	14%	0.00	0.00	11%	0.11	0.07	1	1	0.54			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	School	2014	2054	0.01	0.00	0.00	0.01	37%	0.00	0.00	25%	0.20	0.16	6	2	0.25			0.00
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	School	2014	2054	0.01	0.00	0.00	0.01	41%	0.00	0.00	29%	0.37	0.18	3	2	0.17			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	School	2020	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	School	2020	2054	0.02	0.00	0.03	0.03	67%	0.00	0.00	67%	0.00	0.00	0	0	14.72			0.03
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	School	2020	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	School	2020	2054	0.01	0.00	0.01	0.01	64%	0.00	0.00	64%	0.00	0.00	0	0	12.22			0.01
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	School	2020	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	School	2020	2054	0.01	0.00	0.01	0.01	54%	0.00	0.00	54%	0.01	0.01	0	0	8.43			0.01
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	School	2020	2054	0.25	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.25	0.03	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	School	2020	2054	0.18	0.02	0.07	0.07	28%	0.01	0.01	28%	0.08	0.08	1	1	0.77			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	School	2020	2054	0.32	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.04	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	School	2020	2054	0.23	0.03	0.08	0.08	26%	0.01	0.01	26%	0.06	0.06	0	0	1.02			0.08
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	School	2014	2054	1.31	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.31	0.18	0.00
Opt-Out/Ex	1800	1801	T5 (240W) (base metal halide)	School	2014	2054	0.87	0.12	0.44	0.44	34%	0.06	0.06	34%	0.02	0.02	0	0	3.45			0.44
Opt-Out/Ex	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	School	2014	2054	0.80	0.11	0.06	0.51	39%	0.01	0.07	38%	0.03	0.02	0	0	2.18			0.06
Opt-Out/Ex	1800	1806	Occupancy Sensor, High Bay T5	School	2014	2054	0.78	0.11	0.03	0.53	41%	0.00	0.07	38%	0.06	0.02	2	0	0.83			0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	School	2014	2054	0.04	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.00	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	School	2014	2054	0.02	0.00	0.02	0.02	55%	0.00	0.00	55%	0.04	0.04	0	0	1.31			0.02
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	School	2014	2054	1.30	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.30	0.05	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	School	2014	2054	1.19	0.04	0.11	0.11	9%	0.01	0.01	28%	0.05	0.05	0	0	1.37			0.11
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	School	2014	2054	0.57	0.01	0.62	0.73	56%	0.02	0.04	75%	0.11	0.10	3	2	0.52			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	School	2014	2054	0.40	0.01	0.17	0.90	69%	0.01	0.04	87%	0.72	0.22	20	4	0.08			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	School	2014	2054	3.60	1.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.60	1.85	0.00
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	School	2014	2054	3.29	1.69	0.31	0.31	9%	0.16	0.16	9%	0.07	0.07	0	0	1.34			0.31
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	School	2014	2054	3.29	1.69	0.00	0.31	9%	0.00	0.16	9%	0.12	0.08	0	0	0.87			0.00
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	School	2014	2054	3.28	1.69	0.01	0.32	9%	0.00	0.16	9%	0.09	0.08	0	0	0.80			0.00
Opt-Out/Ex	2000	2003	EMS - Chiller	School	2014	2054	3.11	1.66	0.18	0.49	14%	0.03	0.19	10%	0.14	0.10	1	0	0.44			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	School	2014	2054	3.05	1.63	0.06	0.55	15%	0.03	0.22	12%	0.23	0.11	0	0	0.35			0.00
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	School	2014	2054	3.03	1.62	0.02	0.57	16%	0.01	0.22	12%	0.26	0.12	1	0	0.30			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	School	2014	2054	2.53	1.37	0.50	1.07	30%	0.26	0.48	26%	0.38	0.24	1	1	0.26			0.00
Opt-Out/Ex	2000	2008	New Economizer - Chiller	School	2014	2054	2.26	1.33	0.27	1.34	37%	0.04	0.52	28%	0.43	0.28	3	1	0.13			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	School	2014	2054	2.25	1.32	0.01	1.35	38%	0.01	0.53	29%	6.18	0.34	12	1	0.01			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	School	2014	2054	1.83	0.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.83	0.94	0.00

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	2100	2113	Ceiling/roof Insulation - DX	School	2014	2054	1.83	0.94	0.00	0.00	0%	0.00	0.00	0%	0.03	0.03	0	0	3.47			0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	School	2014	2054	1.41	0.72	0.42	0.42	23%	0.22	0.22	23%	0.07	0.06	0	0	1.41			0.42
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	School	2014	2054	1.41	0.72	0.00	0.42	23%	0.00	0.22	23%	0.19	0.07	1	0	0.29			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	School	2014	2054	1.40	0.72	0.01	0.44	24%	0.01	0.22	24%	0.29	0.07	1	0	0.28			0.00
Opt-Out/Ex	2100	2108	Optimize Controls - DX	School	2014	2054	1.38	0.71	0.02	0.46	25%	0.00	0.23	24%	0.20	0.08	1	0	0.25			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	School	2014	2054	1.30	0.68	0.07	0.53	29%	0.04	0.26	28%	0.42	0.12	1	0	0.23			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	School	2014	2054	1.29	0.68	0.01	0.54	30%	0.00	0.27	28%	0.26	0.13	2	0	0.21			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	School	2014	2054	1.27	0.66	0.02	0.57	31%	0.01	0.28	29%	0.47	0.14	1	0	0.17			0.00
Opt-Out/Ex	2100	2111	Economizer Repair - DX	School	2014	2054	1.24	0.65	0.02	0.59	32%	0.02	0.30	31%	1.04	0.18	1	0	0.07			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	School	2014	2054	1.24	0.64	0.01	0.60	33%	0.00	0.30	32%	1.56	0.19	11	0	0.04			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	School	2014	2054	1.22	0.64	0.01	0.61	33%	0.01	0.30	32%	5.79	0.33	11	1	0.01			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	School	2014	2054	1.83	0.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.83	0.94	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	2014	2054	1.61	0.83	0.23	0.23	12%	0.12	0.12	12%	0.05	0.05	0	0	1.68			0.23
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	School	2014	2054	1.83	0.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.83	0.94	0.00
Opt-Out/Ex	2300	2301	HE PTAC, EER=9.6, 1 ton	School	2014	2054	1.59	0.81	0.25	0.25	14%	0.13	0.13	14%	0.14	0.14	0	0	0.66			0.00
Opt-Out/Ex	2300	2302	Occupancy Sensor (hotels)	School	2014	2054	1.34	0.66	0.25	0.50	27%	0.16	0.29	30%	0.43	0.28	1	0	0.20			0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	School	2014	2054	0.87	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.87	0.17	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	School	2014	2054	0.85	0.17	0.01	0.01	2%	0.00	0.00	2%	0.06	0.06	0	0	1.19			0.01
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	School	2014	2054	0.72	0.12	0.13	0.14	16%	0.04	0.05	28%	1.75	1.57	5	5	0.05			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	School	2014	2054	2.32	0.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.32	0.45	0.00
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	School	2014	2054	2.00	0.40	0.33	0.33	14%	0.06	0.06	13%	0.06	0.06	0	0	1.16			0.33
Opt-Out/Ex	3100	3103	Air Handler Optimization, 15 HP	School	2014	2054	1.80	0.39	0.19	0.52	22%	0.01	0.07	15%	0.06	0.06	1	0	0.78			0.00
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	School	2014	2054	1.79	0.38	0.02	0.54	23%	0.00	0.07	16%	0.16	0.06	1	0	0.46			0.00
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	School	2014	2054	1.69	0.35	0.09	0.63	27%	0.03	0.10	23%	0.58	0.14	2	1	0.15			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	School	2014	2054	1.44	0.26	0.25	0.88	38%	0.09	0.19	42%	2.36	0.78	7	4	0.03			0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	School	2014	2054	0.97	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.97	0.19	0.00
Opt-Out/Ex	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	School	2014	2054	0.97	0.19	0.00	0.00	0%	0.00	0.00	0%	0.03	0.03	0	0	2.64			0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	School	2014	2054	0.87	0.18	0.09	0.10	10%	0.00	0.01	3%	0.05	0.05	1	1	0.90			0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	School	2014	2054	0.74	0.14	0.13	0.23	23%	0.05	0.05	27%	1.91	1.12	5	5	0.04			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	School	2014	2054	1.31	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.31	0.18	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	School	2014	2054	1.21	0.17	0.10	0.10	7%	0.01	0.01	7%	0.00	0.00	0	0	19.34			0.10
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	School	2014	2054	1.20	0.17	0.02	0.11	9%	0.00	0.02	9%	0.00	0.00	0	0	11.35			0.02
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	School	2014	2054	1.18	0.16	0.01	0.13	10%	0.00	0.02	10%	0.01	0.00	0	0	7.09			0.01
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	School	2014	2054	1.15	0.16	0.03	0.16	12%	0.00	0.02	12%	0.01	0.01	0	0	4.26			0.03
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	School	2014	2054	1.14	0.16	0.01	0.17	13%	0.00	0.02	13%	0.02	0.01	0	0	2.76			0.01
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	School	2014	2054	1.13	0.16	0.01	0.18	14%	0.00	0.02	14%	0.02	0.01	0	0	2.29			0.01
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	School	2014	2054	1.11	0.15	0.02	0.20	15%	0.00	0.03	15%	0.04	0.01	0	0	1.51			0.02
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	School	2014	2054	1.11	0.15	0.00	0.20	15%	0.00	0.03	15%	0.34	0.01	2	0	0.17			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	School	2014	2054	1.11	0.15	0.00	0.20	16%	0.00	0.03	16%	0.39	0.02	3	0	0.14			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	School	2014	2054	1.10	0.15	0.00	0.21	16%	0.00	0.03	16%	1.26	0.03	9	0	0.04			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	School	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	School	2014	2054	0.02	0.00	0.01	0.01	45%	0.00	0.00	23%	0.01	0.01	0	0	3.12			0.01
Opt-Out/Ex	5000	5002	Energy Star or Better PC	School	2014	2054	0.01	0.00	0.01	0.02	61%	0.00	0.00	39%	0.03	0.02	0	0	1.60			0.01
Opt-Out/Ex	5100	5100	Base Laptop PC	School	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	School	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	4.25			0.00
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	School	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.38	0.12	16	1	0.04			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	School	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	School	2014	2054	0.01	0.00	0.01	0.01	56%	0.00	0.00	56%	0.00	0.00	0	0	33.82			0.01
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	School	2014	2054	0.01	0.00	0.00	0.02	68%	0.00	0.00	62%	0.02	0.00	0	0	2.14			0.00
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	School	2014	2054	0.01	0.00	0.00	0.02	71%	0.00	0.00	65%	0.24	0.01	3	0	0.20			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	School	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	School	2014	2054	0.01	0.00	0.00	0.00	18%	0.00	0.00	18%	0.01	0.01	0	0	4.98			0.00
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	School	2014	2054	0.01	0.00	0.00	0.00	20%	0.00	0.00	19%	0.09	0.02	2	0	0.51			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	School	2014	2054	0.01	0.00	0.00	0.00	26%	0.00	0.00	20%	0.26	0.07	12	1	0.17			0.00
Opt-Out/Ex	5400	5400	Base Copier	School	2014	2054	0.04	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.00	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	School	2014	2054	0.03	0.00	0.00	0.00	6%	0.00	0.00	6%	0.00	0.00	0	0	27.18			0.00
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	School	2014	2054	0.03	0.00	0.00	0.00	10%	0.00	0.00	8%	0.10	0.04	2	1	0.49			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	School	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	School	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	7.12			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	School	2014	2054	0.00	0.00	0.00	0.00	39%	0.00	0.00	32%	0.30	0.11	7	2	0.16			0.00
Opt-Out/Ex	5600	5600	Base Printer	School	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	School	2014	2054	0.02	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00	0.00	0	0	32.71			0.01
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	School	2014	2054	0.01	0.00	0.00	0.01	47%	0.00	0.00	41%	0.06	0.02	1	0	0.72			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	School	2014	2054	1.55	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.55	0.13	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	School	2014	2054	1.39	0.12	0.15	0.15	10%	0.01	0.01	10%	0.00	0.00	0	0	111.69			0.15
Opt-Out/Ex	5700	5702	Data Center Best Practices	School	2014	2054	1.21	0.10	0.18	0.33	21%	0.02	0.03	21%	0.00	0.00	0	0	45.47			0.18
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	School	2014	2054	1.15	0.10	0.07	0.40	26%	0.01	0.03	26%	0.00	0.00	0	0	23.58			0.07
Opt-Out/Ex	6000	6000	Base Water Heating	School	2014	2054	0.54	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.54	0.04	0.00
Opt-Out/Ex	6000	6007	Heat Trap	School	2014	2054	0.51	0.04	0.03	0.03	5%	0.00	0.00	5%	0.05	0.05	1	1	1.16			0.03
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	School	2014	2054	0.50	0.04	0.01	0.04	7%	0.00	0.00	7%	0.10	0.06	1	1	0.61			0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	School	2014	2054	0.45	0.04	0.05	0.09	16%	0.00	0.01	16%	0.10	0.08	1	1	0.57			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	School	2014	2054	0.44	0.03	0.02	0.10	19%	0.00	0.01	19%	0.13	0.09	2	1	0.47			0.00
Opt-Out/Ex	6000	6004	Tankless Water Heater	School	2014	2054	0.40	0.03	0.03	0.14	25%	0.00	0.01	25%	0.17	0.11	2	1	0.38			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	6000	6008	Solar Water Heater	School	2014	2054	0.37	0.03	0.03	0.16	31%	0.00	0.01	31%	0.20	0.13	3	2	0.32			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	School	2014	2054	0.12	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.01	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	School	2014	2054	0.11	0.01	0.01	0.01	10%	0.00	0.00	5%	0.02	0.02	0	0	2.28			0.01
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	School	2014	2054	0.10	0.01	0.01	0.02	16%	0.00	0.00	8%	0.04	0.03	1	1	1.21			0.01
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	School	2014	2054	0.00	0.00	0.00	0.00	30%	0.00	0.00	15%	0.34	0.34	8	8	0.14			0.00
Opt-Out/Ex	7200	7200	Base Oven	School	2014	2054	0.34	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.34	0.03	0.00
Opt-Out/Ex	7200	7201	Convection Oven	School	2014	2054	0.26	0.02	0.08	0.08	23%	0.01	0.01	23%	0.31	0.31	4	4	0.19			0.00
Opt-Out/Ex	7300	7300	Base Fryer	School	2014	2054	0.04	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.00	0.00
Opt-Out/Ex	7400	7400	Base Steamer	School	2014	2054	0.26	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.26	0.02	0.00
Opt-Out/Ex	7400	7401	Efficient Steamer	School	2014	2054	0.10	0.01	0.17	0.17	63%	0.01	0.01	63%	0.11	0.11	1	1	0.55			0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	School	2014	2054	0.24	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.24	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	School	2014	2054	1.71	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.71	0.15	0.00
Opt-Out/Ex	9500	9501	Xmisc	School	2014	2054	1.71	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Health	2020	2054	16.35	2.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.35	2.49	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Health	2020	2054	16.01	2.46	0.34	0.34	2%	0.02	0.02	1%	0.03	0.03	0	0	1.71			0.34
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Health	2020	2054	14.79	2.32	1.23	1.57	10%	0.15	0.17	7%	0.04	0.04	0	0	1.44			1.23
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Health	2020	2054	13.25	2.08	1.54	3.11	19%	0.23	0.40	16%	0.05	0.04	0	0	1.13			1.54
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Health	2020	2054	13.09	2.06	0.16	3.26	20%	0.02	0.43	17%	1.07	0.09	7	1	0.05			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Health	2020	2054	12.44	2.04	0.66	3.92	24%	0.02	0.45	18%	0.14	0.10	4	1	0.34			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Health	2020	2054	10.43	1.73	2.00	5.92	36%	0.30	0.76	30%	0.53	0.25	3	2	0.11			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Health	2020	2054	9.54	1.60	0.89	6.81	42%	0.14	0.89	36%	0.44	0.27	3	2	0.14			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Health	2020	2054	1.97	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.97	0.30	0.00
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Health	2020	2054	1.77	0.27	0.21	0.21	10%	0.03	0.03	10%	0.05	0.05	0	0	0.98			0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Health	2020	2054	1.73	0.27	0.04	0.24	12%	0.00	0.03	11%	0.06	0.06	1	0	0.73			0.00
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Health	2020	2054	1.60	0.25	0.13	0.37	19%	0.02	0.05	17%	0.10	0.07	1	1	0.61			0.00
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Health	2020	2054	1.39	0.22	0.20	0.58	29%	0.03	0.08	27%	0.13	0.09	1	1	0.43			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Health	2020	2054	1.33	0.21	0.07	0.64	33%	0.01	0.09	30%	0.46	0.13	3	1	0.13			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Health	2020	2054	1.21	0.19	0.11	0.76	38%	0.02	0.11	36%	0.59	0.20	4	1	0.10			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Health	2020	2054	1.15	0.19	0.06	0.82	42%	0.00	0.11	37%	0.33	0.21	9	2	0.15			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Health	2014	2054	0.53	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.53	0.08	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Health	2014	2054	0.49	0.08	0.04	0.04	7%	0.00	0.00	4%	0.01	0.01	0	0	4.60			0.04
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Health	2014	2054	0.45	0.07	0.04	0.08	14%	0.00	0.01	9%	0.12	0.06	1	1	0.51			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Health	2014	2054	0.38	0.07	0.07	0.15	28%	0.00	0.01	12%	0.15	0.11	4	2	0.31			0.00
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Health	2014	2054	0.34	0.06	0.04	0.19	35%	0.01	0.02	20%	0.24	0.14	2	2	0.22			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Health	2020	2054	1.07	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.07	0.16	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Health	2020	2054	0.18	0.03	0.88	0.88	83%	0.13	0.13	83%	0.01	0.01	0	0	4.24			0.88
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Health	2020	2054	0.38	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.38	0.06	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Health	2020	2054	0.07	0.01	0.31	0.31	82%	0.05	0.05	82%	0.02	0.02	0	0	3.58			0.31
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Health	2020	2054	0.28	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.04	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Health	2020	2054	0.07	0.01	0.21	0.21	75%	0.03	0.03	75%	0.02	0.02	0	0	2.67			0.21
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Health	2020	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.01	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Health	2020	2054	0.06	0.01	0.02	0.02	28%	0.00	0.00	28%	0.13	0.13	1	1	0.43			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Health	2020	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Health	2020	2054	0.08	0.01	0.03	0.03	26%	0.00	0.00	26%	0.10	0.10	1	1	0.58			0.00
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Health	2014	2054	0.45	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.07	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Health	2014	2054	0.39	0.06	0.05	0.05	12%	0.01	0.01	12%	0.04	0.04	0	0	1.42			0.05
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Health	2014	2054	1.86	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.86	0.02	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Health	2014	2054	1.81	0.02	0.05	0.05	3%	0.00	0.00	9%	0.09	0.09	3	3	0.69			0.00
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Health	2014	2054	0.87	0.01	0.94	0.99	53%	0.01	0.01	60%	0.19	0.18	20	17	0.29			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Health	2014	2054	0.61	0.00	0.26	1.25	67%	0.00	0.01	72%	1.22	0.40	145	39	0.05			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Health	2014	2054	32.62	17.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	32.62	17.93	0.00
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Health	2014	2054	29.84	16.40	2.78	2.78	9%	1.53	1.53	9%	0.05	0.05	0	0	2.18			2.78
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Health	2014	2054	29.77	16.38	0.07	2.85	9%	0.02	1.55	9%	0.05	0.05	0	0	1.42			0.07
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Health	2014	2054	29.67	16.33	0.10	2.95	9%	0.05	1.60	9%	0.07	0.05	0	0	1.41			0.10
Opt-Out/Ex	2000	2003	EMS - Chiller	Health	2014	2054	26.85	15.97	2.82	5.77	18%	0.36	1.96	11%	0.08	0.06	1	0	0.80			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Health	2014	2054	21.75	13.16	5.10	10.87	33%	2.80	4.77	27%	0.25	0.15	0	0	0.40			0.00
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Health	2014	2054	19.29	12.84	2.46	13.34	41%	0.32	5.09	28%	0.19	0.16	2	0	0.28			0.00
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Health	2014	2054	19.26	12.83	0.03	13.37	41%	0.02	5.10	28%	0.41	0.16	1	0	0.19			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Health	2014	2054	19.20	12.80	0.05	13.42	41%	0.03	5.13	29%	1.07	0.16	2	0	0.07			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Health	2014	2054	18.99	12.68	0.22	13.64	42%	0.12	5.25	29%	4.17	0.22	8	1	0.02			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Health	2014	2054	32.62	17.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	32.62	17.93	0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Health	2014	2054	25.12	13.81	7.50	7.50	23%	4.12	4.12	23%	0.04	0.04	0	0	2.29			7.50
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Health	2014	2054	24.66	13.75	0.46	7.96	24%	0.06	4.18	23%	0.10	0.04	1	0	0.47			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Health	2014	2054	24.15	13.68	0.51	8.47	26%	0.07	4.25	24%	0.13	0.05	1	0	0.41			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Health	2014	2054	22.68	12.87	1.47	9.94	30%	0.81	5.06	28%	0.27	0.08	0	0	0.36			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Health	2014	2054	22.56	12.81	0.12	10.06	31%	0.07	5.12	29%	0.35	0.09	1	0	0.23			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Health	2014	2054	22.49	12.77	0.07	10.13	31%	0.04	5.16	29%	0.91	0.09	2	0	0.09			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Health	2014	2054	22.24	12.63	0.25	10.38	32%	0.14	5.30	30%	3.56	0.17	6	0	0.02			0.00
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Health	2014	2054	22.24	12.63	0.00	10.38	32%	0.00	5.30	30%	32188.47	0.18	38,820	0	0.00			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	Health	2014	2054	22.24	12.63	0.00	10.38	32%	0.00	5.30	30%	37474.44	0.22	291,636	0	0.00			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Health	2014	2054	18.27	10.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.27	10.04	0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	2014	2054	16.01	8.80	2.26	2.26	12%	1.24	1.24	12%	0.03	0.03	0	0	2.68			2.26
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Health	2014	2054	18.27	10.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.27	10.04	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Health	2014	2054	6.05	1.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.05	1.23	0.00
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Health	2014	2054	4.15	1.14	1.90	1.90	31%	0.09	0.09	7%	0.02	0.02	0	0	2.94			1.90
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Health	2014	2054	4.08	1.12	0.07	1.97	33%	0.01	0.11	9%	0.04	0.02	0	0	1.95			0.07
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Health	2014	2054	3.69	0.96	0.39	2.36	39%	0.16	0.27	22%	1.21	0.22	3	2	0.07			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Health	2014	2054	21.03	4.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	21.03	4.27	0.00
Opt-Out/Ex	3100	3102	Variable Speed Drive Control, 15 HP	Health	2014	2054	14.44	3.95	6.59	6.59	31%	0.32	0.32	7%	0.01	0.01	0	0	8.50			6.59
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Health	2014	2054	14.41	3.94	0.03	6.63	32%	0.01	0.33	8%	0.02	0.01	0	0	3.44			0.03
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Health	2014	2054	12.31	3.56	2.10	8.72	41%	0.38	0.71	17%	0.04	0.01	0	0	1.86			2.10
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	Health	2014	2054	11.51	3.23	0.80	9.52	45%	0.33	1.04	24%	0.38	0.04	1	0	0.25			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	Health	2014	2054	10.41	2.78	1.10	10.62	50%	0.46	1.49	35%	1.49	0.19	4	1	0.06			0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Health	2014	2054	22.35	4.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	22.35	4.54	0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Health	2014	2054	20.22	3.65	2.13	2.13	10%	0.89	0.89	20%	0.82	0.82	2	2	0.10			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Health	2014	2054	3.02	0.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.02	0.44	0.00
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Health	2014	2054	2.98	0.43	0.05	0.05	2%	0.01	0.01	2%	0.01	0.01	0	0	7.59			0.05
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Health	2014	2054	2.90	0.42	0.07	0.12	4%	0.01	0.02	4%	0.02	0.02	0	0	2.53			0.07
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Health	2014	2054	2.80	0.41	0.10	0.22	7%	0.01	0.03	7%	0.02	0.02	0	0	2.42			0.10
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Health	2014	2054	2.68	0.39	0.12	0.34	11%	0.02	0.05	11%	0.07	0.04	0	0	0.86			0.00
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Health	2014	2054	2.68	0.39	0.00	0.34	11%	0.00	0.05	11%	0.41	0.04	3	0	0.14			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Health	2014	2054	2.67	0.39	0.01	0.35	12%	0.00	0.05	12%	0.47	0.05	3	0	0.11			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Health	2014	2054	0.44	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.06	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Health	2014	2054	0.24	0.05	0.21	0.21	46%	0.01	0.01	23%	0.03	0.03	0	0	1.79			0.21
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Health	2014	2054	0.16	0.04	0.08	0.28	63%	0.01	0.03	40%	0.06	0.03	0	0	0.86			0.00
Opt-Out/Ex	5100	5100	Base Laptop PC	Health	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Health	2014	2054	0.04	0.01	0.01	0.01	19%	0.00	0.00	19%	0.02	0.02	0	0	2.42			0.01
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Health	2014	2054	0.04	0.01	0.00	0.01	21%	0.00	0.00	21%	2.48	0.22	17	2	0.02			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Health	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Health	2014	2054	0.10	0.01	0.02	0.02	20%	0.00	0.00	20%	0.02	0.02	0	0	2.77			0.02
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Health	2014	2054	0.10	0.01	0.01	0.03	24%	0.00	0.00	22%	0.16	0.04	2	0	0.28			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Health	2014	2054	0.09	0.01	0.01	0.04	30%	0.00	0.00	23%	0.46	0.13	13	1	0.09			0.00
Opt-Out/Ex	5400	5400	Base Copier	Health	2014	2054	0.22	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.22	0.03	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Health	2014	2054	0.18	0.03	0.04	0.04	17%	0.01	0.01	17%	0.00	0.00	0	0	13.66			0.04
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Health	2014	2054	0.17	0.03	0.01	0.05	22%	0.00	0.01	19%	0.20	0.05	3	0	0.24			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Health	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Health	2014	2054	0.03	0.00	0.01	0.01	25%	0.00	0.00	25%	0.01	0.01	0	0	4.05			0.01
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Health	2014	2054	0.03	0.00	0.00	0.02	36%	0.00	0.00	31%	0.48	0.15	7	1	0.10			0.00
Opt-Out/Ex	5600	5600	Base Printer	Health	2014	2054	0.18	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.02	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Health	2014	2054	0.11	0.02	0.06	0.06	35%	0.01	0.01	35%	0.00	0.00	0	0	18.62			0.06
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Health	2014	2054	0.10	0.02	0.02	0.08	44%	0.00	0.01	40%	0.10	0.02	1	0	0.45			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Health	2014	2054	7.01	1.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.01	1.00	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Health	2014	2054	6.31	0.90	0.70	0.70	10%	0.10	0.10	10%	0.00	0.00	0	0	64.41			0.70
Opt-Out/Ex	5700	5702	Data Center Best Practices	Health	2014	2054	5.50	0.78	0.80	1.50	21%	0.11	0.21	21%	0.00	0.00	0	0	26.22			0.80
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Health	2014	2054	5.19	0.74	0.31	1.81	26%	0.04	0.26	26%	0.00	0.00	0	0	13.60			0.31
Opt-Out/Ex	6000	6000	Base Water Heating	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Health	2014	2054	0.74	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.74	0.10	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Health	2014	2054	0.62	0.10	0.12	0.12	16%	0.01	0.01	8%	0.03	0.03	0	0	1.83			0.12
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Health	2014	2054	0.56	0.09	0.07	0.19	25%	0.00	0.01	12%	0.05	0.03	1	0	1.00			0.00
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Health	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Health	2014	2054	0.01	0.00	0.01	0.01	47%	0.00	0.00	23%	0.43	0.43	6	6	0.11			0.00
Opt-Out/Ex	7200	7200	Base Oven	Health	2014	2054	0.39	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.07	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Health	2014	2054	0.66	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.66	0.13	0.00
Opt-Out/Ex	7300	7301	Efficient Fryer	Health	2014	2054	0.62	0.12	0.04	0.04	6%	0.01	0.01	6%	31.87	31.87	167	167	0.00			0.00
Opt-Out/Ex	7400	7400	Base Steamer	Health	2014	2054	0.47	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.47	0.09	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Health	2014	2054	50.19	6.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	50.19	6.99	0.00
Opt-Out/Ex	9500	9501	Xmisc	Health	2014	2054	50.19	6.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Lodging	2020	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Lodging	2020	2054	0.02	0.00	0.00	0.00	10%	0.00	0.00	10%	0.02	0.02	0	0	2.54			0.00
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Lodging	2020	2054	0.02	0.00	0.00	0.00	17%	0.00	0.00	17%	0.09	0.05	1	0	0.67			0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Lodging	2020	2054	0.02	0.00	0.00	0.00	17%	0.00	0.00	17%	0.04	0.05	1	0	1.07			0.00
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Lodging	2020	2054	0.02	0.00	0.00	0.01	23%	0.00	0.00	22%	0.07	0.05	1	0	0.90			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Lodging	2020	2054	0.02	0.00	0.00	0.01	36%	0.00	0.00	34%	0.33	0.15	2	1	0.21			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Lodging	2020	2054	0.02	0.00	0.00	0.01	38%	0.00	0.00	35%	0.17	0.15	5	1	0.29			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Lodging	2020	2054	0.01	0.00	0.00	0.01	43%	0.00	0.00	40%	0.29	0.17	2	1	0.25			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Lodging	2020	2054	0.11	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.01	0.00
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Lodging	2020	2054	0.09	0.01	0.01	0.01	10%	0.00	0.00	10%	0.03	0.03	0	0	2.00			0.01
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Lodging	2020	2054	0.08	0.01	0.01	0.02	22%	0.00	0.00	22%	0.06	0.05	0	0	0.96			0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Lodging	2020	2054	0.08	0.01	0.00	0.02	22%	0.00	0.00	22%	0.07	0.05	1	0	0.72			0.00
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Lodging	2020	2054	0.08	0.01	0.01	0.03	28%	0.00	0.00	27%	0.10	0.06	1	0	0.61			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Lodging	2020	2054	0.07	0.01	0.00	0.03	32%	0.00	0.00	30%	0.29	0.08	2	1	0.25			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2014

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Lodging	2020	2054	0.07	0.01	0.01	0.04	37%	0.00	0.01	36%	0.37	0.13	3	1	0.19			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Lodging	2020	2054	0.06	0.01	0.00	0.04	39%	0.00	0.01	36%	0.31	0.14	9	1	0.16			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Lodging	2014	2054	0.00	0.00	0.00	0.00	3%	0.00	0.00	1%	0.02	0.02	0	0	2.44			0.00
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Lodging	2014	2054	0.00	0.00	0.00	0.00	13%	0.00	0.00	11%	0.10	0.08	1	1	0.61			0.00
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Lodging	2014	2054	0.00	0.00	0.00	0.00	30%	0.00	0.00	27%	0.23	0.16	2	1	0.26			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Lodging	2014	2054	0.00	0.00	0.00	0.00	35%	0.00	0.00	28%	0.21	0.17	6	1	0.23			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Lodging	2020	2054	0.16	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.02	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Lodging	2020	2054	0.03	0.00	0.13	0.13	81%	0.02	0.02	81%	0.01	0.01	0	0	7.93			0.13
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Lodging	2020	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Lodging	2020	2054	0.01	0.00	0.05	0.05	79%	0.01	0.01	79%	0.01	0.01	0	0	6.68			0.05
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Lodging	2020	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Lodging	2020	2054	0.01	0.00	0.03	0.03	71%	0.00	0.00	71%	0.01	0.01	0	0	4.92			0.03
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Lodging	2020	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Lodging	2020	2054	0.02	0.00	0.01	0.01	28%	0.00	0.00	28%	0.09	0.09	1	1	0.72			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Lodging	2020	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Lodging	2020	2054	0.03	0.00	0.01	0.01	26%	0.00	0.00	26%	0.07	0.07	0	0	0.95			0.00
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Lodging	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00
Opt-Out/Ex	1800	1801	T5 (240W) (base metal halide)	Lodging	2014	2054	0.06	0.01	0.03	0.03	34%	0.00	0.00	34%	0.02	0.02	0	0	3.57			0.03
Opt-Out/Ex	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Lodging	2014	2054	0.05	0.01	0.00	0.03	39%	0.00	0.00	38%	0.05	0.02	0	0	1.25			0.00
Opt-Out/Ex	1800	1806	Occupancy Sensor, High Bay T5	Lodging	2014	2054	0.05	0.01	0.00	0.03	41%	0.00	0.00	38%	0.05	0.02	2	0	0.94			0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Lodging	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Lodging	2014	2054	0.01	0.00	0.01	0.01	44%	0.00	0.00	44%	0.03	0.03	0	0	1.81			0.01
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Lodging	2014	2054	0.12	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.00	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Lodging	2014	2054	0.10	0.00	0.02	0.02	20%	0.00	0.00	66%	0.06	0.06	2	2	1.10			0.02
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Lodging	2014	2054	0.05	0.00	0.05	0.08	61%	0.00	0.00	108%	0.11	0.10	13	6	0.49			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Lodging	2014	2054	0.03	0.00	0.01	0.09	73%	0.00	0.00	118%	0.74	0.20	95	14	0.07			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Lodging	2014	2054	0.43	0.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.43	0.26	0.00
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Lodging	2014	2054	0.41	0.25	0.02	0.02	4%	0.01	0.01	4%	0.03	0.03	0	0	2.71			0.02
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Lodging	2014	2054	0.37	0.23	0.03	0.05	12%	0.02	0.03	12%	0.05	0.04	0	0	2.05			0.03
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Lodging	2014	2054	0.37	0.23	0.00	0.05	12%	0.00	0.03	12%	0.08	0.04	0	0	1.35			0.00
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Lodging	2014	2054	0.37	0.23	0.00	0.05	12%	0.00	0.03	12%	0.06	0.05	0	0	1.20			0.00
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Lodging	2014	2054	0.24	0.21	0.14	0.19	44%	0.02	0.05	20%	0.06	0.06	0	0	0.89			0.00
Opt-Out/Ex	2000	2003	EMS - Chiller	Lodging	2014	2054	0.22	0.20	0.02	0.21	49%	0.00	0.05	21%	0.13	0.06	1	0	0.47			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Lodging	2014	2054	0.18	0.18	0.04	0.25	59%	0.02	0.08	30%	0.42	0.12	1	0	0.24			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Lodging	2014	2054	0.17	0.18	0.00	0.25	59%	0.00	0.08	30%	1.89	0.13	3	0	0.04			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Lodging	2014	2054	0.17	0.18	0.00	0.25	59%	0.00	0.08	31%	4.50	0.14	7	0	0.02			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Lodging	2014	2054	1.09	0.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.09	0.65	0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Lodging	2014	2054	1.03	0.62	0.06	0.06	5%	0.03	0.03	5%	0.03	0.03	0	0	2.65			0.06
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Lodging	2014	2054	0.79	0.48	0.24	0.29	27%	0.14	0.18	27%	0.05	0.04	0	0	2.12			0.24
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Lodging	2014	2054	0.78	0.48	0.01	0.31	28%	0.00	0.18	27%	0.08	0.04	1	0	0.59			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Lodging	2014	2054	0.76	0.47	0.02	0.33	30%	0.00	0.18	28%	0.14	0.05	1	0	0.36			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Lodging	2014	2054	0.71	0.44	0.05	0.38	35%	0.03	0.21	32%	0.31	0.08	1	0	0.33			0.00
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Lodging	2014	2054	0.71	0.44	0.00	0.38	35%	0.00	0.21	32%	0.88	0.09	1	0	0.09			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Lodging	2014	2054	0.70	0.44	0.00	0.38	35%	0.00	0.21	33%	1.20	0.09	2	0	0.07			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	Lodging	2014	2054	0.69	0.44	0.01	0.39	36%	0.00	0.21	33%	1.04	0.12	7	0	0.05			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Lodging	2014	2054	0.69	0.44	0.00	0.39	36%	0.00	0.21	33%	1.75	0.12	12	0	0.03			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Lodging	2014	2054	0.69	0.43	0.01	0.40	37%	0.00	0.22	34%	2.93	0.17	5	0	0.03			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Lodging	2014	2054	0.84	0.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.84	0.51	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	2014	2054	0.74	0.44	0.10	0.10	12%	0.06	0.06	12%	0.03	0.03	0	0	3.65			0.10
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Lodging	2014	2054	0.18	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.11	0.00
Opt-Out/Ex	2300	2301	HE PTAC, EER=9.6, 1 ton	Lodging	2014	2054	0.15	0.09	0.02	0.02	14%	0.01	0.01	14%	0.08	0.08	0	0	1.24			0.02
Opt-Out/Ex	2300	2302	Occupancy Sensor (hotels)	Lodging	2014	2054	0.13	0.07	0.02	0.05	26%	0.02	0.03	30%	0.26	0.16	0	0	0.36			0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Lodging	2014	2054	0.71	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.71	0.15	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Lodging	2014	2054	0.70	0.15	0.01	0.01	2%	0.00	0.00	2%	0.03	0.03	0	0	2.37			0.01
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Lodging	2014	2054	0.60	0.11	0.10	0.11	15%	0.04	0.04	30%	0.97	0.86	2	2	0.09			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Lodging	2014	2054	0.12	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.03	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Lodging	2014	2054	0.11	0.03	0.01	0.01	10%	0.00	0.00	3%	0.02	0.02	0	0	2.00			0.01
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Lodging	2014	2054	0.09	0.02	0.02	0.03	23%	0.01	0.01	28%	1.06	0.59	2	2	0.08			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Lodging	2014	2054	0.40	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.40	0.06	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	Lodging	2014	2054	0.38	0.06	0.02	0.02	4%	0.00	0.00	4%	0.00	0.00	0	0	69.59			0.02
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Lodging	2014	2054	0.38	0.06	0.00	0.02	6%	0.00	0.00	6%	0.00	0.00	0	0	26.70			0.00
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	Lodging	2014	2054	0.37	0.05	0.01	0.03	7%	0.00	0.00	7%	0.00	0.00	0	0	19.92			0.01
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	Lodging	2014	2054	0.37	0.05	0.00	0.03	8%	0.00	0.00	8%	0.01	0.00	0	0	7.93			0.00
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Lodging	2014	2054	0.37	0.05	0.00	0.03	8%	0.00	0.00	8%	0.01	0.00	0	0	6.30			0.00
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Lodging	2014	2054	0.37	0.05	0.00	0.04	9%	0.00	0.01	9%	0.02	0.00	0	0	2.34			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Lodging	2014	2054	0.37	0.05	0.00	0.04	9%	0.00	0.01	9%	0.33	0.00	2	0	0.17			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Lodging	2014	2054	0.36	0.05	0.00	0.04	10%	0.00	0.01	10%	0.35	0.03	2	0	0.14			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Lodging	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Lodging	2014	2054	0.02	0.00	0.01	0.01	21%	0.00	0.00	21%	0.01	0.01	0	0	3.72			0.01
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Lodging	2014	2054	0.01	0.00	0.01	0.01	58%	0.00	0.00	39%	0.02	0.02	0	0	2.85			0.01
Opt-Out/Ex	5100	5100	Base Laptop PC	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Lodging	2014	2054	0.00	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	4.87			0.00
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Lodging	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	1.24	0.11	8	1	0.04			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Lodging	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Lodging	2014	2054	0.00	0.00	0.00	0.00	56%	0.00	0.00	56%	0.00	0.00	0	0	38.73			0.00
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Lodging	2014	2054	0.00	0.00	0.00	0.01	67%	0.00	0.00	61%	0.02	0.00	0	0	2.72			0.00
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Lodging	2014	2054	0.00	0.00	0.00	0.01	69%	0.00	0.00	64%	0.21	0.01	1	0	0.24			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Lodging	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Lodging	2014	2054	0.00	0.00	0.00	0.00	10%	0.00	0.00	10%	0.01	0.01	0	0	6.24			0.00
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Lodging	2014	2054	0.00	0.00	0.00	0.00	20%	0.00	0.00	15%	0.08	0.05	1	0	0.57			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Lodging	2014	2054	0.00	0.00	0.00	0.00	27%	0.00	0.00	17%	0.22	0.09	6	1	0.20			0.00
Opt-Out/Ex	5400	5400	Base Copier	Lodging	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Lodging	2014	2054	0.01	0.00	0.00	0.00	10%	0.00	0.00	10%	0.00	0.00	0	0	29.79			0.00
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Lodging	2014	2054	0.01	0.00	0.00	0.00	13%	0.00	0.00	12%	0.09	0.03	1	0	0.54			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Lodging	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	8.14			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Lodging	2014	2054	0.00	0.00	0.00	0.00	39%	0.00	0.00	32%	0.26	0.09	3	1	0.18			0.00
Opt-Out/Ex	5600	5600	Base Printer	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Lodging	2014	2054	0.00	0.00	0.00	0.00	35%	0.00	0.00	35%	0.00	0.00	0	0	37.40			0.00
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Lodging	2014	2054	0.00	0.00	0.00	0.00	47%	0.00	0.00	41%	0.06	0.02	1	0	0.84			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Lodging	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Lodging	2014	2054	0.10	0.02	0.01	0.01	10%	0.00	0.00	10%	0.00	0.00	0	0	103.65			0.01
Opt-Out/Ex	5700	5702	Data Center Best Practices	Lodging	2014	2054	0.09	0.01	0.01	0.02	21%	0.00	0.00	21%	0.00	0.00	0	0	42.20			0.01
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Lodging	2014	2054	0.08	0.01	0.01	0.03	26%	0.00	0.00	26%	0.00	0.00	0	0	21.88			0.01
Opt-Out/Ex	6000	6000	Base Water Heating	Lodging	2014	2054	0.18	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.02	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Lodging	2014	2054	0.17	0.02	0.01	0.01	5%	0.00	0.00	5%	0.01	0.01	0	0	4.25			0.01
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Lodging	2014	2054	0.15	0.02	0.02	0.03	18%	0.00	0.00	18%	0.02	0.02	0	0	3.18			0.02
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Lodging	2014	2054	0.14	0.02	0.01	0.04	21%	0.00	0.00	21%	0.03	0.02	0	0	2.18			0.01
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Lodging	2014	2054	0.14	0.02	0.00	0.04	22%	0.00	0.01	22%	0.03	0.02	0	0	1.90			0.00
Opt-Out/Ex	6000	6004	Tankless Water Heater	Lodging	2014	2054	0.13	0.02	0.01	0.05	28%	0.00	0.01	28%	0.05	0.03	0	0	1.35			0.01
Opt-Out/Ex	6000	6008	Solar Water Heater	Lodging	2014	2054	0.11	0.01	0.02	0.07	38%	0.00	0.01	38%	0.06	0.03	0	0	1.16			0.02
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Lodging	2014	2054	0.11	0.01	0.00	0.07	39%	0.00	0.01	39%	0.07	0.04	1	0	0.90			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Lodging	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Lodging	2014	2054	0.04	0.01	0.01	0.01	16%	0.00	0.00	8%	0.03	0.03	0	0	1.84			0.01
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Lodging	2014	2054	0.03	0.01	0.00	0.01	25%	0.00	0.00	12%	0.05	0.03	1	0	1.00			0.00
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Lodging	2014	2054	0.00	0.00	0.00	0.00	47%	0.00	0.00	23%	0.43	0.43	5	5	0.11			0.00
Opt-Out/Ex	7200	7200	Base Oven	Lodging	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Lodging	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	7400	7400	Base Steamer	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Lodging	2014	2054	0.07	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.00	0.00
Opt-Out/Ex	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	2014	2054	0.07	0.00	0.00	0.00	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	2.11			0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Lodging	2014	2054	0.06	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Lodging	2014	2054	0.79	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.79	0.13	0.00
Opt-Out/Ex	9500	9501	Xmisc	Lodging	2014	2054	0.79	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Data Centers	2020	2054	17.77	3.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.77	3.09	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Data Centers	2020	2054	17.71	3.09	0.05	0.05	0%	0.00	0.00	0%	0.01	0.01	0	0	4.01			0.05
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Data Centers	2020	2054	16.40	2.90	1.31	1.36	8%	0.18	0.19	6%	0.02	0.02	0	0	3.66			1.31
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Data Centers	2020	2054	14.73	2.61	1.67	3.03	17%	0.29	0.48	16%	0.03	0.02	0	0	2.11			1.67
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	2020	2054	13.37	2.37	1.36	4.40	25%	0.24	0.72	23%	0.08	0.04	0	0	0.74			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Data Centers	2020	2054	12.31	2.32	1.06	5.46	31%	0.05	0.77	25%	0.08	0.05	2	0	0.60			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Data Centers	2020	2054	10.33	1.98	1.98	7.44	42%	0.35	1.11	36%	0.34	0.13	2	1	0.19			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Data Centers	2020	2054	9.44	1.83	0.88	8.32	47%	0.15	1.27	41%	0.29	0.14	2	1	0.23			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Data Centers	2020	2054	0.30	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.30	0.05	0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Data Centers	2020	2054	0.30	0.05	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	2.33			0.00
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Data Centers	2020	2054	0.28	0.05	0.02	0.02	8%	0.00	0.00	6%	0.03	0.03	0	0	2.13			0.02
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Data Centers	2020	2054	0.25	0.04	0.03	0.05	17%	0.01	0.01	16%	0.03	0.03	0	0	1.66			0.03
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	2020	2054	0.22	0.04	0.03	0.08	28%	0.01	0.01	26%	0.07	0.05	0	0	0.80			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Data Centers	2020	2054	0.21	0.04	0.01	0.09	31%	0.00	0.02	30%	0.27	0.07	2	0	0.25			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Data Centers	2020	2054	0.19	0.04	0.02	0.11	37%	0.00	0.02	31%	0.16	0.08	3	1	0.31			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Data Centers	2020	2054	0.17	0.03	0.02	0.13	42%	0.00	0.02	37%	0.37	0.12	2	1	0.18			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Data Centers	2014	2054	0.65	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.65	0.11	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Data Centers	2014	2054	0.64	0.11	0.01	0.01	2%	0.00	0.00	1%	0.00	0.00	0	0	11.27			0.01
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Data Centers	2014	2054	0.59	0.11	0.05	0.06	9%	0.01	0.01	7%	0.04	0.03	0	0	1.69			0.05
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Data Centers	2014	2054	0.53	0.09	0.06	0.12	19%	0.01	0.02	16%	0.11	0.07	1	0	0.51			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Data Centers	2014	2054	0.46	0.09	0.07	0.19	30%	0.00	0.02	19%	0.15	0.10	3	1	0.32			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Data Centers	2020	2054	5.49	0.96	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.49	0.96	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Data Centers	2020	2054	1.08	0.19	4.41	4.41	80%	0.77	0.77	80%	0.01	0.01	0	0	8.50			4.41
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Data Centers	2020	2054	1.98	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.98	0.34	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Data Centers	2020	2054	0.42	0.07	1.56	1.56	79%	0.27	0.27	79%	0.01	0.01	0	0	7.16			1.56
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Data Centers	2020	2054	1.45	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.45	0.25	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Data Centers	2020	2054	0.42	0.07	1.03	1.03	71%	0.18	0.18	71%	0.01	0.01	0	0	5.27			1.03
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Data Centers	2020	2054	1.11	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.11	0.19	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Data Centers	2020	2054	0.80	0.14	0.31	0.31	28%	0.05	0.05	28%	0.07	0.07	0	0	0.75			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Data Centers	2020	2054	1.42	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.42	0.25	0.00

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Data Centers	2020	2054	1.05	0.18	0.37	0.37	26%	0.06	0.06	26%	0.06	0.06	0	0	1.00			0.37
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Data Centers	2014	2054	0.28	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.05	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Data Centers	2014	2054	0.16	0.03	0.12	0.12	44%	0.02	0.02	44%	0.03	0.03	0	0	1.61			0.12
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Data Centers	2014	2054	4.17	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.17	0.05	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Data Centers	2014	2054	2.80	0.02	1.37	1.37	33%	0.03	0.03	66%	0.04	0.04	2	2	1.63			1.37
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Data Centers	2014	2054	1.35	0.00	1.45	2.82	68%	0.02	0.05	101%	0.16	0.10	14	6	0.37			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Data Centers	2014	2054	0.96	0.00	0.38	3.21	77%	0.00	0.05	109%	1.07	0.22	104	14	0.05			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Data Centers	2014	2054	36.02	8.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	36.02	8.87	0.00
Opt-Out/Ex	2000	2010	Ceiling/roof Insulation - Chiller	Data Centers	2014	2054	35.86	8.83	0.16	0.16	0%	0.04	0.04	0%	0.00	0.00	0	0	20.15			0.16
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Data Centers	2014	2054	32.80	8.07	3.06	3.22	9%	0.75	0.79	9%	0.02	0.02	0	0	4.58			3.06
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Data Centers	2014	2054	32.57	8.05	0.23	3.45	10%	0.03	0.82	9%	0.02	0.02	0	0	3.34			0.23
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Data Centers	2014	2054	32.51	8.03	0.06	3.51	10%	0.01	0.83	9%	0.03	0.02	0	0	2.98			0.06
Opt-Out/Ex	2000	2003	EMS - Chiller	Data Centers	2014	2054	31.68	7.99	0.84	4.35	12%	0.05	0.88	10%	0.03	0.02	0	0	2.23			0.84
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Data Centers	2014	2054	29.39	7.86	2.29	6.63	18%	0.13	1.01	11%	0.03	0.02	1	0	1.76			2.29
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Data Centers	2014	2054	29.38	7.85	0.01	6.64	18%	0.00	1.01	11%	0.05	0.02	0	0	1.19			0.01
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Data Centers	2014	2054	23.80	6.48	5.58	12.22	34%	1.37	2.39	27%	0.09	0.05	0	0	0.84			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Data Centers	2014	2054	23.72	6.46	0.07	12.30	34%	0.02	2.40	27%	0.14	0.05	1	0	0.47			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Data Centers	2014	2054	23.65	6.44	0.07	12.37	34%	0.02	2.42	27%	1.13	0.06	5	0	0.06			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Data Centers	2014	2054	20.54	5.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	20.54	5.06	0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Data Centers	2014	2054	15.82	3.89	4.72	4.72	23%	1.16	1.16	23%	0.01	0.01	0	0	4.89			4.72
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Data Centers	2014	2054	15.47	3.74	0.34	5.07	25%	0.15	1.31	26%	0.04	0.02	0	0	1.56			0.34
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Data Centers	2014	2054	15.18	3.73	0.29	5.36	26%	0.02	1.33	26%	0.03	0.02	1	0	1.49			0.29
Opt-Out/Ex	2100	2109	Economizer - DX	Data Centers	2014	2054	13.35	3.62	1.83	7.19	35%	0.10	1.43	28%	0.04	0.02	1	0	1.27			1.83
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Data Centers	2014	2054	13.07	3.56	0.28	7.47	36%	0.07	1.50	30%	0.07	0.03	0	0	0.92			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Data Centers	2014	2054	12.43	3.52	0.64	8.11	39%	0.04	1.54	30%	0.06	0.03	1	0	0.89			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Data Centers	2014	2054	11.68	3.33	0.76	8.87	43%	0.19	1.72	34%	0.12	0.04	0	0	0.62			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Data Centers	2014	2054	11.67	3.33	0.00	8.87	43%	0.00	1.72	34%	0.12	0.04	2	0	0.45			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Data Centers	2014	2054	11.57	3.31	0.10	8.97	44%	0.02	1.75	35%	0.16	0.04	1	0	0.40			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Data Centers	2014	2054	11.50	3.29	0.07	9.04	44%	0.02	1.77	35%	1.33	0.05	5	0	0.05			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Data Centers	2014	2054	2.63	0.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.63	0.65	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Data Centers	2014	2054	2.31	0.57	0.33	0.33	12%	0.08	0.08	12%	0.01	0.01	0	0	6.85			0.33
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Data Centers	2014	2054	5.27	1.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.27	1.30	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Data Centers	2014	2054	5.19	1.28	0.09	0.09	2%	0.02	0.02	2%	0.02	0.02	0	0	4.50			0.09
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Data Centers	2014	2054	3.92	1.20	1.27	1.35	26%	0.08	0.10	8%	0.01	0.01	0	0	4.25			1.27
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Data Centers	2014	2054	3.69	1.10	0.23	1.58	30%	0.10	0.20	15%	0.55	0.09	1	1	0.16			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Data Centers	2014	2054	18.33	4.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.33	4.51	0.00
Opt-Out/Ex	3100	3102	Variable Speed Drive Control, 15 HP	Data Centers	2014	2054	13.84	4.23	4.48	4.48	24%	0.28	0.28	6%	0.00	0.00	0	0	15.63			4.48
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Data Centers	2014	2054	13.76	4.21	0.08	4.57	25%	0.02	0.30	7%	0.01	0.00	0	0	7.49			0.08
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Data Centers	2014	2054	12.86	4.01	0.90	5.47	30%	0.20	0.50	11%	0.02	0.01	0	0	3.30			0.90
Opt-Out/Ex	3100	3103	Air Handler Optimization, 15 HP	Data Centers	2014	2054	11.65	3.93	1.21	6.68	36%	0.08	0.58	13%	0.02	0.01	0	0	2.61			1.21
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	Data Centers	2014	2054	11.36	3.81	0.29	6.97	38%	0.13	0.70	16%	0.21	0.02	0	0	0.46			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	Data Centers	2014	2054	10.70	3.52	0.65	7.62	42%	0.29	0.99	22%	0.65	0.07	1	1	0.14			0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Data Centers	2014	2054	19.47	4.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.47	4.79	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Data Centers	2014	2054	17.63	4.68	1.84	1.84	9%	0.11	0.11	2%	0.01	0.01	0	0	3.71			1.84
Opt-Out/Ex	3200	3202	Variable Speed Drive Control, 40 HP	Data Centers	2014	2054	13.32	4.41	4.31	6.15	32%	0.27	0.38	8%	0.02	0.02	0	0	2.81			4.31
Opt-Out/Ex	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Data Centers	2014	2054	13.26	4.40	0.06	6.21	32%	0.01	0.40	8%	0.09	0.02	0	0	0.84			0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Data Centers	2014	2054	12.50	4.06	0.76	6.98	36%	0.34	0.74	15%	0.60	0.08	1	1	0.15			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Data Centers	2014	2054	3.79	0.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.79	0.71	0.00
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	Data Centers	2014	2054	3.79	0.71	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0	0	23.12			0.00
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Data Centers	2014	2054	3.72	0.70	0.07	0.07	2%	0.01	0.01	2%	0.00	0.00	0	0	22.18			0.07
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	Data Centers	2014	2054	3.72	0.70	0.00	0.07	2%	0.00	0.01	2%	0.01	0.00	0	0	9.26			0.00
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Data Centers	2014	2054	3.72	0.70	0.00	0.08	2%	0.00	0.01	2%	0.01	0.00	0	0	7.81			0.00
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Data Centers	2014	2054	3.71	0.70	0.00	0.08	2%	0.00	0.01	2%	0.01	0.00	0	0	7.48			0.00
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Data Centers	2014	2054	3.71	0.70	0.00	0.08	2%	0.00	0.02	2%	0.02	0.00	0	0	2.78			0.00
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Data Centers	2014	2054	3.71	0.70	0.00	0.08	2%	0.00	0.02	2%	0.31	0.00	2	0	0.20			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Data Centers	2014	2054	3.71	0.70	0.00	0.08	2%	0.00	0.02	2%	0.36	0.00	2	0	0.16			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Data Centers	2014	2054	3.71	0.70	0.00	0.08	2%	0.00	0.02	2%	8.40	0.04	45	0	0.01			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Data Centers	2014	2054	0.50	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.50	0.09	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Data Centers	2014	2054	0.28	0.07	0.22	0.22	44%	0.02	0.02	23%	0.02	0.02	0	0	3.01			0.22
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Data Centers	2014	2054	0.22	0.06	0.06	0.28	56%	0.01	0.03	35%	0.03	0.02	0	0	1.67			0.06
Opt-Out/Ex	5100	5100	Base Laptop PC	Data Centers	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Data Centers	2014	2054	0.03	0.01	0.01	0.01	19%	0.00	0.00	19%	0.01	0.01	0	0	4.36			0.01
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Data Centers	2014	2054	0.03	0.00	0.00	0.01	21%	0.00	0.00	21%	1.46	0.13	8	1	0.04			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Data Centers	2014	2054	0.21	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.21	0.04	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Data Centers	2014	2054	0.12	0.02	0.09	0.09	43%	0.02	0.02	43%	0.00	0.00	0	0	45.38			0.09
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Data Centers	2014	2054	0.10	0.02	0.01	0.10	50%	0.00	0.02	46%	0.01	0.00	0	0	3.50			0.01
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Data Centers	2014	2054	0.10	0.02	0.01	0.11	54%	0.00	0.02	50%	0.16	0.01	1	0	0.33			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Data Centers	2014	2054	0.13	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.02	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Data Centers	2014	2054	0.11	0.02	0.02	0.02	13%	0.00	0.00	13%	0.01	0.01	0	0	5.39			0.02
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Data Centers	2014	2054	0.11	0.02	0.01	0.03	19%	0.00	0.00	16%	0.10	0.04	1	0	0.49			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Data Centers	2014	2054	0.10	0.02	0.01	0.03	25%	0.00	0.00	18%	0.29	0.10	6	1	0.16			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	5400	5400	Base Copier	Data Centers	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Data Centers	2014	2054	0.10	0.02	0.01	0.01	10%	0.00	0.00	10%	0.00	0.00	0	0	26.53			0.01
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Data Centers	2014	2054	0.10	0.02	0.00	0.02	14%	0.00	0.00	12%	0.11	0.03	1	0	0.45			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Data Centers	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	7.27			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Data Centers	2014	2054	0.01	0.00	0.00	0.01	38%	0.00	0.00	32%	0.32	0.11	4	1	0.15			0.00
Opt-Out/Ex	5600	5600	Base Printer	Data Centers	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Data Centers	2014	2054	0.03	0.00	0.02	0.02	35%	0.00	0.00	35%	0.00	0.00	0	0	33.42			0.02
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Data Centers	2014	2054	0.02	0.00	0.00	0.02	46%	0.00	0.00	41%	0.07	0.02	1	0	0.70			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Data Centers	2014	2054	992.35	172.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	992.35	172.65	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Data Centers	2014	2054	893.12	155.39	99.24	99.24	10%	17.27	17.27	10%	0.00	0.00	0	0	115.96			99.24
Opt-Out/Ex	5700	5702	Data Center Best Practices	Data Centers	2014	2054	779.49	135.62	113.63	212.86	21%	19.77	37.03	21%	0.00	0.00	0	0	47.21			113.63
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Data Centers	2014	2054	735.84	128.02	43.65	256.51	26%	7.59	44.63	26%	0.00	0.00	0	0	24.48			43.65
Opt-Out/Ex	6000	6000	Base Water Heating	Data Centers	2014	2054	0.47	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.47	0.08	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Data Centers	2014	2054	0.45	0.08	0.02	0.02	5%	0.00	0.00	5%	0.08	0.08	0	0	0.79			0.00
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Data Centers	2014	2054	0.44	0.08	0.01	0.03	7%	0.00	0.01	7%	0.16	0.10	1	1	0.42			0.00
Opt-Out/Ex	6000	6004	Tankless Water Heater	Data Centers	2014	2054	0.40	0.07	0.03	0.07	14%	0.01	0.01	14%	0.24	0.17	1	1	0.30			0.00
Opt-Out/Ex	6000	6008	Solar Water Heater	Data Centers	2014	2054	0.19	0.03	0.21	0.28	60%	0.04	0.05	60%	0.28	0.26	2	1	0.26			0.00
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Data Centers	2014	2054	0.19	0.03	0.00	0.28	60%	0.00	0.05	60%	0.62	0.26	4	1	0.11			0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Data Centers	2014	2054	0.17	0.03	0.01	0.30	63%	0.00	0.05	63%	0.63	0.28	4	2	0.10			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Data Centers	2014	2054	0.17	0.03	0.01	0.30	64%	0.00	0.05	64%	1.89	0.30	11	2	0.04			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Data Centers	2014	2054	0.31	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.31	0.05	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Data Centers	2014	2054	0.26	0.05	0.05	0.05	16%	0.00	0.00	8%	0.01	0.01	0	0	5.44			0.05
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Data Centers	2014	2054	0.23	0.05	0.03	0.07	24%	0.00	0.01	12%	0.02	0.01	0	0	3.00			0.03
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Data Centers	2014	2054	0.01	0.00	0.01	0.01	44%	0.00	0.00	23%	0.12	0.12	1	1	0.41			0.00
Opt-Out/Ex	7200	7200	Base Oven	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7400	7400	Base Steamer	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Data Centers	2014	2054	0.58	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.58	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Data Centers	2014	2054	4.70	0.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.70	0.82	0.00
Opt-Out/Ex	9500	9501	Xmisc	Data Centers	2014	2054	4.70	0.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Non-Jurisdictional	2020	2054	8.11	1.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.11	1.44	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Non-Jurisdictional	2020	2054	8.06	1.44	0.05	0.05	1%	0.00	0.00	0%	0.01	0.01	0	0	5.03			0.05
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Non-Jurisdictional	2020	2054	7.45	1.35	0.61	0.66	8%	0.09	0.09	6%	0.01	0.01	0	0	4.45			0.61
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Non-Jurisdictional	2020	2054	6.68	1.22	0.77	1.42	18%	0.14	0.23	16%	0.02	0.02	0	0	3.38			0.77
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Non-Jurisdictional	2020	2054	6.34	1.15	0.35	1.77	22%	0.06	0.29	20%	0.09	0.03	0	0	0.66			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Non-Jurisdictional	2020	2054	6.00	1.14	0.34	2.11	26%	0.01	0.30	21%	0.05	0.03	1	0	0.91			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Non-Jurisdictional	2020	2054	5.03	0.97	0.97	3.08	38%	0.17	0.48	33%	0.20	0.08	1	1	0.33			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Non-Jurisdictional	2020	2054	4.60	0.89	0.43	3.51	43%	0.08	0.55	38%	0.16	0.09	1	1	0.40			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Non-Jurisdictional	2020	2054	1.54	0.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.54	0.27	0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Non-Jurisdictional	2020	2054	1.53	0.27	0.01	0.01	0%	0.00	0.00	0%	0.01	0.01	0	0	3.35			0.01
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Non-Jurisdictional	2020	2054	1.42	0.26	0.12	0.12	8%	0.02	0.02	6%	0.02	0.02	0	0	2.98			0.12
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Non-Jurisdictional	2020	2054	1.28	0.23	0.14	0.26	17%	0.03	0.04	15%	0.02	0.02	0	0	2.56			0.14
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Non-Jurisdictional	2020	2054	1.12	0.20	0.16	0.43	28%	0.03	0.07	26%	0.05	0.03	0	0	1.23			0.16
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Non-Jurisdictional	2020	2054	1.06	0.19	0.05	0.48	31%	0.01	0.08	29%	0.17	0.05	1	0	0.38			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Non-Jurisdictional	2020	2054	0.97	0.18	0.09	0.57	37%	0.02	0.10	35%	0.22	0.07	1	0	0.30			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Non-Jurisdictional	2020	2054	0.92	0.18	0.05	0.62	40%	0.00	0.10	36%	0.12	0.08	3	0	0.39			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Non-Jurisdictional	2014	2054	0.21	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.21	0.04	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Non-Jurisdictional	2014	2054	0.20	0.04	0.01	0.01	4%	0.00	0.00	2%	0.00	0.00	0	0	11.32			0.01
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Non-Jurisdictional	2014	2054	0.19	0.03	0.02	0.02	11%	0.00	0.00	8%	0.04	0.03	0	0	1.62			0.02
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Non-Jurisdictional	2014	2054	0.17	0.03	0.02	0.04	19%	0.00	0.01	16%	0.05	0.04	0	0	1.14			0.02
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Non-Jurisdictional	2014	2054	0.15	0.03	0.02	0.06	28%	0.00	0.01	18%	0.06	0.05	1	0	0.77			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Non-Jurisdictional	2020	2054	2.31	0.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.31	0.41	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Non-Jurisdictional	2020	2054	0.58	0.10	1.73	1.73	75%	0.31	0.31	75%	0.00	0.00	0	0	29.67			1.73
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Non-Jurisdictional	2020	2054	0.83	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.83	0.15	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Non-Jurisdictional	2020	2054	0.22	0.04	0.61	0.61	73%	0.11	0.11	73%	0.00	0.00	0	0	24.85			0.61
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Non-Jurisdictional	2020	2054	0.61	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.61	0.11	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Non-Jurisdictional	2020	2054	0.22	0.04	0.39	0.39	64%	0.07	0.07	64%	0.00	0.00	0	0	17.82			0.39
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Non-Jurisdictional	2020	2054	0.35	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.35	0.06	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Non-Jurisdictional	2020	2054	0.25	0.04	0.10	0.10	28%	0.02	0.02	28%	0.06	0.06	0	0	0.94			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Non-Jurisdictional	2020	2054	0.44	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.08	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Non-Jurisdictional	2020	2054	0.33	0.06	0.12	0.12	26%	0.02	0.02	26%	0.04	0.04	0	0	1.25			0.12
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Non-Jurisdictional	2014	2054	0.36	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.36	0.06	0.00
Opt-Out/Ex	1800	1801	T5 (240W) (base metal halide)	Non-Jurisdictional	2014	2054	0.24	0.04	0.12	0.12	34%	0.02	0.02	34%	0.03	0.03	0	0	2.75			0.12
Opt-Out/Ex	1800	1806	Occupancy Sensor, High Bay T5	Non-Jurisdictional	2014	2054	0.23	0.04	0.01	0.13	36%	0.00	0.02	34%	0.07	0.03	2	0	0.71			0.00
Opt-Out/Ex	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Non-Jurisdictional	2014	2054	0.22	0.04	0.02	0.15	41%	0.00	0.02	38%	0.09	0.04	1	0	0.70			0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Non-Jurisdictional	2014	2054	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Non-Jurisdictional	2014	2054	0.06	0.01	0.05	0.05	45%	0.01	0.01	45%	0.02	0.02	0	0	2.92			0.05
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Non-Jurisdictional	2014	2054	1.23	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.23	0.05	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Non-Jurisdictional	2014	2054	0.97	0.02	0.26	0.26	21%	0.03	0.03	66%	0.04	0.04	0	0	1.78			0.26
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Non-Jurisdictional	2014	2054	0.47	0.00	0.50	0.77	62%	0.02	0.06	107%	0.09	0.07	2	1	0.66			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Non-Jurisdictional	2014	2054	0.33	-0.01	0.14	0.90	73%	0.01	0.06	117%	0.58	0.15	15	2	0.10			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Non-Jurisdictional	2014	2054	3.06	2.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.06	2.26	0.00
Opt-Out/Ex	2000	2010	Ceiling/roof Insulation - Chiller	Non-Jurisdictional	2014	2054	3.04	2.24	0.02	0.02	1%	0.02	0.02	1%	0.01	0.01	0	0	10.57			0.02
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Non-Jurisdictional	2014	2054	2.78	2.05	0.26	0.28	9%	0.19	0.21	9%	0.05	0.05	0	0	2.40			0.26
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Non-Jurisdictional	2014	2054	2.77	2.04	0.01	0.29	9%	0.00	0.21	9%	0.07	0.05	0	0	1.56			0.01
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Non-Jurisdictional	2014	2054	2.72	2.02	0.06	0.35	11%	0.02	0.23	10%	0.06	0.05	0	0	1.37			0.06
Opt-Out/Ex	2000	2003	EMS - Chiller	Non-Jurisdictional	2014	2054	2.61	2.00	0.10	0.45	15%	0.02	0.25	11%	0.08	0.06	0	0	0.78			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Non-Jurisdictional	2014	2054	2.12	1.64	0.49	0.94	31%	0.36	0.61	27%	0.24	0.15	0	0	0.46			0.00
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Non-Jurisdictional	2014	2054	2.09	1.62	0.04	0.98	32%	0.03	0.64	28%	0.35	0.16	0	0	0.26			0.00
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Non-Jurisdictional	2014	2054	1.92	1.59	0.17	1.14	37%	0.03	0.67	30%	0.29	0.18	2	0	0.20			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Non-Jurisdictional	2014	2054	1.91	1.58	0.01	1.15	38%	0.01	0.68	30%	0.67	0.18	1	0	0.13			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Non-Jurisdictional	2014	2054	1.90	1.57	0.02	1.17	38%	0.01	0.69	31%	3.39	0.23	5	0	0.03			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Non-Jurisdictional	2014	2054	3.77	2.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.77	2.78	0.00
Opt-Out/Ex	2100	2113	Ceiling/roof Insulation - DX	Non-Jurisdictional	2014	2054	3.77	2.78	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	10.81			0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Non-Jurisdictional	2014	2054	2.91	2.14	0.87	0.87	23%	0.64	0.64	23%	0.04	0.04	0	0	2.53			0.87
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Non-Jurisdictional	2014	2054	2.86	2.13	0.05	0.92	24%	0.01	0.65	23%	0.10	0.04	1	0	0.53			0.00
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Non-Jurisdictional	2014	2054	2.78	2.05	0.08	0.99	26%	0.08	0.73	26%	0.20	0.06	0	0	0.44			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Non-Jurisdictional	2014	2054	2.62	1.93	0.17	1.16	31%	0.12	0.85	31%	0.28	0.09	0	0	0.40			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Non-Jurisdictional	2014	2054	2.53	1.91	0.09	1.25	33%	0.02	0.87	31%	0.16	0.09	1	0	0.34			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Non-Jurisdictional	2014	2054	2.49	1.89	0.04	1.28	34%	0.03	0.90	32%	0.35	0.10	0	0	0.26			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	Non-Jurisdictional	2014	2054	2.38	1.87	0.11	1.39	37%	0.02	0.92	33%	0.29	0.12	2	0	0.20			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Non-Jurisdictional	2014	2054	2.37	1.86	0.01	1.41	37%	0.01	0.93	33%	0.66	0.12	1	0	0.13			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Non-Jurisdictional	2014	2054	2.37	1.86	0.00	1.41	37%	0.00	0.93	33%	0.66	0.12	4	0	0.09			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Non-Jurisdictional	2014	2054	2.35	1.85	0.02	1.42	38%	0.01	0.94	34%	3.37	0.16	5	0	0.03			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Non-Jurisdictional	2014	2054	1.64	1.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.64	1.21	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Non-Jurisdictional	2014	2054	1.44	1.06	0.20	0.20	12%	0.15	0.15	12%	0.03	0.03	0	0	3.55			0.20
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Non-Jurisdictional	2014	2054	2.54	1.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.54	1.87	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Non-Jurisdictional	2014	2054	2.21	0.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.21	0.65	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Non-Jurisdictional	2014	2054	2.18	0.64	0.04	0.04	2%	0.01	0.01	2%	0.04	0.04	0	0	2.24			0.04
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Non-Jurisdictional	2014	2054	1.58	0.59	0.60	0.63	29%	0.04	0.05	8%	0.03	0.03	0	0	2.06			0.60
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Non-Jurisdictional	2014	2054	1.52	0.56	0.06	0.70	31%	0.03	0.09	14%	1.22	0.13	2	1	0.08			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Non-Jurisdictional	2014	2054	2.29	0.67	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.29	0.67	0.00
Opt-Out/Ex	3100	3102	Variable Speed Drive Control, 15 HP	Non-Jurisdictional	2014	2054	1.66	0.63	0.63	0.63	27%	0.05	0.05	7%	0.01	0.01	0	0	7.57			0.63
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Non-Jurisdictional	2014	2054	1.64	0.62	0.02	0.65	28%	0.01	0.05	8%	0.02	0.01	0	0	3.57			0.02
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Non-Jurisdictional	2014	2054	1.47	0.57	0.18	0.82	36%	0.05	0.10	15%	0.05	0.02	0	0	1.51			0.18
Opt-Out/Ex	3100	3103	Air Handler Optimization, 15 HP	Non-Jurisdictional	2014	2054	1.35	0.56	0.12	0.94	41%	0.01	0.11	16%	0.04	0.02	1	0	1.16			0.12
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	Non-Jurisdictional	2014	2054	1.32	0.55	0.03	0.97	42%	0.02	0.12	18%	0.49	0.03	1	0	0.21			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	Non-Jurisdictional	2014	2054	1.27	0.52	0.05	1.02	45%	0.03	0.15	22%	1.51	0.11	3	1	0.06			0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Non-Jurisdictional	2014	2054	1.36	0.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.36	0.40	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Non-Jurisdictional	2014	2054	1.25	0.39	0.11	0.11	8%	0.01	0.01	2%	0.03	0.03	0	0	1.81			0.11
Opt-Out/Ex	3200	3202	Variable Speed Drive Control, 40 HP	Non-Jurisdictional	2014	2054	0.90	0.36	0.34	0.45	33%	0.02	0.03	8%	0.04	0.04	1	1	1.38			0.34
Opt-Out/Ex	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Non-Jurisdictional	2014	2054	0.90	0.36	0.00	0.46	34%	0.00	0.03	9%	0.20	0.04	1	1	0.41			0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Non-Jurisdictional	2014	2054	0.86	0.34	0.03	0.49	36%	0.02	0.05	14%	1.32	0.13	2	1	0.07			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Non-Jurisdictional	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Non-Jurisdictional	2014	2054	1.89	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.89	0.28	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	Non-Jurisdictional	2014	2054	1.79	0.26	0.10	0.10	5%	0.01	0.01	5%	0.00	0.00	0	0	65.08			0.10
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Non-Jurisdictional	2014	2054	1.76	0.26	0.03	0.13	7%	0.00	0.02	7%	0.00	0.00	0	0	27.05			0.03
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	Non-Jurisdictional	2014	2054	1.76	0.26	0.01	0.14	7%	0.00	0.02	7%	0.00	0.00	0	0	15.56			0.01
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Non-Jurisdictional	2014	2054	1.73	0.25	0.02	0.16	8%	0.00	0.02	8%	0.00	0.00	0	0	14.64			0.02
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Non-Jurisdictional	2014	2054	1.71	0.25	0.02	0.18	10%	0.00	0.03	10%	0.01	0.00	0	0	6.94			0.02
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	Non-Jurisdictional	2014	2054	1.71	0.25	0.00	0.19	10%	0.00	0.03	10%	0.01	0.00	0	0	6.17			0.00
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Non-Jurisdictional	2014	2054	1.68	0.24	0.03	0.21	11%	0.00	0.03	11%	0.01	0.00	0	0	5.27			0.03
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Non-Jurisdictional	2014	2054	1.68	0.24	0.00	0.21	11%	0.00	0.03	11%	0.33	0.00	2	0	0.17			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Non-Jurisdictional	2014	2054	1.68	0.24	0.00	0.21	11%	0.00	0.03	11%	0.38	0.01	3	0	0.14			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Non-Jurisdictional	2014	2054	1.68	0.24	0.00	0.22	11%	0.00	0.03	11%	15.38	0.16	106	1	0.00			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Non-Jurisdictional	2014	2054	0.36	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.36	0.05	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Non-Jurisdictional	2014	2054	0.19	0.04	0.16	0.16	46%	0.01	0.01	23%	0.01	0.01	0	0	4.27			0.16
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Non-Jurisdictional	2014	2054	0.14	0.03	0.05	0.21	60%	0.01	0.02	37%	0.02	0.01	0	0	2.15			0.05
Opt-Out/Ex	5100	5100	Base Laptop PC	Non-Jurisdictional	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Non-Jurisdictional	2014	2054	0.03	0.00	0.01	0.01	19%	0.00	0.00	19%	0.01	0.01	0	0	5.87			0.01
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Non-Jurisdictional	2014	2054	0.03	0.00	0.00	0.01	21%	0.00	0.00	21%	1.03	0.09	7	1	0.05			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Non-Jurisdictional	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Non-Jurisdictional	2014	2054	0.04	0.01	0.04	0.04	50%	0.01	0.01	50%	0.00	0.00	0	0	53.00			0.04
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Non-Jurisdictional	2014	2054	0.03	0.00	0.01	0.05	60%	0.00	0.01	55%	0.01	0.00	0	0	3.90			0.01
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Non-Jurisdictional	2014	2054	0.03	0.00	0.00	0.05	63%	0.00	0.01	58%	0.15	0.01	1	0	0.35			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Non-Jurisdictional	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Non-Jurisdictional	2014	2054	0.07	0.01	0.01	0.01	16%	0.00	0.00	16%	0.01	0.01	0	0	7.05			0.01
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Non-Jurisdictional	2014	2054	0.07	0.01	0.00	0.02	20%	0.00	0.00	18%	0.07	0.02	1	0	0.69			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Non-Jurisdictional	2014	2054	0.06	0.01	0.01	0.02	26%	0.00	0.00	19%	0.19	0.06	5	1	0.23			0.00
Opt-Out/Ex	5400	5400	Base Copier	Non-Jurisdictional	2014	2054	0.10	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.01	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Non-Jurisdictional	2014	2054	0.09	0.01	0.01	0.01	12%	0.00	0.00	12%	0.00	0.00	0	0	35.12			0.01
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Non-Jurisdictional	2014	2054	0.08	0.01	0.00	0.02	16%	0.00	0.00	14%	0.08	0.02	1	0	0.62			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Non-Jurisdictional	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Non-Jurisdictional	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	9.81			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Non-Jurisdictional	2014	2054	0.01	0.00	0.00	0.01	38%	0.00	0.00	32%	0.21	0.08	3	1	0.22			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS Year 2014 SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	5600	5600	Base Printer	Non-Jurisdictional	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Non-Jurisdictional	2014	2054	0.08	0.01	0.04	0.04	35%	0.01	0.01	35%	0.00	0.00	0	0	45.10			0.04
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Non-Jurisdictional	2014	2054	0.06	0.01	0.01	0.05	46%	0.00	0.01	40%	0.05	0.01	1	0	1.01			0.01
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Non-Jurisdictional	2014	2054	1.03	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.03	0.15	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Non-Jurisdictional	2014	2054	0.93	0.14	0.10	0.10	10%	0.02	0.02	10%	0.00	0.00	0	0	156.01			0.10
Opt-Out/Ex	5700	5702	Data Center Best Practices	Non-Jurisdictional	2014	2054	0.81	0.12	0.12	0.22	21%	0.02	0.03	21%	0.00	0.00	0	0	63.52			0.12
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Non-Jurisdictional	2014	2054	0.77	0.11	0.05	0.27	26%	0.01	0.04	26%	0.00	0.00	0	0	32.94			0.05
Opt-Out/Ex	6000	6000	Base Water Heating	Non-Jurisdictional	2014	2054	0.37	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.37	0.05	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Non-Jurisdictional	2014	2054	0.35	0.05	0.02	0.02	5%	0.00	0.00	5%	0.02	0.02	0	0	3.74			0.02
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Non-Jurisdictional	2014	2054	0.34	0.05	0.01	0.03	7%	0.00	0.00	7%	0.03	0.02	0	0	2.00			0.01
Opt-Out/Ex	6000	6004	Tankless Water Heater	Non-Jurisdictional	2014	2054	0.32	0.04	0.03	0.05	14%	0.00	0.01	14%	0.05	0.03	0	0	1.42			0.03
Opt-Out/Ex	6000	6008	Solar Water Heater	Non-Jurisdictional	2014	2054	0.23	0.03	0.08	0.14	37%	0.01	0.02	37%	0.06	0.05	0	0	1.22			0.08
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Non-Jurisdictional	2014	2054	0.23	0.03	0.00	0.14	38%	0.00	0.02	38%	0.08	0.05	1	0	0.81			0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Non-Jurisdictional	2014	2054	0.22	0.03	0.01	0.15	41%	0.00	0.02	41%	0.08	0.05	1	0	0.71			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Non-Jurisdictional	2014	2054	0.21	0.03	0.01	0.16	43%	0.00	0.02	43%	0.24	0.06	2	0	0.27			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Non-Jurisdictional	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Non-Jurisdictional	2014	2054	0.10	0.02	0.02	0.02	16%	0.00	0.00	8%	0.05	0.05	1	1	0.99			0.00
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Non-Jurisdictional	2014	2054	0.09	0.02	0.01	0.03	25%	0.00	0.00	12%	0.09	0.06	1	1	0.54			0.00
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Non-Jurisdictional	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Non-Jurisdictional	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	23%	0.92	0.92	12	12	0.05			0.00
Opt-Out/Ex	7200	7200	Base Oven	Non-Jurisdictional	2014	2054	0.35	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.35	0.05	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Non-Jurisdictional	2014	2054	0.17	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.17	0.03	0.00
Opt-Out/Ex	7300	7301	Efficient Fryer	Non-Jurisdictional	2014	2054	0.17	0.03	0.01	0.01	3%	0.00	0.00	3%	0.42	0.42	3	3	0.15			0.00
Opt-Out/Ex	7400	7400	Base Steamer	Non-Jurisdictional	2014	2054	0.35	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.35	0.06	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Non-Jurisdictional	2014	2054	0.07	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.00	0.00
Opt-Out/Ex	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Non-Jurisdictional	2014	2054	0.07	0.00	0.00	0.00	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	1.89			0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Non-Jurisdictional	2014	2054	0.17	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.17	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Non-Jurisdictional	2014	2054	4.28	0.67	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.28	0.67	0.00
Opt-Out/Ex	9500	9501	Xmisc	Non-Jurisdictional	2014	2054	4.28	0.67	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Misc	2020	2054	9.64	1.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.64	1.64	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Misc	2020	2054	9.53	1.63	0.11	0.11	1%	0.01	0.01	1%	0.01	0.01	0	0	3.68			0.11
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Misc	2020	2054	8.81	1.53	0.72	0.83	9%	0.10	0.11	6%	0.02	0.02	0	0	3.20			0.72
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Misc	2020	2054	7.89	1.37	0.91	1.75	18%	0.15	0.26	16%	0.02	0.02	0	0	2.73			0.91
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Misc	2020	2054	7.80	1.36	0.09	1.84	19%	0.02	0.28	17%	0.45	0.04	3	0	0.12			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Misc	2020	2054	7.62	1.35	0.18	2.02	21%	0.01	0.28	17%	0.07	0.04	2	0	0.74			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Misc	2020	2054	6.39	1.14	1.23	3.25	34%	0.21	0.49	30%	0.22	0.11	1	1	0.29			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Misc	2020	2054	5.85	1.05	0.55	3.79	39%	0.09	0.59	36%	0.18	0.12	1	1	0.34			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Misc	2020	2054	7.38	1.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.38	1.25	0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Misc	2020	2054	7.29	1.25	0.09	0.09	1%	0.01	0.01	1%	0.02	0.02	0	0	2.99			0.09
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Misc	2020	2054	6.74	1.17	0.55	0.64	9%	0.07	0.08	6%	0.02	0.02	0	0	2.60			0.55
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Misc	2020	2054	6.11	1.06	0.64	1.28	17%	0.11	0.19	15%	0.03	0.02	0	0	2.17			0.64
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Misc	2020	2054	5.33	0.93	0.78	2.05	28%	0.13	0.32	26%	0.05	0.03	0	0	1.04			0.78
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Misc	2020	2054	5.07	0.89	0.26	2.31	31%	0.04	0.37	29%	0.19	0.05	1	0	0.32			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Misc	2020	2054	4.64	0.81	0.43	2.74	37%	0.07	0.44	35%	0.25	0.08	1	1	0.25			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Misc	2020	2054	4.53	0.81	0.11	2.85	39%	0.00	0.44	35%	0.15	0.09	4	1	0.33			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Misc	2014	2054	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Misc	2014	2054	0.09	0.02	0.01	0.01	7%	0.00	0.00	3%	0.01	0.01	0	0	4.71			0.01
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Misc	2014	2054	0.09	0.02	0.01	0.01	14%	0.00	0.00	10%	0.08	0.04	0	0	0.71			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Misc	2014	2054	0.08	0.02	0.01	0.02	20%	0.00	0.00	12%	0.08	0.05	2	1	0.63			0.00
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Misc	2014	2054	0.07	0.01	0.01	0.03	26%	0.00	0.00	17%	0.11	0.07	1	1	0.55			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Misc	2020	2054	11.75	1.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.75	1.99	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Misc	2020	2054	2.48	0.42	9.27	9.27	79%	1.57	1.57	79%	0.00	0.00	0	0	12.68			9.27
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Misc	2020	2054	4.23	0.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.23	0.72	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Misc	2020	2054	0.97	0.16	3.26	3.26	77%	0.55	0.55	77%	0.01	0.01	0	0	10.66			3.26
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Misc	2020	2054	3.11	0.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.11	0.53	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Misc	2020	2054	0.96	0.16	2.15	2.15	69%	0.37	0.37	69%	0.01	0.01	0	0	7.79			2.15
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Misc	2020	2054	1.90	0.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.90	0.32	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Misc	2020	2054	1.38	0.23	0.53	0.53	28%	0.09	0.09	28%	0.05	0.05	0	0	1.05			0.53
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Misc	2020	2054	2.43	0.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.43	0.41	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Misc	2020	2054	1.80	0.31	0.63	0.63	26%	0.11	0.11	26%	0.04	0.04	0	0	1.39			0.63
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Misc	2014	2054	4.40	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.40	0.75	0.00
Opt-Out/Ex	1800	1801	T5 (240W) (base metal halide)	Misc	2014	2054	2.91	0.49	1.49	1.49	34%	0.25	0.25	34%	0.01	0.01	0	0	7.55			1.49
Opt-Out/Ex	1800	1806	Occupancy Sensor, High Bay T5	Misc	2014	2054	2.81	0.49	0.10	1.58	36%	0.00	0.26	34%	0.02	0.01	1	0	2.00			0.10
Opt-Out/Ex	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Misc	2014	2054	2.60	0.46	0.21	1.79	41%	0.03	0.28	38%	0.05	0.01	0	0	1.38			0.21
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Misc	2014	2054	0.52	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.52	0.09	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Misc	2014	2054	0.28	0.05	0.24	0.24	46%	0.04	0.04	46%	0.03	0.03	0	0	1.95			0.24
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Misc	2014	2054	7.31	0.57	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.31	0.57	0.00
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Misc	2014	2054	3.52	0.27	3.79	3.79	52%	0.29	0.29	52%	0.08	0.08	1	1	0.74			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Misc	2014	2054	2.49	0.20	1.03	4.82	66%	0.07	0.37	65%	0.54	0.18	8	2	0.11			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Misc	2014	2054	2.28	1.76	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.28	1.76	0.00
Opt-Out/Ex	2000	2010	Ceiling/roof Insulation - Chiller	Misc	2014	2054	2.25	1.74	0.03	0.03	1%	0.02	0.02	1%	0.02	0.02	0	0	6.00			0.03
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Misc	2014	2054	2.06	1.59	0.19	0.22	10%	0.15	0.17	10%	0.04	0.04	0	0	3.08			0.19
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Misc	2014	2054	2.06	1.59	0.00	0.22	10%	0.00	0.17	10%	0.06	0.04	0	0	1.99			0.00
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Misc	2014	2054	1.98	1.56	0.08	0.30	13%	0.03	0.20	12%	0.05	0.04	0	0	1.71			0.08

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	2000	2003	EMS - Chiller	Misc	2014	2054	1.80	1.53	0.17	0.48	21%	0.03	0.24	14%	0.07	0.05	0	0	0.91			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Misc	2014	2054	1.47	1.27	0.33	0.81	35%	0.26	0.49	28%	0.21	0.12	0	0	0.55			0.00
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Misc	2014	2054	1.46	1.26	0.01	0.82	36%	0.01	0.50	28%	0.76	0.12	1	0	0.12			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Misc	2014	2054	1.46	1.26	0.00	0.82	36%	0.00	0.50	29%	3.29	0.13	4	0	0.03			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Misc	2014	2054	1.44	1.25	0.02	0.84	37%	0.02	0.52	29%	3.97	0.22	5	0	0.02			0.00
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Misc	2014	2054	1.44	1.25	0.00	0.84	37%	0.00	0.52	29%	36634.21	0.28	184,662	0	0.00			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Misc	2014	2054	53.61	41.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	53.61	41.46	0.00
Opt-Out/Ex	2100	2113	Ceiling/roof Insulation - DX	Misc	2014	2054	53.61	41.46	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	6.16			0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Misc	2014	2054	41.28	31.92	12.33	12.33	23%	9.53	9.54	23%	0.03	0.03	0	0	3.27			12.33
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Misc	2014	2054	38.85	30.04	2.43	14.76	28%	1.88	11.41	28%	0.21	0.06	0	0	0.54			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Misc	2014	2054	38.11	29.90	0.74	15.50	29%	0.15	11.56	28%	0.12	0.07	1	0	0.46			0.00
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Misc	2014	2054	37.47	29.77	0.63	16.13	30%	0.13	11.69	28%	0.13	0.07	1	0	0.40			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Misc	2014	2054	37.33	29.66	0.15	16.28	30%	0.11	11.80	28%	0.59	0.07	1	0	0.15			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Misc	2014	2054	37.25	29.60	0.07	16.35	31%	0.06	11.86	29%	3.03	0.09	4	0	0.03			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Misc	2014	2054	37.02	29.42	0.24	16.59	31%	0.18	12.04	29%	3.62	0.14	5	0	0.03			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Misc	2014	2054	6.61	5.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.61	5.11	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	2014	2054	5.79	4.48	0.82	0.82	12%	0.63	0.63	12%	0.04	0.04	0	0	3.05			0.82
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Misc	2014	2054	6.61	5.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.61	5.11	0.00
Opt-Out/Ex	2300	2301	HE PTAC, EER=9.6, 1 ton	Misc	2014	2054	5.72	4.42	0.90	0.90	14%	0.69	0.69	14%	0.08	0.08	0	0	1.33			0.90
Opt-Out/Ex	2300	2302	Occupancy Sensor (hotels)	Misc	2014	2054	4.86	3.56	0.86	1.76	27%	0.86	1.55	30%	0.26	0.17	0	0	0.40			0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Misc	2014	2054	19.47	5.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.47	5.53	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Misc	2014	2054	19.13	5.44	0.34	0.34	2%	0.10	0.10	2%	0.06	0.06	0	0	1.26			0.34
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Misc	2014	2054	13.38	5.03	5.75	6.09	31%	0.41	0.50	9%	0.05	0.05	1	1	1.17			5.75
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Misc	2014	2054	13.12	4.89	0.26	6.35	33%	0.14	0.65	12%	1.56	0.11	3	1	0.06			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Misc	2014	2054	15.52	4.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.52	4.41	0.00
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Misc	2014	2054	13.28	3.84	2.24	2.24	14%	0.57	0.57	13%	0.03	0.03	0	0	2.40			2.24
Opt-Out/Ex	3100	3103	Air Handler Optimization, 15 HP	Misc	2014	2054	12.37	3.77	0.91	3.15	20%	0.06	0.64	14%	0.04	0.03	1	0	1.26			0.91
Opt-Out/Ex	3100	3102	Variable Speed Drive Control, 15 HP	Misc	2014	2054	8.65	3.51	3.72	6.87	44%	0.26	0.90	20%	0.07	0.05	1	0	0.86			0.00
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Misc	2014	2054	8.52	3.47	0.13	7.00	45%	0.04	0.94	21%	0.21	0.05	1	0	0.38			0.00
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	Misc	2014	2054	8.41	3.41	0.11	7.11	46%	0.06	1.00	23%	0.43	0.06	1	0	0.24			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	Misc	2014	2054	8.25	3.32	0.16	7.27	47%	0.09	1.09	25%	1.97	0.10	4	1	0.05			0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Misc	2014	2054	12.31	3.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.31	3.50	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Misc	2014	2054	11.47	3.44	0.84	0.84	7%	0.06	0.06	2%	0.03	0.03	0	0	1.47			0.84
Opt-Out/Ex	3200	3202	Variable Speed Drive Control, 40 HP	Misc	2014	2054	8.02	3.19	3.45	4.29	35%	0.24	0.30	9%	0.10	0.09	1	1	0.55			0.00
Opt-Out/Ex	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Misc	2014	2054	7.99	3.19	0.03	4.33	35%	0.01	0.31	9%	0.51	0.09	2	1	0.16			0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Misc	2014	2054	7.83	3.10	0.16	4.48	36%	0.09	0.40	11%	1.65	0.15	3	2	0.06			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Misc	2014	2054	13.77	2.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.77	2.07	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	Misc	2014	2054	12.53	1.89	1.24	1.24	9%	0.19	0.19	9%	0.00	0.00	0	0	36.38			1.24
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Misc	2014	2054	12.35	1.86	0.18	1.42	10%	0.03	0.21	10%	0.00	0.00	0	0	32.37			0.18
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Misc	2014	2054	12.19	1.83	0.17	1.58	11%	0.02	0.24	11%	0.01	0.00	0	0	10.44			0.17
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Misc	2014	2054	11.76	1.77	0.42	2.01	15%	0.06	0.30	15%	0.01	0.00	0	0	10.17			0.42
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Misc	2014	2054	11.72	1.76	0.05	2.05	15%	0.01	0.31	15%	0.02	0.00	0	0	3.63			0.05
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Misc	2014	2054	11.72	1.76	0.00	2.05	15%	0.00	0.31	15%	0.31	0.00	2	0	0.19			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Misc	2014	2054	11.71	1.76	0.01	2.07	15%	0.00	0.31	15%	0.35	0.00	2	0	0.15			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Misc	2014	2054	0.48	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.48	0.07	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Misc	2014	2054	0.26	0.06	0.21	0.21	45%	0.02	0.02	23%	0.01	0.01	0	0	3.90			0.21
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Misc	2014	2054	0.18	0.04	0.08	0.30	62%	0.01	0.03	40%	0.03	0.02	0	0	1.98			0.08
Opt-Out/Ex	5100	5100	Base Laptop PC	Misc	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Misc	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	5.43			0.00
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Misc	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.13	0.10	7	1	0.05			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Misc	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Misc	2014	2054	0.02	0.00	0.02	0.02	56%	0.00	0.00	56%	0.00	0.00	0	0	43.26			0.02
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Misc	2014	2054	0.01	0.00	0.00	0.03	67%	0.00	0.00	62%	0.02	0.00	0	0	2.81			0.00
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Misc	2014	2054	0.01	0.00	0.00	0.03	70%	0.00	0.00	64%	0.19	0.01	1	0	0.26			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Misc	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Misc	2014	2054	0.05	0.01	0.01	0.01	18%	0.00	0.00	18%	0.01	0.01	0	0	6.34			0.01
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Misc	2014	2054	0.05	0.01	0.00	0.01	21%	0.00	0.00	19%	0.07	0.02	1	0	0.63			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Misc	2014	2054	0.05	0.01	0.00	0.02	27%	0.00	0.00	21%	0.21	0.06	5	1	0.21			0.00
Opt-Out/Ex	5400	5400	Base Copier	Misc	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Misc	2014	2054	0.10	0.01	0.01	0.01	13%	0.00	0.00	13%	0.00	0.00	0	0	31.86			0.01
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Misc	2014	2054	0.09	0.01	0.00	0.02	18%	0.00	0.00	16%	0.09	0.02	1	0	0.55			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Misc	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Misc	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	9.07			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Misc	2014	2054	0.01	0.00	0.00	0.01	37%	0.00	0.00	31%	0.23	0.08	3	1	0.20			0.00
Opt-Out/Ex	5600	5600	Base Printer	Misc	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Misc	2014	2054	0.03	0.00	0.02	0.02	35%	0.00	0.00	35%	0.00	0.00	0	0	41.71			0.02
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Misc	2014	2054	0.02	0.00	0.00	0.02	45%	0.00	0.00	40%	0.05	0.01	1	0	0.93			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Misc	2014	2054	5.32	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.32	0.81	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Misc	2014	2054	4.79	0.73	0.53	0.53	10%	0.08	0.08	10%	0.00	0.00	0	0	105.02			0.53
Opt-Out/Ex	5700	5702	Data Center Best Practices	Misc	2014	2054	4.18	0.63	0.61	1.14	21%	0.09	0.17	21%	0.00	0.00	0	0	42.75			0.61
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Misc	2014	2054	3.95	0.60	0.23	1.38	26%	0.04	0.21	26%	0.00	0.00	0	0	22.17			0.23
Opt-Out/Ex	6000	6000	Base Water Heating	Misc	2014	2054	0.77	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.77	0.11	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Misc	2014	2054	0.73	0.11	0.04	0.04	5%	0.01	0.01	5%	0.01	0.01	0	0	3.99			0.04

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Misc	2014	2054	0.72	0.11	0.01	0.05	7%	0.00	0.01	7%	0.03	0.02	0	0	2.13			0.01
Opt-Out/Ex	6000	6004	Tankless Water Heater	Misc	2014	2054	0.66	0.10	0.05	0.11	14%	0.01	0.02	14%	0.05	0.03	0	0	1.52			0.05
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Misc	2014	2054	0.65	0.10	0.01	0.12	16%	0.00	0.02	16%	0.05	0.03	0	0	1.18			0.01
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Misc	2014	2054	0.63	0.09	0.02	0.14	18%	0.00	0.02	18%	0.05	0.04	0	0	1.10			0.02
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Misc	2014	2054	0.60	0.09	0.02	0.17	22%	0.00	0.02	22%	0.15	0.05	1	0	0.42			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Misc	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Misc	2014	2054	0.10	0.02	0.02	0.02	16%	0.00	0.00	8%	0.03	0.03	0	0	1.82			0.02
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Misc	2014	2054	0.09	0.02	0.01	0.03	25%	0.00	0.00	12%	0.05	0.03	1	0	1.00			0.00
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Misc	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	23%	0.44	0.44	5	5	0.11			0.00
Opt-Out/Ex	7200	7200	Base Oven	Misc	2014	2054	0.56	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.56	0.09	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Misc	2014	2054	1.16	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.16	0.19	0.00
Opt-Out/Ex	7300	7301	Efficient Fryer	Misc	2014	2054	1.08	0.18	0.07	0.07	6%	0.01	0.01	6%	1.65	1.65	10	10	0.04			0.00
Opt-Out/Ex	7400	7400	Base Steamer	Misc	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Misc	2014	2054	5.50	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.50	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Misc	2014	2054	44.56	7.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	44.56	7.41	0.00
Opt-Out/Ex	9500	9501	Xmisc	Misc	2014	2054	44.56	7.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Non-Jurisdictional	2020	2054	1,337.88	237.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,337.88	237.97	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Non-Jurisdictional	2020	2054	1,323.24	236.69	14.64	14.64	1%	1.29	1.29	1%	0.01	0.01	0	0	3.98			14.64
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Non-Jurisdictional	2020	2054	1,223.50	222.57	99.75	114.38	9%	14.12	15.41	6%	0.02	0.02	0	0	3.50			99.75
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Non-Jurisdictional	2020	2054	1,097.81	200.21	125.69	240.07	18%	22.36	37.77	16%	0.02	0.02	0	0	2.66			125.69
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Non-Jurisdictional	2020	2054	958.13	175.36	139.68	379.75	28%	24.84	62.61	26%	0.04	0.03	0	0	1.27			139.68
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Non-Jurisdictional	2020	2054	915.80	173.51	42.33	422.08	32%	1.85	64.46	27%	0.07	0.03	2	0	0.70			0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Non-Jurisdictional	2020	2054	768.24	147.27	147.56	569.64	43%	26.25	90.71	38%	0.27	0.09	2	1	0.24			0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Non-Jurisdictional	2020	2054	702.66	135.60	65.58	635.22	47%	11.67	102.37	43%	0.22	0.11	1	1	0.29			0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Non-Jurisdictional	2020	2054	266.78	47.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	266.78	47.45	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Non-Jurisdictional	2020	2054	263.81	47.19	2.97	2.97	1%	0.26	0.26	1%	0.02	0.02	0	0	2.78			2.97
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Non-Jurisdictional	2020	2054	243.92	44.38	19.89	22.85	9%	2.82	3.08	6%	0.03	0.02	0	0	2.45			19.89
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Non-Jurisdictional	2020	2054	219.71	40.07	24.21	47.07	18%	4.31	7.38	16%	0.03	0.03	0	0	2.11			24.21
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Non-Jurisdictional	2020	2054	191.76	35.10	27.95	75.02	28%	4.97	12.36	26%	0.06	0.04	0	0	1.01			27.95
VA	1130	1134	ROB 2L4' LED Tube, 2020	Non-Jurisdictional	2020	2054	182.49	33.45	9.27	84.29	32%	1.65	14.00	30%	0.21	0.06	1	0	0.32			0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Non-Jurisdictional	2020	2054	174.42	33.10	8.06	92.35	35%	0.35	14.36	30%	0.13	0.06	3	0	0.38			0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Non-Jurisdictional	2020	2054	159.53	30.45	14.89	107.24	40%	2.65	17.00	36%	0.28	0.09	2	1	0.24			0.00
VA	1200	1200	Base Other Fluorescent Fixture	Non-Jurisdictional	2014	2054	25.29	4.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.29	4.50	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Non-Jurisdictional	2014	2054	23.60	4.35	1.69	1.69	7%	0.15	0.15	3%	0.01	0.01	0	0	6.44			1.69
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Non-Jurisdictional	2014	2054	21.82	4.10	1.78	3.47	14%	0.25	0.40	9%	0.07	0.04	1	0	0.89			0.00
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Non-Jurisdictional	2014	2054	19.86	3.75	1.97	5.43	21%	0.35	0.75	17%	0.09	0.06	1	0	0.63			0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Non-Jurisdictional	2014	2054	17.91	3.66	1.95	7.38	29%	0.09	0.84	19%	0.10	0.07	2	1	0.48			0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Non-Jurisdictional	2014	2054	15.63	3.26	2.28	9.66	38%	0.41	1.24	28%	0.21	0.10	1	1	0.27			0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Non-Jurisdictional	2020	2054	235.95	41.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	235.95	41.97	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Non-Jurisdictional	2020	2054	58.86	10.47	177.09	177.09	75%	31.50	31.50	75%	0.00	0.00	0	0	14.52			177.09
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Non-Jurisdictional	2020	2054	84.94	15.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	84.94	15.11	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Non-Jurisdictional	2020	2054	22.87	4.07	62.08	62.08	73%	11.04	11.04	73%	0.00	0.00	0	0	12.16			62.08
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Non-Jurisdictional	2020	2054	62.53	11.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	62.53	11.12	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Non-Jurisdictional	2020	2054	22.33	3.97	40.20	40.20	64%	7.15	7.15	64%	0.01	0.01	0	0	8.72			40.20
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Non-Jurisdictional	2020	2054	78.05	13.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	78.05	13.88	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Non-Jurisdictional	2020	2054	56.43	10.04	21.62	21.62	28%	3.85	3.85	28%	0.05	0.05	0	0	1.01			21.62
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Non-Jurisdictional	2020	2054	99.73	17.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	99.73	17.74	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Non-Jurisdictional	2020	2054	73.80	13.13	25.93	25.93	26%	4.61	4.61	26%	0.04	0.04	0	0	1.35			25.93
VA	1800	1800	BaseMetal Halide, 465W	Non-Jurisdictional	2014	2054	179.43	31.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	179.43	31.92	0.00
VA	1800	1801	T5 (240W) (base metal halide)	Non-Jurisdictional	2014	2054	118.76	21.12	60.66	60.66	34%	10.79	10.79	34%	0.01	0.01	0	0	6.49			60.66
VA	1800	1806	Occupancy Sensor, High Bay T5	Non-Jurisdictional	2014	2054	114.95	20.96	3.81	64.47	36%	0.17	10.96	34%	0.03	0.01	1	0	1.68			3.81
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Non-Jurisdictional	2014	2054	106.29	19.73	8.67	73.14	41%	1.23	12.18	38%	0.04	0.02	0	0	1.65			8.67
VA	1850	1850	Base CFL Exit Sign	Non-Jurisdictional	2014	2054	14.79	2.63	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.79	2.63	0.00
VA	1850	1851	LED Exit Sign	Non-Jurisdictional	2014	2054	8.14	1.45	6.66	6.66	45%	1.18	1.18	45%	0.03	0.03	0	0	2.01			6.66
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Non-Jurisdictional	2014	2054	214.61	8.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	214.61	8.98	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Non-Jurisdictional	2014	2054	199.35	7.01	15.26	15.26	7%	1.97	1.97	22%	0.04	0.04	0	0	1.79			15.26
VA	1900	1902	LED Outdoor Area Lighting	Non-Jurisdictional	2014	2054	95.93	2.69	103.42	118.69	55%	4.33	6.30	70%	0.09	0.08	2	2	0.65			0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Non-Jurisdictional	2014	2054	67.81	1.62	28.12	146.80	68%	1.06	7.36	82%	0.58	0.18	15	4	0.10			0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Non-Jurisdictional	2014	2054	639.79	471.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	639.79	471.58	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	Non-Jurisdictional	2014	2054	634.60	467.75	5.20	5.20	1%	3.83	3.83	1%	0.01	0.01	0	0	10.57			5.20
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Non-Jurisdictional	2014	2054	580.42	427.82	54.17	59.37	9%	39.93	43.76	9%	0.05	0.05	0	0	2.40			54.17
VA	2000	2005	Chiller Tune Up/Diagnostics	Non-Jurisdictional	2014	2054	577.09	426.58	3.33	62.70	10%	1.24	45.00	10%	0.04	0.04	0	0	1.87			3.33
VA	2000	2013	High Efficiency Chiller Motors	Non-Jurisdictional	2014	2054	575.85	425.67	1.24	63.94	10%	0.91	45.91	10%	0.08	0.05	0	0	1.55			1.24
VA	2000	2006	VSD for Chiller Pumps and Towers	Non-Jurisdictional	2014	2054	564.16	421.32	11.68	75.63	12%	4.35	50.26	11%	0.06	0.05	0	0	1.36			11.68
VA	2000	2003	EMS - Chiller	Non-Jurisdictional	2014	2054	542.51	417.28	21.66	97.28	15%	4.04	54.30	12%	0.08	0.06	0	0	0.78			0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	Non-Jurisdictional	2014	2054	441.10	342.53	101.41	198.69	31%	74.75	129.05	27%	0.25	0.15	0	0	0.46			0.00
VA	2000	2002	Window Film (Standard) - Chiller	Non-Jurisdictional	2014	2054	433.63	337.03	7.47	206.16	32%	5.50	134.55	29%	0.35	0.16	0	0	0.26			0.00
VA	2000	2008	New Economizer - Chiller	Non-Jurisdictional	2014	2054	398.83	330.53	34.81	240.97	38%	6.50	141.04	30%	0.30	0.18	2	0	0.19			0.00
VA	2000	2004	Cool Roof - Chiller	Non-Jurisdictional	2014	2054	397.35	329.45	1.47	242.44	38%	1.08	142.13	30%	0.67	0.18	1	0	0.13			0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Non-Jurisdictional	2014	2054	394.07	327.03	3.28	245.72	38%	2.42	144.55	31%	3.41	0.23	5	0	0.03			0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Non-Jurisdictional	2014	2054	788.26	581.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	788.26	581.01	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	Non-Jurisdictional	2014	2054	788.25	581.01	0.01	0.01	0%	0.00	0.00	0%	0.01	0.01	0	0	10.81			0.01

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Non-Jurisdictional	2014	2054	606.95	447.37	181.30	181.30	23%	133.63	133.64	23%	0.04	0.04	0	0	2.53			181.30
VA	2100	2108	Optimize Controls - DX	Non-Jurisdictional	2014	2054	596.73	445.47	10.23	191.53	24%	1.91	135.54	23%	0.10	0.04	1	0	0.53			0.00
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Non-Jurisdictional	2014	2054	594.65	444.69	2.08	193.61	25%	0.77	136.32	23%	0.14	0.05	0	0	0.47			0.00
VA	2100	2111	Economizer Repair - DX	Non-Jurisdictional	2014	2054	586.00	435.43	8.64	202.25	26%	9.27	145.58	25%	0.20	0.05	0	0	0.44			0.00
VA	2100	2112	Duct Testing/Sealing - DX	Non-Jurisdictional	2014	2054	550.95	409.59	35.05	237.31	30%	25.84	171.42	30%	0.28	0.09	0	0	0.40			0.00
VA	2100	2106	Prog. Thermostat - DX	Non-Jurisdictional	2014	2054	532.42	406.13	18.53	255.84	32%	3.46	174.88	30%	0.16	0.09	1	0	0.35			0.00
VA	2100	2115	Window Film (Standard) - DX	Non-Jurisdictional	2014	2054	524.69	400.43	7.73	263.57	33%	5.70	180.58	31%	0.35	0.10	0	0	0.26			0.00
VA	2100	2109	Economizer - DX	Non-Jurisdictional	2014	2054	501.30	396.07	23.38	286.95	36%	4.36	184.94	32%	0.29	0.11	2	0	0.20			0.00
VA	2100	2107	Cool Roof - DX	Non-Jurisdictional	2014	2054	498.63	394.10	2.68	289.63	37%	1.97	186.91	32%	0.66	0.12	1	0	0.14			0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Non-Jurisdictional	2014	2054	498.59	394.09	0.04	289.67	37%	0.01	186.92	32%	0.66	0.12	4	0	0.09			0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Non-Jurisdictional	2014	2054	495.38	391.73	3.20	292.87	37%	2.36	189.28	33%	3.34	0.15	5	0	0.03			0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Non-Jurisdictional	2014	2054	342.49	252.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	342.49	252.44	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Non-Jurisdictional	2014	2054	300.13	221.22	42.36	42.36	12%	31.22	31.22	12%	0.03	0.03	0	0	3.55			42.36
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Non-Jurisdictional	2014	2054	530.62	391.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	530.62	391.11	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Non-Jurisdictional	2014	2054	488.60	143.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	488.60	143.21	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	Non-Jurisdictional	2014	2054	390.32	136.02	98.28	98.28	20%	7.19	7.19	5%	0.02	0.02	0	0	2.33			98.28
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Non-Jurisdictional	2014	2054	383.78	134.10	6.54	104.82	21%	1.92	9.11	6%	0.05	0.03	0	0	1.79			6.54
VA	3000	3003	Demand Controlled Ventilation	Non-Jurisdictional	2014	2054	368.87	125.76	14.91	119.73	25%	8.35	17.45	12%	1.11	0.16	2	1	0.09			0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Non-Jurisdictional	2014	2054	254.70	74.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	254.70	74.65	0.00
VA	3100	3102	Variable Speed Drive Control, 15 HP	Non-Jurisdictional	2014	2054	203.47	70.91	51.23	51.23	20%	3.75	3.75	5%	0.01	0.01	0	0	8.44			51.23
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Non-Jurisdictional	2014	2054	201.36	70.29	2.11	53.34	21%	0.62	4.37	6%	0.02	0.01	0	0	3.93			2.11
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Non-Jurisdictional	2014	2054	179.83	64.62	21.53	74.87	29%	5.67	10.04	13%	0.04	0.02	0	0	1.66			21.53
VA	3100	3103	Air Handler Optimization, 15 HP	Non-Jurisdictional	2014	2054	165.03	63.53	14.80	89.67	35%	1.08	11.12	15%	0.04	0.02	1	0	1.28			14.80
VA	3100	3105	Energy Recovery Ventilation (ERV)	Non-Jurisdictional	2014	2054	161.67	61.65	3.37	93.03	37%	1.88	13.01	17%	0.45	0.04	1	0	0.24			0.00
VA	3100	3107	Demand Controlled Ventilation	Non-Jurisdictional	2014	2054	155.39	58.13	6.28	99.32	39%	3.52	16.52	22%	1.37	0.12	2	1	0.07			0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Non-Jurisdictional	2014	2054	196.01	57.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	196.01	57.45	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	Non-Jurisdictional	2014	2054	179.88	56.27	16.13	16.13	8%	1.18	1.18	2%	0.03	0.03	0	0	1.81			16.13
VA	3200	3202	Variable Speed Drive Control, 40 HP	Non-Jurisdictional	2014	2054	143.70	53.62	36.18	52.31	27%	2.65	3.83	7%	0.04	0.03	1	0	1.54			36.18
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Non-Jurisdictional	2014	2054	143.10	53.45	0.60	52.91	27%	0.18	4.00	7%	0.18	0.04	1	0	0.45			0.00
VA	3200	3204	Demand Controlled Ventilation	Non-Jurisdictional	2014	2054	137.54	50.34	5.56	58.47	30%	3.11	7.12	12%	1.20	0.15	2	1	0.08			0.00
VA	4000	4000	Base Built-Up Refrigeration System	Non-Jurisdictional	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Non-Jurisdictional	2014	2054	395.15	57.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	395.15	57.43	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Non-Jurisdictional	2014	2054	385.17	55.98	9.98	9.98	3%	1.45	1.45	3%	0.00	0.00	0	0	66.98			9.98
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Non-Jurisdictional	2014	2054	378.91	55.07	6.26	16.24	4%	0.91	2.36	4%	0.00	0.00	0	0	27.85			6.26
VA	4100	4109	Energy-Star Freezer, glass door	Non-Jurisdictional	2014	2054	377.75	54.90	1.16	17.40	4%	0.17	2.53	4%	0.00	0.00	0	0	16.03			1.16
VA	4100	4106	Energy-Star Refrigerator, solid door	Non-Jurisdictional	2014	2054	372.61	54.16	5.13	22.53	6%	0.75	3.28	6%	0.00	0.00	0	0	15.08			5.13
VA	4100	4108	Energy-Star Refrigerator, glass door	Non-Jurisdictional	2014	2054	367.40	53.40	5.22	27.75	7%	0.76	4.03	7%	0.01	0.00	0	0	7.15			5.22
VA	4100	4107	Energy-Star Freezer, solid door	Non-Jurisdictional	2014	2054	366.92	53.33	0.47	28.23	7%	0.07	4.10	7%	0.01	0.00	0	0	6.36			0.47
VA	4100	4110	Energy Star Ice Machines	Non-Jurisdictional	2014	2054	361.12	52.49	5.80	34.02	9%	0.84	4.94	9%	0.01	0.00	0	0	5.43			5.80
VA	4100	4112	Reach-in unit occupancy sensors	Non-Jurisdictional	2014	2054	361.05	52.48	0.07	34.09	9%	0.01	4.96	9%	0.32	0.01	2	0	0.18			0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Non-Jurisdictional	2014	2054	360.88	52.45	0.17	34.26	9%	0.02	4.98	9%	0.37	0.01	3	0	0.15			0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Non-Jurisdictional	2014	2054	360.66	52.42	0.22	34.48	9%	0.03	5.01	9%	14.92	0.10	103	1	0.00			0.00
VA	5000	5000	Base Desktop PC	Non-Jurisdictional	2014	2054	68.50	9.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	68.50	9.95	0.00
VA	5000	5001	PC Network Power Management Enabling	Non-Jurisdictional	2014	2054	37.28	7.66	31.22	31.22	46%	2.29	2.29	23%	0.01	0.01	0	0	3.91			31.22
VA	5000	5002	Energy Star or Better PC	Non-Jurisdictional	2014	2054	27.36	6.22	9.92	41.14	60%	1.44	3.73	37%	0.03	0.02	0	0	1.97			9.92
VA	5100	5100	Base Laptop PC	Non-Jurisdictional	2014	2054	6.06	0.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.06	0.88	0.00
VA	5100	5102	Energy Star or Better Laptop	Non-Jurisdictional	2014	2054	4.91	0.71	1.15	1.15	19%	0.17	0.17	19%	0.01	0.01	0	0	5.38			1.15
VA	5100	5101	Laptop Network Power Management Enabling	Non-Jurisdictional	2014	2054	4.81	0.70	0.10	1.25	21%	0.01	0.18	21%	1.13	0.10	8	1	0.04			0.00
VA	5200	5200	Base Monitor, CRT	Non-Jurisdictional	2014	2054	14.74	2.14	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.74	2.14	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Non-Jurisdictional	2014	2054	7.34	1.07	7.40	7.40	50%	1.08	1.08	50%	0.00	0.00	0	0	48.58			7.40
VA	5200	5202	Monitor Power Management Enabling - CRT	Non-Jurisdictional	2014	2054	5.86	0.96	1.47	8.88	60%	0.11	1.18	55%	0.01	0.00	0	0	3.57			1.47
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Non-Jurisdictional	2014	2054	5.40	0.89	0.46	9.34	63%	0.07	1.25	58%	0.16	0.01	1	0	0.32			0.00
VA	5300	5300	Base Monitor, LCD	Non-Jurisdictional	2014	2054	15.83	2.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.83	2.30	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Non-Jurisdictional	2014	2054	13.36	1.94	2.47	2.47	16%	0.36	0.36	16%	0.01	0.01	0	0	6.47			2.47
VA	5300	5302	Monitor Power Management Enabling - LCD	Non-Jurisdictional	2014	2054	12.63	1.89	0.73	3.20	20%	0.05	0.41	18%	0.07	0.02	1	0	0.63			0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Non-Jurisdictional	2014	2054	11.65	1.85	0.98	4.18	26%	0.04	0.45	19%	0.21	0.07	6	1	0.21			0.00
VA	5400	5400	Base Copier	Non-Jurisdictional	2014	2054	19.09	2.77	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.09	2.77	0.00
VA	5400	5401	Energy Star or Better Copier	Non-Jurisdictional	2014	2054	16.86	2.45	2.23	2.23	12%	0.32	0.32	12%	0.00	0.00	0	0	32.19			2.23
VA	5400	5402	Copier Power Management Enabling	Non-Jurisdictional	2014	2054	16.08	2.39	0.78	3.01	16%	0.06	0.38	14%	0.08	0.02	1	0	0.57			0.00
VA	5500	5500	Base Multifunction	Non-Jurisdictional	2014	2054	2.74	0.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.74	0.40	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Non-Jurisdictional	2014	2054	2.05	0.30	0.69	0.69	25%	0.10	0.10	25%	0.01	0.01	0	0	8.99			0.69
VA	5500	5501	Multifunction Power Management Enabling	Non-Jurisdictional	2014	2054	1.70	0.27	0.35	1.04	38%	0.03	0.13	32%	0.23	0.08	3	1	0.20			0.00
VA	5600	5600	Base Printer	Non-Jurisdictional	2014	2054	22.50	3.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	22.50	3.27	0.00
VA	5600	5602	ENERGY STAR Printer	Non-Jurisdictional	2014	2054	14.67	2.13	7.83	7.83	35%	1.14	1.14	35%	0.00	0.00	0	0	41.34			7.83
VA	5600	5601	Printer Power Management Enabling	Non-Jurisdictional	2014	2054	12.14	1.95	2.54	10.36	46%	0.19	1.32	40%	0.05	0.01	1	0	0.93			0.00
VA	5700	5700	Base Data Center/Server Room	Non-Jurisdictional	2014	2054	143.83	20.89	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	143.83	20.89	0.00
VA	5700	5701	Data Center Improved Operations	Non-Jurisdictional	2014	2054	129.45	18.80	14.38	14.38	10%	2.09	2.09	10%	0.00	0.00	0	0	104.01			14.38
VA	5700	5702	Data Center Best Practices	Non-Jurisdictional	2014	2054	112.98	16.41	16.47	30.85	21%	2.39	4.48	21%	0.00	0.00	0	0	42.34			16.47
VA	5700	5703	Data Center State of the Art practices	Non-Jurisdictional	2014	2054	106.65	15.49	6.33	37.18	26%	0.92	5.40	26%	0.00	0.00	0	0	21.96			6.33
VA	6000	6000	Base Water Heating	Non-Jurisdictional	2014	2054	76.92	10.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	76.92	10.87	0.00
VA	6000	6007	Heat Trap	Non-Jurisdictional	2014	2054	72.94	10.31	3.98	3.98	5%	0.56	0.56	5%	0.02	0.02	0	0	3.74			3.98
VA	6000	6002	High Efficiency Water Heater (electric)	Non-Jurisdictional	2014	2054	71.48	10.10	1.46	5.44	7%	0.21	0.77	7%	0.03	0.02	0	0	2.00			1.46
VA	6000	6004	Tankless Water Heater	Non-Jurisdictional	2014	2054	66.12	9.34	5.36	10.80	14%	0.76	1.53	14%	0.05	0.03	0	0	1.42			5.36
VA	6000	6008	Solar Water Heater	Non-Jurisdictional	2014	2054	48.53	6.86	17.59	28.39	37%	2.49	4.01	37%	0.06	0.05	0	0	1.22			17.59

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2014

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH
VA	6000	6003	Hot Water Pipe Insulation	Non-Jurisdictional	2014	2054	47.91	6.77	0.62	29.01	38%	0.09	4.10	38%	0.08	0.05	1	0	0.81			0.00
VA	6000	6006	Heat Recovery Unit	Non-Jurisdictional	2014	2054	45.57	6.44	2.34	31.35	41%	0.33	4.43	41%	0.08	0.05	1	0	0.71			0.00
VA	6000	6001	Demand controlled circulating systems	Non-Jurisdictional	2014	2054	44.03	6.22	1.54	32.89	43%	0.22	4.65	43%	0.24	0.06	2	0	0.27			0.00
VA	7000	7000	Base Refrigerated Vending Machines	Non-Jurisdictional	2014	2054	25.15	3.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.15	3.92	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Non-Jurisdictional	2014	2054	21.46	3.63	3.69	3.69	15%	0.29	0.29	7%	0.04	0.04	1	1	1.06			3.69
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Non-Jurisdictional	2014	2054	19.46	3.47	2.00	5.70	23%	0.16	0.44	11%	0.08	0.06	1	1	0.58			0.00
VA	7100	7100	Base Non-Refrigerated Vending Machines	Non-Jurisdictional	2014	2054	0.45	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.07	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Non-Jurisdictional	2014	2054	0.26	0.05	0.19	0.19	42%	0.01	0.01	21%	0.86	0.86	11	11	0.06			0.00
VA	7200	7200	Base Oven	Non-Jurisdictional	2014	2054	72.06	11.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	72.06	11.40	0.00
VA	7300	7300	Base Fryer	Non-Jurisdictional	2014	2054	36.07	5.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	36.07	5.71	0.00
VA	7300	7301	Efficient Fryer	Non-Jurisdictional	2014	2054	34.88	5.52	1.19	1.19	3%	0.19	0.19	3%	0.42	0.42	3	3	0.15			0.00
VA	7400	7400	Base Steamer	Non-Jurisdictional	2014	2054	72.69	11.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	72.69	11.50	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Non-Jurisdictional	2014	2054	15.57	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.57	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Non-Jurisdictional	2014	2054	14.70	0.00	0.88	0.88	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	1.89			0.88
VA	8100	8100	Base Heating, Other Electric	Non-Jurisdictional	2014	2054	34.88	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	34.88	0.00	0.00
VA	9500	9500	Base Miscellaneous	Non-Jurisdictional	2014	2054	894.20	139.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	894.20	139.33	0.00
VA	9500	9501	Xmisc	Non-Jurisdictional	2014	2054	894.20	139.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00

APPENDIX H

Base Avoided Costs

Economic MW
0.00
0.11
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Base Avoided Costs

Economic MW
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Economic MW
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Base Avoided Costs

Economic MW
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APPENDIX H

Base Avoided Costs

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Base Avoided Costs

Economic MW
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Base Avoided Costs

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Base Avoided Costs

Economic MW
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Base Avoided Costs

Economic MW
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Base Avoided Costs

Economic MW
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APPENDIX H

Base Avoided Costs

Economic MW
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Base Avoided Costs

Economic MW
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Economic MW
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APPENDIX H

Base Avoided Costs

Economic MW
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14.12
22.36
24.84
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31.50
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11.04
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7.15
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3.85
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4.61
0.00
10.79
0.17
1.23
0.00
1.18
0.00
1.97
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0.00
0.00
3.83
39.93
1.24
0.91
4.35
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Base Avoided Costs

Economic MW
133.63
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31.22
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7.19
1.92
0.00
0.00
3.75
0.62
5.67
1.08
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0.00
0.00
1.18
2.65
0.00
0.00
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0.00
1.45
0.91
0.17
0.75
0.76
0.07
0.84
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1.14
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2.09
2.39
0.92
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APPENDIX H

Base Avoided Costs

Economic MW
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APPENDIX H

Base Avoided Costs

Commercial Opt-Out/Exempt/Nonjurisdictional New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Office	2014	2053	6.32	1.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.32	1.44	0.00	0.00
Opt-Out/Ex	100	101	High Performance Building/Int Design - Tier 1 15% - Office	Office	2014	2053	5.36	1.16	0.97	0.97	15%	0.28	0.28	20%	0.04	0.04	0	0	1.93			0.97	0.28
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Office	2014	2053	5.06	1.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.06	1.15	0.00	0.00
Opt-Out/Ex	200	201	High Performance Building/Int Design - Tier 2 30% - Office	Office	2014	2053	3.51	0.70	1.54	1.54	31%	0.45	0.45	39%	0.03	0.03	0	0	2.71			1.54	0.45
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Office	2014	2053	1.14	0.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.14	0.26	0.00	0.00
Opt-Out/Ex	300	301	High Performance Building/Int Design - Tier 3 50% - Office	Office	2014	2053	0.56	0.09	0.58	0.58	51%	0.17	0.17	65%	0.03	0.03	0	0	2.58			0.58	0.17
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Office	2014	2053	0.13	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.03	0.00	0.00
Opt-Out/Ex	400	401	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Office	Office	2014	2053	0.04	0.00	0.09	0.09	71%	0.03	0.03	91%	0.04	0.04	0	0	2.30			0.09	0.03
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Retail	2014	2053	0.81	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.81	0.19	0.00	0.00
Opt-Out/Ex	100	103	High Performance Building/Int Design - Tier 1 15% - Retail	Retail	2014	2053	0.69	0.15	0.12	0.12	15%	0.04	0.04	20%	0.09	0.09	0	0	0.93			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Retail	2014	2053	0.65	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.65	0.15	0.00	0.00
Opt-Out/Ex	200	203	High Performance Building/Int Design - Tier 2 30% - Retail	Retail	2014	2053	0.45	0.09	0.20	0.20	31%	0.06	0.06	39%	0.06	0.06	0	0	1.30			0.20	0.06
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Retail	2014	2053	0.15	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.15	0.03	0.00	0.00
Opt-Out/Ex	300	303	High Performance Building/Int Design - Tier 3 50% - Retail	Retail	2014	2053	0.07	0.01	0.07	0.07	51%	0.02	0.02	65%	0.07	0.07	0	0	1.24			0.07	0.02
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Retail	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
Opt-Out/Ex	400	403	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Retail	Retail	2014	2053	0.00	0.00	0.01	0.01	71%	0.00	0.00	91%	0.07	0.07	0	0	1.10			0.01	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Grocery	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
Opt-Out/Ex	100	104	High Performance Building/Int Design - Tier 1 15% - Grocery	Grocery	2014	2053	0.02	0.00	0.00	0.00	15%	0.00	0.00	20%	0.03	0.03	0	0	2.38			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Grocery	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
Opt-Out/Ex	200	204	High Performance Building/Int Design - Tier 2 30% - Grocery	Grocery	2014	2053	0.01	0.00	0.01	0.01	30%	0.00	0.00	39%	0.02	0.02	0	0	3.33			0.01	0.00
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Grocery	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	300	304	High Performance Building/Int Design - Tier 3 50% - Grocery	Grocery	2014	2053	0.00	0.00	0.00	0.00	50%	0.00	0.00	65%	0.02	0.02	0	0	3.17			0.00	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Grocery	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	400	404	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Grocery	Grocery	2014	2053	0.00	0.00	0.00	0.00	70%	0.00	0.00	91%	0.03	0.03	0	0	2.83			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Warehouse	2014	2053	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00	0.00
Opt-Out/Ex	100	105	High Performance Building/Int Design - Tier 1 15% - Warehouse	Warehouse	2014	2053	0.09	0.02	0.02	0.02	15%	0.00	0.00	20%	0.10	0.10	0	0	0.75			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Warehouse	2014	2053	0.08	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.02	0.00	0.00
Opt-Out/Ex	200	205	High Performance Building/Int Design - Tier 2 30% - Warehouse	Warehouse	2014	2053	0.06	0.01	0.03	0.03	30%	0.01	0.01	39%	0.07	0.07	0	0	1.05			0.03	0.01
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Warehouse	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
Opt-Out/Ex	300	305	High Performance Building/Int Design - Tier 3 50% - Warehouse	Warehouse	2014	2053	0.01	0.00	0.01	0.01	51%	0.00	0.00	65%	0.08	0.08	0	0	1.00			0.01	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Warehouse	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	400	405	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Warehous	Warehouse	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.09	0.09	0	0	0.89			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	School	2014	2053	0.19	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.03	0.00	0.00
Opt-Out/Ex	100	106	High Performance Building/Int Design - Tier 1 15% - School	School	2014	2053	0.16	0.02	0.03	0.03	15%	0.01	0.01	20%	0.12	0.12	1	1	0.61			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	School	2014	2053	0.15	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.15	0.02	0.00	0.00
Opt-Out/Ex	200	206	High Performance Building/Int Design - Tier 2 30% - School	School	2014	2053	0.10	0.01	0.05	0.05	31%	0.01	0.01	39%	0.09	0.09	0	0	0.86			0.00	0.00
Opt-Out/Ex	300	300	Base Bldg Design - 50%	School	2014	2053	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
Opt-Out/Ex	300	306	High Performance Building/Int Design - Tier 3 50% - School	School	2014	2053	0.02	0.00	0.02	0.02	51%	0.00	0.00	65%	0.09	0.09	0	0	0.82			0.00	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	School	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	400	406	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - School	School	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.10	0.10	1	1	0.73			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Health	2014	2053	1.74	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.74	0.33	0.00	0.00
Opt-Out/Ex	100	107	High Performance Building/Int Design - Tier 1 15% - Health	Health	2014	2053	1.48	0.26	0.26	0.26	15%	0.06	0.06	20%	0.12	0.12	1	1	0.62			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Health	2014	2053	1.39	0.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.39	0.26	0.00	0.00
Opt-Out/Ex	200	207	High Performance Building/Int Design - Tier 2 30% - Health	Health	2014	2053	0.97	0.16	0.42	0.42	30%	0.10	0.10	39%	0.09	0.09	0	0	0.87			0.00	0.00
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Health	2014	2053	0.31	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.31	0.06	0.00	0.00
Opt-Out/Ex	300	307	High Performance Building/Int Design - Tier 3 50% - Health	Health	2014	2053	0.16	0.02	0.16	0.16	50%	0.04	0.04	65%	0.09	0.09	0	0	0.83			0.00	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Health	2014	2053	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
Opt-Out/Ex	400	407	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Health	Health	2014	2053	0.01	0.00	0.02	0.02	71%	0.01	0.01	91%	0.10	0.10	0	0	0.74			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Lodging	2014	2053	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
Opt-Out/Ex	100	108	High Performance Building/Int Design - Tier 1 15% - Lodging	Lodging	2014	2053	0.04	0.01	0.01	0.01	15%	0.00	0.00	20%	0.09	0.09	0	0	0.84			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Lodging	2014	2053	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
Opt-Out/Ex	200	208	High Performance Building/Int Design - Tier 2 30% - Lodging	Lodging	2014	2053	0.03	0.00	0.01	0.01	30%	0.00	0.00	39%	0.07	0.07	0	0	1.17			0.01	0.00
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Lodging	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
Opt-Out/Ex	300	308	High Performance Building/Int Design - Tier 3 50% - Lodging	Lodging	2014	2053	0.00	0.00	0.00	0.00	50%	0.00	0.00	65%	0.07	0.07	0	0	1.12			0.00	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Lodging	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	400	408	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Lodging	Lodging	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.08	0.08	0	0	1.00			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Data Centers	2014	2053	8.83	1.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.83	1.54	0.00	0.00
Opt-Out/Ex	100	109	High Performance Building/Int Design - Tier 1 15% - Data Centers	Data Centers	2014	2053	7.50	1.24	1.33	1.33	15%	0.30	0.30	20%	0.01	0.01	0	0	6.12			1.33	0.30
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Data Centers	2014	2053	7.07	1.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.07	1.23	0.00	0.00
Opt-Out/Ex	200	209	High Performance Building/Int Design - Tier 2 30% - Data Centers	Data Centers	2014	2053	4.94	0.75	2.13	2.13	30%	0.48	0.48	39%	0.01	0.01	0	0	8.56			2.13	0.48
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Data Centers	2014	2053	1.59	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.59	0.28	0.00	0.00
Opt-Out/Ex	300	309	High Performance Building/Int Design - Tier 3 50% - Data Centers	Data Centers	2014	2053	0.79	0.10	0.80	0.80	50%	0.18	0.18	65%	0.01	0.01	0	0	8.16			0.80	0.18
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Data Centers	2014	2053	0.18	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.03	0.00	0.00
Opt-Out/Ex	400	409	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Data Cent	Data Centers	2014	2053	0.05	0.00	0.12	0.12	70%	0.03	0.03	91%	0.01	0.01	0	0	7.27			0.12	0.03
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Misc	2014	2053	2.19	0.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.19	0.43	0.00	0.00
Opt-Out/Ex	100	112	High Performance Building/Int Design - Tier 1 15% - Miscellaneous	Misc	2014	2053	1.85	0.35	0.33	0.33	15%	0.08	0.08	20%	0.09	0.09	0	0	0.83			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Misc	2014	2053	1.75	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.75	0.34	0.00	0.00
Opt-Out/Ex	200	212	High Performance Building/Int Design - Tier 2 30% - Miscellaneous	Misc	2014	2053	1.22	0.21	0.53	0.53	30%	0.13	0.13	39%	0.07	0.07	0	0	1.16			0.53	0.13
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Misc	2014	2053	0.39	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.08	0.00	0.00
Opt-Out/Ex	300	312	High Performance Building/Int Design - Tier 3 50% - Miscellaneous	Misc	2014	2053	0.19	0.03	0.20	0.20	51%	0.05	0.05	65%	0.07	0.07	0	0	1.11			0.20	0.05
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Misc	2014	2053	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
Opt-Out/Ex	400	412	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Miscellane	Misc	2014	2053	0.01	0.00	0.03	0.03	71%	0.01	0.01	91%	0.08	0.08	0	0	0.99			0.00	0.00
VA	100	100	Base Bldg Design - 15%	Non-Jurisdictional	2014	2053	79.60	16.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	79.60	16.85	0.00	0.00
VA	100	110	High Performance Building/Int Design - Tier 1 15% - Non-Jurisdictional	Non-Jurisdictional	2014	2053	67.47	13.57	12.13	12.13	15%	3.29	3.29	20%	0.06	0.06	0	0	1.37			12.13	3.29

APPENDIX H

Base Avoided Costs

Commercial Opt-Out/Exempt/Nonjurisdictional New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	200	200	Base Bldg Design - 30%	Non-Jurisdictional	2014	2053	63.68	13.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	63.68	13.48	0.00	0.00
VA	200	210	High Performance Building/Int Design - Tier 2 30% - Non-Jurisdictional	Non-Jurisdictional	2014	2053	44.28	8.22	19.40	19.40	30%	5.26	5.26	39%	0.04	0.04	0	0	1.92			19.40	5.26
VA	300	300	Base Bldg Design - 50%	Non-Jurisdictional	2014	2053	14.33	3.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.33	3.03	0.00	0.00
VA	300	310	High Performance Building/Int Design - Tier 3 50% - Non-Jurisdictional	Non-Jurisdictional	2014	2053	7.05	1.06	7.28	7.28	51%	1.97	1.97	65%	0.04	0.04	0	0	1.83			7.28	1.97
VA	400	400	Base Bldg Design - 70%	Non-Jurisdictional	2014	2053	1.59	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.59	0.34	0.00	0.00
VA	400	410	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Non-Juris	Non-Jurisdictional	2014	2053	0.46	0.03	1.13	1.13	71%	0.31	0.31	91%	0.05	0.05	0	0	1.63			1.13	0.31

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	1000	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	Single Family	2014	2053	2,123.48	1,261.52	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2,123.48	1,261.52	0.00	0.00
VA	1000	1024	Self Install Weatherization (CAC)	Single Family	2014	2053	2,099.82	1,247.47	23.66	23.66	1%	14.06	14.06	1%	0.01	0.01	0	0	6.57			23.66	14.06
VA	1000	1022	Programmable Thermostat (CAC)	Single Family	2014	2053	2,087.47	1,240.13	12.34	36.01	2%	7.33	21.39	2%	0.04	0.02	0	0	2.38			12.34	7.33
VA	1000	1021	Return Duct Modification (CAC)	Single Family	2014	2053	2,075.37	1,232.94	12.10	48.11	2%	7.19	28.58	2%	0.06	0.03	0	0	1.90			12.10	7.19
VA	1000	1019	Duct Insulation (CAC)	Single Family	2014	2053	2,073.16	1,231.63	2.22	50.32	2%	1.32	29.90	2%	0.09	0.03	0	0	1.28			2.22	1.32
VA	1000	1004	Proper Refrigerant Charging and Air Flow (CAC)	Single Family	2014	2053	1,924.33	1,143.21	148.83	199.16	9%	88.42	118.32	9%	0.08	0.07	0	0	1.14			148.83	88.42
VA	1000	1025	Door Weatherization (CAC)	Single Family	2014	2053	1,893.00	1,124.60	31.33	230.48	11%	18.61	136.93	11%	0.07	0.07	0	0	1.01			31.33	18.61
VA	1000	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	1,778.11	1,056.34	114.89	345.38	16%	68.26	205.18	16%	0.13	0.09	0	0	0.84			0.00	0.00
VA	1000	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	1,677.46	996.55	100.65	446.02	21%	59.79	264.97	21%	0.16	0.10	0	0	0.71			0.00	0.00
VA	1000	1005	Proper Sizing and Quality Install (CAC)	Single Family	2014	2053	1,514.52	899.75	162.94	608.96	29%	96.80	361.78	29%	0.17	0.12	0	0	0.65			0.00	0.00
VA	1000	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	1,361.98	809.13	152.54	761.51	36%	90.62	452.40	36%	0.22	0.14	0	0	0.49			0.00	0.00
VA	1000	1014	Crawlspace insulation (CAC)	Single Family	2014	2053	1,353.27	803.95	8.70	770.21	36%	5.17	457.57	36%	0.26	0.14	0	0	0.44			0.00	0.00
VA	1000	1008	Ceiling R-0 to R-38 Insulation (CAC)	Single Family	2014	2053	1,315.09	781.27	38.18	808.39	38%	22.68	480.25	38%	0.27	0.15	0	0	0.42			0.00	0.00
VA	1000	1009	Ceiling R-0 to R-49 Insulation (CAC)	Single Family	2014	2053	1,314.53	780.94	0.55	808.95	38%	0.33	480.58	38%	3.00	0.15	5	0	0.04			0.00	0.00
VA	1000	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Single Family	2014	2053	1,254.71	745.40	59.82	868.77	41%	35.54	516.12	41%	0.33	0.16	1	0	0.27			0.00	0.00
VA	1000	1029	WINDOWS - Default With Sunscreen (CAC)	Single Family	2014	2053	1,131.76	672.36	122.95	991.72	47%	73.04	589.16	47%	0.36	0.19	1	0	0.24			0.00	0.00
VA	1000	1026	Ceiling Fans (CAC)	Single Family	2014	2053	1,119.10	664.84	12.66	1,004.38	47%	7.52	596.68	47%	0.51	0.19	1	0	0.20			0.00	0.00
VA	1000	1010	Ceiling R-11 to R-38 Insulaton (CAC)	Single Family	2014	2053	1,095.69	650.93	23.41	1,027.79	48%	13.91	610.59	48%	0.74	0.20	1	0	0.15			0.00	0.00
VA	1000	1011	Ceiling R-11 to R-49 Insulation (CAC)	Single Family	2014	2053	1,094.69	650.34	1.00	1,028.79	48%	0.59	611.18	48%	3.60	0.21	6	0	0.03			0.00	0.00
VA	1000	1020	Duct Testing and Sealing (CAC)	Single Family	2014	2053	1,090.03	647.57	4.67	1,033.45	49%	2.77	613.96	49%	1.06	0.21	2	0	0.10			0.00	0.00
VA	1000	1012	Ceiling R-19 to R-38 Insulation (CAC)	Single Family	2014	2053	1,083.96	643.96	6.07	1,039.52	49%	3.61	617.56	49%	1.26	0.22	2	0	0.09			0.00	0.00
VA	1000	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Single Family	2014	2053	1,078.68	640.83	5.27	1,044.80	49%	3.13	620.70	49%	1.30	0.22	2	0	0.09			0.00	0.00
VA	1000	1018	Cool Roof (CAC)	Single Family	2014	2053	1,060.37	629.95	18.31	1,063.11	50%	10.88	631.57	50%	1.34	0.24	2	0	0.08			0.00	0.00
VA	1000	1013	Ceiling R-19 to R-49 Insulation (CAC)	Single Family	2014	2053	1,059.82	629.62	0.55	1,063.66	50%	0.33	631.90	50%	3.72	0.24	6	0	0.03			0.00	0.00
VA	1000	1027	Whole House Fans (CAC)	Single Family	2014	2053	1,032.07	613.13	27.75	1,091.41	51%	16.49	648.39	51%	1.68	0.28	3	0	0.06			0.00	0.00
VA	1000	1028	Window Film (CAC)	Single Family	2014	2053	997.22	592.43	34.85	1,126.26	53%	20.70	669.09	53%	1.73	0.33	3	1	0.05			0.00	0.00
VA	1000	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	Single Family	2014	2053	995.17	591.21	2.05	1,128.31	53%	1.22	670.31	53%	2.48	0.33	4	1	0.05			0.00	0.00
VA	1000	1007	AC Filter Changes (CAC)	Single Family	2014	2053	990.93	588.70	4.24	1,132.55	53%	2.52	672.83	53%	1.83	0.34	3	1	0.04			0.00	0.00
VA	1000	1006	AC Maintenance and/or tune-up (CAC)	Single Family	2014	2053	986.52	586.07	4.41	1,136.96	54%	2.62	675.45	54%	2.09	0.34	4	1	0.03			0.00	0.00
VA	1000	1015	Basement insulation R-13 (CAC)	Single Family	2014	2053	982.22	583.52	4.30	1,141.26	54%	2.55	678.00	54%	3.64	0.35	6	1	0.03			0.00	0.00
VA	1000	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	Single Family	2014	2053	981.99	583.38	0.23	1,141.49	54%	0.14	678.14	54%	4.19	0.36	7	1	0.03			0.00	0.00
VA	1100	1100	Base Split-System Air Conditioner - Early Replacement (11 SEI	Single Family	2014	2053	349.12	207.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	349.12	207.41	0.00	0.00
VA	1100	1117	Duct Insulation (CAC early replacement)	Single Family	2014	2053	346.27	205.72	2.85	2.85	1%	1.69	1.69	1%	0.01	0.01	0	0	9.28			2.85	1.69
VA	1100	1122	Self Install Weatherization (CAC early replacement)	Single Family	2014	2053	340.44	202.25	5.84	8.69	2%	3.47	5.16	2%	0.01	0.01	0	0	6.04			5.84	3.47
VA	1100	1120	Programmable Thermostat (CAC early replacement)	Single Family	2014	2053	338.44	201.06	2.00	10.69	3%	1.19	6.35	3%	0.04	0.02	0	0	2.19			2.00	1.19
VA	1100	1119	Return Duct Modification (CAC early replacement)	Single Family	2014	2053	336.47	199.89	1.96	12.65	4%	1.17	7.51	4%	0.07	0.03	0	0	1.74			1.96	1.17
VA	1100	1123	Door Weatherization (CAC early replacement)	Single Family	2014	2053	330.11	196.11	6.37	19.02	5%	3.78	11.30	5%	0.06	0.04	0	0	1.16			6.37	3.78
VA	1100	1102	Proper Refrigerant Charging and Air Flow (CAC early replacem	Single Family	2014	2053	302.78	179.88	27.32	46.34	13%	16.23	27.53	13%	0.09	0.07	0	0	1.02			27.32	16.23
VA	1100	1116	Cool Roof (CAC early replacement)	Single Family	2014	2053	271.17	161.09	31.62	77.96	22%	18.78	46.31	22%	0.14	0.10	0	0	0.76			0.00	0.00
VA	1100	1125	Whole House Fans (CAC early replacement)	Single Family	2014	2053	221.49	131.58	49.68	127.64	37%	29.51	75.83	37%	0.17	0.12	0	0	0.63			0.00	0.00
VA	1100	1103	Proper Sizing and Quality Install (CAC early replacement)	Single Family	2014	2053	196.79	116.91	24.70	152.34	44%	14.67	90.50	44%	0.23	0.14	0	0	0.48			0.00	0.00
VA	1100	1112	Crawlspace insulation (CAC early replacement)	Single Family	2014	2053	195.53	116.16	1.26	153.59	44%	0.75	91.25	44%	0.32	0.14	1	0	0.36			0.00	0.00
VA	1100	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Single Family	2014	2053	190.01	112.88	5.52	159.11	46%	3.28	94.52	46%	0.34	0.15	1	0	0.34			0.00	0.00
VA	1100	1113	Basement insulation R-13 (CAC early replacement)	Single Family	2014	2053	182.51	108.43	7.50	166.61	48%	4.46	98.98	48%	0.37	0.16	1	0	0.31			0.00	0.00
VA	1100	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	182.43	108.38	0.08	166.69	48%	0.05	99.03	48%	3.82	0.16	6	0	0.03			0.00	0.00
VA	1100	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early r	Single Family	2014	2053	179.74	106.78	2.70	169.39	49%	1.60	100.63	49%	0.45	0.16	1	0	0.25			0.00	0.00
VA	1100	1118	Duct Testing and Sealing (CAC early replacement)	Single Family	2014	2053	178.06	105.78	1.68	171.06	49%	1.00	101.63	49%	0.52	0.17	1	0	0.21			0.00	0.00
VA	1100	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early re	Single Family	2014	2053	169.96	100.97	8.10	179.17	51%	4.81	106.44	51%	0.43	0.18	1	0	0.21			0.00	0.00
VA	1100	1124	Ceiling Fans (CAC early replacement)	Single Family	2014	2053	168.37	100.03	1.58	180.75	52%	0.94	107.38	52%	0.72	0.18	1	0	0.14			0.00	0.00
VA	1100	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Single Family	2014	2053	164.85	97.94	3.52	184.27	53%	2.09	109.47	53%	0.87	0.20	1	0	0.13			0.00	0.00
VA	1100	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	164.70	97.85	0.15	184.42	53%	0.09	109.56	53%	4.23	0.20	7	0	0.03			0.00	0.00
VA	1100	1126	Window Film (CAC early replacement)	Single Family	2014	2053	152.35	90.51	12.35	196.77	56%	7.34	116.90	56%	0.86	0.24	1	0	0.10			0.00	0.00
VA	1100	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	Single Family	2014	2053	145.08	86.19	7.27	204.04	58%	4.32	121.22	58%	1.09	0.27	2	0	0.08			0.00	0.00
VA	1100	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Single Family	2014	2053	144.27	85.71	0.81	204.85	59%	0.48	121.70	59%	1.67	0.28	3	0	0.07			0.00	0.00
VA	1100	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	144.20	85.66	0.08	204.93	59%	0.04	121.74	59%	4.83	0.28	8	0	0.02			0.00	0.00
VA	1100	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Single Family	2014	2053	143.90	85.49	0.30	205.22	59%	0.18	121.92	59%	3.03	0.28	5	0	0.04			0.00	0.00
VA	1100	1105	AC Filter Changes (CAC early replacement)	Single Family	2014	2053	143.29	85.12	0.61	205.84	59%	0.36	122.28	59%	2.23	0.29	4	0	0.03			0.00	0.00
VA	1100	1104	AC Maintenance and/or tune-up (CAC early replacement)	Single Family	2014	2053	142.65	84.75	0.64	206.47	59%	0.38	122.66	59%	2.55	0.30	4	0	0.03			0.00	0.00
VA	1100	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality I	Single Family	2014	2053	138.99	82.57	3.66	210.13	60%	2.17	124.84	60%	3.37	0.35	6	1	0.02			0.00	0.00
VA	1100	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Single Family	2014	2053	138.96	82.55	0.03	210.16	60%	0.02	124.86	60%	5.23	0.35	9	1	0.02			0.00	0.00
VA	1200	1200	Base Heat Pump Cooling (13 SEER)	Single Family	2014	2053	1,802.58	1,070.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,802.58	1,070.88	0.00	0.00
VA	1200	1219	Duct Insulation (HP cooling)	Single Family	2014	2053	1,787.87	1,062.14	14.71	14.71	1%	8.74	8.74	1%	0.01	0.01	0	0	9.51			14.71	8.74
VA	1200	1223	Self Install Weatherization (HP cooling)	Single Family	2014	2053	1,767.94	1,050.30	19.92	34.64	2%	11.84	20.58	2%	0.04	0.03	0	0	2.38			19.92	11.84
VA	1200	1221	Programmable Thermostat (HP cooling)	Single Family	2014	2053	1,741.39	1,034.53	26.56	61.19	3%	15.78	36.35	3%	0.06	0.04	0	0	1.73			26.56	15.78
VA	1200	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Single Family	2014	2053	1,446.34	859.24	295.05	356.24	20%	175.29	211.64	20%	0.08	0.07	0	0	1.29			295.05	175.29
VA	1200	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	Single Family	2014	2053	1,342.50	797.56	103.83	460.08	26%	61.68	273.32	26%	0.10	0.08	0	0	0.90			0.00	0.00
VA	1200	1224	Door Weatherization (HP cooling)	Single Family	2014	2053	1,320.65	784.57	21.86	481.93	27%	12.98	286.31	27%	0.09	0.08	0	0	0.79			0.00	0.00
VA	1200	1218	Cool Roof (HP cooling)	Single Family	2014	2053	1,182.74	702.64	137.91	619.84	34%	81.93	368.24	34%	0.16	0.10	0	0	0.65			0.00	0.00
VA	1200	1226	Whole House Fans (HP cooling)	Single Family	2014	2053	966.05	573.92	216.68	836.53	46%	128.73	496.97	46%	0.19	0.12	0	0	0.54			0.00	0.00
VA	1200	1205	Proper Sizing and Quality Install (HP cooling)	Single Family	2014	2053	872.22	518.17	93.84	930.36	52%	55.75	552.71	52%	0.29	0.14	0	0	0.38			0.00	0.00
VA	1200	1214	Crawlspace insulation (HP cooling)	Single Family	2014	2053	866.64	514.85	5.58	935.94	52%	3.31	556.03	52%	0.36	0.14	1	0	0.32			0.00	0.00
VA	1200	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	Single Family	2014	2053	841.94	500.18	24.70	960.64	53%	14.67	570.70	53%	0.38	0.15	1	0	0.30			0.00	0.00
VA	1200	1215	Basement insulation R-13 (HP cooling)	Single Family	2014	2053	808.61	480.38	33.33	993.97	55%	19.80	590.50	55%	0.42	0.16	1	0	0.27			0.00	0.00
VA	1200	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	Single Family	2014	2053	807.86	479.93	0.76	994.72	55%	0.45	590.95	55%	1.95	0.16	3	0	0.06			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	1200	1220	Duct Testing and Sealing (HP cooling)	Single Family	2014	2053	800.31	475.45	7.54	1,002.27	56%	4.48	595.43	56%	0.58	0.16	1	0	0.19			0.00	0.00
VA	1200	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Single Family	2014	2053	763.89	453.82	36.42	1,038.69	58%	21.64	617.07	58%	0.48	0.17	1	0	0.18			0.00	0.00
VA	1200	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Single Family	2014	2053	752.60	447.11	11.29	1,049.98	58%	6.71	623.77	58%	0.84	0.18	1	0	0.14			0.00	0.00
VA	1200	1225	Ceiling Fans (HP cooling)	Single Family	2014	2053	745.60	442.95	7.01	1,056.98	59%	4.16	627.94	59%	0.82	0.18	1	0	0.13			0.00	0.00
VA	1200	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	Single Family	2014	2053	729.61	433.45	15.99	1,072.97	60%	9.50	637.43	60%	0.96	0.19	2	0	0.12			0.00	0.00
VA	1200	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	Single Family	2014	2053	728.13	432.57	1.48	1,074.45	60%	0.88	638.31	60%	2.16	0.20	4	0	0.05			0.00	0.00
VA	1200	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Single Family	2014	2053	727.50	432.19	0.63	1,075.08	60%	0.38	638.69	60%	1.36	0.20	2	0	0.08			0.00	0.00
VA	1200	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	Single Family	2014	2053	723.56	429.85	3.94	1,079.02	60%	2.34	641.03	60%	1.73	0.20	3	0	0.07			0.00	0.00
VA	1200	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	Single Family	2014	2053	722.72	429.35	0.84	1,079.86	60%	0.50	641.53	60%	2.18	0.20	4	0	0.05			0.00	0.00
VA	1200	1207	Heat Pump Filter Replacement	Single Family	2014	2053	719.64	427.53	3.08	1,082.94	60%	1.83	643.36	60%	2.49	0.21	4	0	0.03			0.00	0.00
VA	1200	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Single Family	2014	2053	717.15	426.05	2.49	1,085.43	60%	1.48	644.83	60%	5.83	0.22	10	0	0.02			0.00	0.00
VA	1200	1206	Heat pump tune up	Single Family	2014	2053	713.96	424.15	3.19	1,088.62	60%	1.90	646.73	60%	4.04	0.24	7	0	0.02			0.00	0.00
VA	1300	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	Single Family	2014	2053	274.13	162.86	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	274.13	162.86	0.00	0.00
VA	1300	1319	Duct Insulation (HP cooling Early Replacement)	Single Family	2014	2053	271.89	161.53	2.24	2.24	1%	1.33	1.33	1%	0.01	0.01	0	0	8.19			2.24	1.33
VA	1300	1323	Self Install Weatherization (HP cooling Early Replacement)	Single Family	2014	2053	268.86	159.73	3.03	5.27	2%	1.80	3.13	2%	0.04	0.03	0	0	2.05			3.03	1.80
VA	1300	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Ea	Single Family	2014	2053	223.31	132.66	45.56	50.82	19%	27.06	30.19	19%	0.09	0.09	0	0	1.12			45.56	27.06
VA	1300	1321	Programmable Thermostat (HP cooling Early Replacement)	Single Family	2014	2053	219.95	130.67	3.35	54.18	20%	1.99	32.19	20%	0.11	0.09	0	0	0.90			0.00	0.00
VA	1300	1324	Door Weatherization (HP cooling Early Replacement)	Single Family	2014	2053	215.79	128.20	4.16	58.34	21%	2.47	34.66	21%	0.09	0.09	0	0	0.85			0.00	0.00
VA	1300	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Re	Single Family	2014	2053	200.30	118.99	15.49	73.83	27%	9.20	43.86	27%	0.12	0.09	0	0	0.76			0.00	0.00
VA	1300	1318	Cool Roof (HP cooling Early Replacement)	Single Family	2014	2053	179.38	106.57	20.92	94.75	35%	12.43	56.29	35%	0.18	0.11	0	0	0.56			0.00	0.00
VA	1300	1326	Whole House Fans (HP cooling early replacement)	Single Family	2014	2053	146.52	87.04	32.86	127.61	47%	19.52	75.81	47%	0.22	0.14	0	0	0.47			0.00	0.00
VA	1300	1305	Proper Sizing and Quality Install (HP cooling Early Replacemer	Single Family	2014	2053	132.29	78.59	14.23	141.84	52%	8.46	84.27	52%	0.34	0.16	1	0	0.32			0.00	0.00
VA	1300	1314	Crawlspace insulation (HP cooling Early Replacement)	Single Family	2014	2053	131.44	78.09	0.84	142.69	52%	0.50	84.77	52%	0.42	0.16	1	0	0.27			0.00	0.00
VA	1300	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Single Family	2014	2053	127.70	75.86	3.75	146.44	53%	2.23	86.99	53%	0.44	0.17	1	0	0.26			0.00	0.00
VA	1300	1315	Basement insulation R-13 (HP cooling Early Replacement)	Single Family	2014	2053	122.65	72.86	5.05	151.48	55%	3.00	89.99	55%	0.49	0.18	1	0	0.23			0.00	0.00
VA	1300	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Single Family	2014	2053	122.54	72.80	0.11	151.60	55%	0.07	90.06	55%	2.27	0.18	4	0	0.05			0.00	0.00
VA	1300	1320	Duct Testing and Sealing (HP cooling Early Replacement)	Single Family	2014	2053	121.39	72.12	1.14	152.74	56%	0.68	90.74	56%	0.68	0.19	1	0	0.16			0.00	0.00
VA	1300	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling E	Single Family	2014	2053	115.87	68.84	5.52	158.26	58%	3.28	94.02	58%	0.56	0.20	1	0	0.16			0.00	0.00
VA	1300	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling I	Single Family	2014	2053	114.16	67.82	1.71	159.98	58%	1.02	95.04	58%	0.97	0.21	2	0	0.12			0.00	0.00
VA	1300	1325	Ceiling Fans (HP cooling early replacement)	Single Family	2014	2053	113.09	67.19	1.06	161.04	59%	0.63	95.67	59%	0.96	0.21	2	0	0.11			0.00	0.00
VA	1300	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Single Family	2014	2053	110.67	65.75	2.42	163.46	60%	1.44	97.11	60%	1.12	0.23	2	0	0.10			0.00	0.00
VA	1300	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement	Single Family	2014	2053	110.44	65.61	0.22	163.69	60%	0.13	97.24	60%	2.52	0.23	4	0	0.05			0.00	0.00
VA	1300	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacem	Single Family	2014	2053	110.35	65.56	0.10	163.78	60%	0.06	97.30	60%	1.58	0.23	3	0	0.07			0.00	0.00
VA	1300	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement	Single Family	2014	2053	109.75	65.20	0.60	164.38	60%	0.35	97.66	60%	2.01	0.24	3	0	0.06			0.00	0.00
VA	1300	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement	Single Family	2014	2053	109.62	65.12	0.13	164.51	60%	0.08	97.73	60%	2.54	0.24	4	0	0.04			0.00	0.00
VA	1300	1307	Heat Pump Filter Replacement	Single Family	2014	2053	109.16	64.85	0.47	164.98	60%	0.28	98.01	60%	2.90	0.25	5	0	0.02			0.00	0.00
VA	1300	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacer	Single Family	2014	2053	108.78	64.62	0.38	165.35	60%	0.22	98.23	60%	6.79	0.26	11	0	0.02			0.00	0.00
VA	1300	1306	Heat pump tune up	Single Family	2014	2053	108.29	64.34	0.48	165.84	60%	0.29	98.52	60%	4.70	0.27	8	0	0.02			0.00	0.00
VA	1400	1400	Base Room Air Conditioner - EER 10.6	Single Family	2014	2053	112.24	66.68	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	112.24	66.68	0.00	0.00
VA	1400	1413	Self Install Weatherization (RAC)	Single Family	2014	2053	110.99	65.94	1.25	1.25	1%	0.74	0.74	1%	0.03	0.03	0	0	3.07			1.25	0.74
VA	1400	1414	Door Weatherization (RAC)	Single Family	2014	2053	109.18	64.86	1.81	3.06	3%	1.07	1.82	3%	0.14	0.10	0	0	0.51			0.00	0.00
VA	1400	1411	Cool Roof (RAC)	Single Family	2014	2053	97.78	58.09	11.40	14.46	13%	6.77	8.59	13%	0.24	0.21	0	0	0.43			0.00	0.00
VA	1400	1416	Whole House Fans (RAC)	Single Family	2014	2053	79.87	47.45	17.91	32.37	29%	10.64	19.23	29%	0.29	0.26	0	0	0.35			0.00	0.00
VA	1400	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Single Family	2014	2053	75.39	44.79	4.48	36.85	33%	2.66	21.89	33%	0.31	0.26	1	0	0.27			0.00	0.00
VA	1400	1417	Window Film (RAC)	Single Family	2014	2053	59.56	35.38	15.83	52.68	47%	9.41	31.30	47%	0.43	0.31	1	1	0.21			0.00	0.00
VA	1400	1404	Ceiling R-0 to R-38 Insulation (RAC)	Single Family	2014	2053	57.97	34.44	1.59	54.27	48%	0.94	32.24	48%	0.75	0.33	1	1	0.15			0.00	0.00
VA	1400	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Single Family	2014	2053	57.12	33.93	0.86	55.13	49%	0.51	32.75	49%	0.90	0.34	2	1	0.13			0.00	0.00
VA	1400	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Single Family	2014	2053	54.01	32.09	3.11	58.23	52%	1.85	34.59	52%	0.72	0.36	1	1	0.12			0.00	0.00
VA	1400	1405	Ceiling R-0 to R-49 Insulation (RAC)	Single Family	2014	2053	53.97	32.06	0.04	58.27	52%	0.02	34.62	52%	4.53	0.36	8	1	0.03			0.00	0.00
VA	1400	1415	Ceiling Fans (RAC)	Single Family	2014	2053	53.47	31.76	0.50	58.77	52%	0.30	34.92	52%	1.46	0.37	2	1	0.07			0.00	0.00
VA	1400	1406	Ceiling R-11 to R-38 Insulaton (RAC)	Single Family	2014	2053	52.45	31.16	1.02	59.79	53%	0.60	35.52	53%	1.93	0.39	3	1	0.06			0.00	0.00
VA	1400	1407	Ceiling R-11 to R-49 Insulation (RAC)	Single Family	2014	2053	52.36	31.11	0.09	59.88	53%	0.05	35.57	53%	4.67	0.40	8	1	0.02			0.00	0.00
VA	1400	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	Single Family	2014	2053	52.14	30.97	0.23	60.10	54%	0.13	35.71	54%	2.58	0.41	4	1	0.04			0.00	0.00
VA	1400	1418	WINDOWS - Default With Sunscreen (RAC)	Single Family	2014	2053	49.65	29.50	2.49	62.59	56%	1.48	37.18	56%	2.03	0.47	3	1	0.04			0.00	0.00
VA	1400	1408	Ceiling R-19 to R-38 Insulation (RAC)	Single Family	2014	2053	49.40	29.35	0.25	62.84	56%	0.15	37.34	56%	3.42	0.49	6	1	0.03			0.00	0.00
VA	1400	1409	Ceiling R-19 to R-49 Insulation (RAC)	Single Family	2014	2053	49.35	29.32	0.05	62.89	56%	0.03	37.36	56%	4.96	0.49	8	1	0.02			0.00	0.00
VA	1400	1403	Room AC Filter Replacement	Single Family	2014	2053	49.14	29.19	0.21	63.10	56%	0.12	37.49	56%	4.18	0.50	7	1	0.02			0.00	0.00
VA	1500	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	Single Family	2014	2053	23.56	14.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	23.56	14.00	0.00	0.00
VA	1500	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early	Single Family	2014	2053	20.43	12.14	3.13	3.13	13%	1.86	1.86	13%	0.63	0.63	1	1	0.13			0.00	0.00
VA	1600	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	Single Family	2014	2053	25.36	15.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.36	15.07	0.00	0.00
VA	1600	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/da	Single Family	2014	2053	21.52	12.79	3.84	3.84	15%	2.28	2.28	15%	0.18	0.18	0	0	0.52			0.00	0.00
VA	1700	1700	Base Furnace Fan - Furnace & CAC	Single Family	2014	2053	1,754.83	900.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,754.83	900.13	0.00	0.00
VA	1700	1701	ECM Furnace Fan (variable speed motor) - Cooling	Single Family	2014	2053	974.90	500.07	779.92	779.92	44%	400.06	400.06	44%	0.03	0.03	0	0	3.76			779.92	400.06
VA	2000	2000	Base Heat Pump Space Heating (7.7 HSPF)	Single Family	2014	2053	2,499.04	296.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2,499.04	296.50	0.00	0.00
VA	2000	2016	Duct Insulation (HP heating)	Single Family	2014	2053	2,478.64	294.08	20.40	20.40	1%	2.42	2.42	1%	0.01	0.01	0	0	10.47			20.40	2.42
VA	2000	2021	Self Install Weatherization (HP heating)	Single Family	2014	2053	2,451.02	290.81	27.62	48.02	2%	3.28	5.70	2%	0.02	0.02	0	0	2.80			27.62	3.28
VA	2000	2019	Programmable Thermostat (HP heating)	Single Family	2014	2053	2,414.21	286.44	36.82	84.84	3%	4.37	10.07	3%	0.05	0.03	0	0	1.44			36.82	4.37
VA	2000	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Single Family	2014	2053	2,191.76	260.05	222.45	307.28	12%	26.39	36.46	12%	0.08	0.07	1	1	0.85			0.00	0.00
VA	2000	2022	Door Weatherization (HP heating)	Single Family	2014	2053	2,170.07	257.47	21.69	328.97	13%	2.57	39.03	13%	0.08	0.07	1	1	0.70			0.00	0.00
VA	2000	2012	Crawlspace insulation (HP heating)	Single Family	2014	2053	2,156.21	255.83	13.85	342.83	14%	1.64	40.68	14%	0.12	0.07	1	1	0.62			0.00	0.00
VA	2000	2006	Ceiling R-0 to R-38 Insulation (HP heating)	Single Family	2014	2053	2,094.77	248.54	61.45	404.27	16%	7.29	47.97	16%	0.13	0.08	1	1	0.60			0.00	0.00
VA	2000	2018	Heat Recovery Ventilators (HP heating)	Single Family	2014	2053	1,640.19	194.60	454.58	858.85	34%	53.93	101.90	34%	0.14	0.11	1	1	0.57			0.00	0.00
VA	2000	2013	Basement insulation R-13 (HP heating)	Single Family	2014	2053	1,575.39	186.92	64.80	923.65	37%	7.69	109.59	37%	0.18	0.11	2	1	0.42			0.00	0.00
VA	2000	2007	Ceiling R-0 to R-49 Insulation (HP heating)	Single Family	2014	2053	1,573.92	186.74	1.48	925.12	37%	0.18	109.76	37%	0.85	0.12	7	1	0.09			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	2000	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Single Family	2014	2053	1,502.29	178.24	71.62	996.75	40%	8.50	118.26	40%	0.21	0.12	2	1	0.31			0.00	0.00
VA	2000	2017	Duct Testing and Sealing (HP heating)	Single Family	2014	2053	1,488.27	176.58	14.03	1,010.77	40%	1.66	119.93	40%	0.26	0.12	2	1	0.28			0.00	0.00
VA	2000	2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Single Family	2014	2053	1,466.96	174.05	21.31	1,032.08	41%	2.53	122.45	41%	0.38	0.13	3	1	0.20			0.00	0.00
VA	2000	2008	Ceiling R-11 to R-38 Insulaton (HP heating)	Single Family	2014	2053	1,435.50	170.32	31.45	1,063.54	43%	3.73	126.19	43%	0.41	0.14	3	1	0.19			0.00	0.00
VA	2000	2009	Ceiling R-11 to R-49 Insulation (HP heating)	Single Family	2014	2053	1,432.59	169.97	2.91	1,066.45	43%	0.35	126.53	43%	0.93	0.14	8	1	0.08			0.00	0.00
VA	2000	2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	Single Family	2014	2053	1,431.35	169.83	1.24	1,067.69	43%	0.15	126.68	43%	0.58	0.14	5	1	0.13			0.00	0.00
VA	2000	2010	Ceiling R-19 to R-38 Insulation (HP heating)	Single Family	2014	2053	1,423.60	168.91	7.75	1,075.44	43%	0.92	127.60	43%	0.74	0.15	6	1	0.10			0.00	0.00
VA	2000	2011	Ceiling R-19 to R-49 Insulation (HP heating)	Single Family	2014	2053	1,421.94	168.71	1.65	1,077.10	43%	0.20	127.79	43%	0.94	0.15	8	1	0.08			0.00	0.00
VA	2000	2003	Ground Source Heat Pump with Desuperheater (HP heating)	Single Family	2014	2053	1,294.15	153.55	127.79	1,204.89	48%	15.16	142.96	48%	1.75	0.32	15	3	0.04			0.00	0.00
VA	2000	2005	Heat Pump Filter Replacement	Single Family	2014	2053	1,288.64	152.89	5.51	1,210.40	48%	0.65	143.61	48%	1.18	0.32	10	3	0.04			0.00	0.00
VA	2000	2004	Heat pump tune up	Single Family	2014	2053	1,282.90	152.21	5.74	1,216.14	49%	0.68	144.29	49%	1.90	0.33	16	3	0.03			0.00	0.00
VA	2000	2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Single Family	2014	2053	1,278.47	151.69	4.44	1,220.57	49%	0.53	144.82	49%	2.77	0.34	23	3	0.03			0.00	0.00
VA	2100	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSP	Single Family	2014	2053	420.83	49.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	420.83	49.93	0.00	0.00
VA	2100	2116	Duct Insulation (HP heating early replacement)	Single Family	2014	2053	417.39	49.52	3.43	3.43	1%	0.41	0.41	1%	0.01	0.01	0	0	9.99			3.43	0.41
VA	2100	2121	Self Install Weatherization (HP heating early replacement)	Single Family	2014	2053	412.74	48.97	4.65	8.09	2%	0.55	0.96	2%	0.02	0.02	0	0	2.67			4.65	0.55
VA	2100	2119	Programmable Thermostat (HP heating early replacement)	Single Family	2014	2053	406.54	48.24	6.20	14.29	3%	0.74	1.69	3%	0.05	0.03	0	0	1.38			6.20	0.74
VA	2100	2102	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early	Single Family	2014	2053	369.08	43.79	37.46	51.75	12%	4.44	6.14	12%	0.09	0.07	1	1	0.81			0.00	0.00
VA	2100	2122	Door Weatherization (HP heating early replacement)	Single Family	2014	2053	365.25	43.34	3.83	55.57	13%	0.45	6.59	13%	0.08	0.07	1	1	0.70			0.00	0.00
VA	2100	2112	Crawlspace insulation (HP heating early replacement)	Single Family	2014	2053	362.93	43.06	2.33	57.90	14%	0.28	6.87	14%	0.13	0.07	1	1	0.59			0.00	0.00
VA	2100	2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Single Family	2014	2053	352.58	41.83	10.34	68.25	16%	1.23	8.10	16%	0.13	0.08	1	1	0.57			0.00	0.00
VA	2100	2118	Heat Recovery Ventilators (HP heating early replacement)	Single Family	2014	2053	276.07	32.76	76.51	144.76	34%	9.08	17.18	34%	0.14	0.11	1	1	0.54			0.00	0.00
VA	2100	2113	Basement insulation R-13 (HP heating early replacement)	Single Family	2014	2053	265.18	31.46	10.90	155.65	37%	1.29	18.47	37%	0.19	0.12	2	1	0.40			0.00	0.00
VA	2100	2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	264.93	31.43	0.25	155.90	37%	0.03	18.50	37%	0.89	0.12	8	1	0.09			0.00	0.00
VA	2100	2120	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating e	Single Family	2014	2053	252.87	30.00	12.06	167.96	40%	1.43	19.93	40%	0.22	0.13	2	1	0.29			0.00	0.00
VA	2100	2117	Duct Testing and Sealing (HP heating early replacement)	Single Family	2014	2053	250.51	29.72	2.36	170.32	40%	0.28	20.21	40%	0.28	0.13	2	1	0.27			0.00	0.00
VA	2100	2123	WINDOWS - Double-Glazed Clear to Energy Star (HP heating	Single Family	2014	2053	246.92	29.30	3.59	173.91	41%	0.43	20.63	41%	0.39	0.14	3	1	0.19			0.00	0.00
VA	2100	2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Single Family	2014	2053	241.63	28.67	5.29	179.20	43%	0.63	21.26	43%	0.43	0.14	4	1	0.18			0.00	0.00
VA	2100	2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	241.14	28.61	0.49	179.69	43%	0.06	21.32	43%	0.98	0.15	8	1	0.08			0.00	0.00
VA	2100	2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replaceme	Single Family	2014	2053	240.93	28.59	0.21	179.90	43%	0.02	21.34	43%	0.61	0.15	5	1	0.13			0.00	0.00
VA	2100	2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Single Family	2014	2053	239.62	28.43	1.30	181.20	43%	0.15	21.50	43%	0.78	0.15	7	1	0.10			0.00	0.00
VA	2100	2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	239.35	28.40	0.28	181.48	43%	0.03	21.53	43%	0.98	0.15	8	1	0.08			0.00	0.00
VA	2100	2103	Ground Source Heat Pump with Desuperheater (HP heating ea	Single Family	2014	2053	217.84	25.85	21.51	202.99	48%	2.55	24.08	48%	1.83	0.33	15	3	0.04			0.00	0.00
VA	2100	2105	Heat Pump Filter Replacement (heating)	Single Family	2014	2053	216.91	25.74	0.93	203.92	48%	0.11	24.19	48%	1.24	0.33	10	3	0.04			0.00	0.00
VA	2100	2104	Heat pump tune up (heating)	Single Family	2014	2053	215.94	25.62	0.97	204.89	49%	0.11	24.31	49%	2.00	0.34	17	3	0.03			0.00	0.00
VA	2100	2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacem	Single Family	2014	2053	215.20	25.53	0.75	205.63	49%	0.09	24.40	49%	2.91	0.35	24	3	0.03			0.00	0.00
VA	2200	2200	Base Resistance Space Heating (Primary)	Single Family	2014	2053	1,220.36	144.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,220.36	144.79	0.00	0.00
VA	2200	2201	Air Source Heat Pump (resistance heating)	Single Family	2014	2053	972.08	115.34	248.28	248.28	20%	29.46	29.46	20%	0.01	0.01	0	0	5.08			248.28	29.46
VA	2200	2216	Self Install Weatherization	Single Family	2014	2053	961.25	114.05	10.83	259.11	21%	1.29	30.74	21%	0.02	0.01	0	0	2.63			10.83	1.29
VA	2200	2214	Programmable Thermostat (resistance heating)	Single Family	2014	2053	946.81	112.34	14.44	273.55	22%	1.71	32.46	22%	0.04	0.02	0	0	1.86			14.44	1.71
VA	2200	2217	Door Weatherization (resistance heating)	Single Family	2014	2053	930.71	110.43	16.10	289.65	24%	1.91	34.37	24%	0.04	0.02	0	0	1.25			16.10	1.91
VA	2200	2203	Ceiling R-0 to R-38 Insulation (resistance heating)	Single Family	2014	2053	902.03	107.02	28.68	318.33	26%	3.40	37.77	26%	0.11	0.03	1	0	0.67			0.00	0.00
VA	2200	2213	Heat Recovery Ventilators (resistance heating)	Single Family	2014	2053	706.29	83.80	195.75	514.07	42%	23.22	60.99	42%	0.13	0.07	1	1	0.58			0.00	0.00
VA	2200	2209	Crawlspace insulation (resistance heating)	Single Family	2014	2053	702.14	83.31	4.14	518.22	42%	0.49	61.49	42%	0.17	0.07	1	1	0.45			0.00	0.00
VA	2200	2210	Basement insulation R-13 (resistance heating)	Single Family	2014	2053	659.41	78.24	42.74	560.95	46%	5.07	66.56	46%	0.18	0.08	1	1	0.43			0.00	0.00
VA	2200	2204	Ceiling R-0 to R-49 Insulation (resistance heating)	Single Family	2014	2053	658.88	78.17	0.53	561.48	46%	0.06	66.62	46%	0.99	0.08	8	1	0.08			0.00	0.00
VA	2200	2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance he	Single Family	2014	2053	628.90	74.62	29.98	591.46	48%	3.56	70.18	48%	0.21	0.08	2	1	0.31			0.00	0.00
VA	2200	2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance h	Single Family	2014	2053	618.62	73.40	10.28	601.74	49%	1.22	71.40	49%	0.33	0.09	3	1	0.24			0.00	0.00
VA	2200	2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	Single Family	2014	2053	604.24	71.69	14.38	616.13	50%	1.71	73.10	50%	0.38	0.09	3	1	0.20			0.00	0.00
VA	2200	2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Single Family	2014	2053	603.50	71.60	0.74	616.86	51%	0.09	73.19	51%	0.41	0.09	3	1	0.19			0.00	0.00
VA	2200	2206	Ceiling R-11 to R-49 Insulation (resistance heating)	Single Family	2014	2053	602.45	71.48	1.05	617.91	51%	0.12	73.31	51%	1.08	0.10	9	1	0.07			0.00	0.00
VA	2200	2207	Ceiling R-19 to R-38 Insulation (resistance heating)	Single Family	2014	2053	598.72	71.04	3.74	621.65	51%	0.44	73.76	51%	0.64	0.10	5	1	0.12			0.00	0.00
VA	2200	2208	Ceiling R-19 to R-49 Insulation (resistance heating)	Single Family	2014	2053	598.12	70.97	0.59	622.24	51%	0.07	73.83	51%	1.09	0.10	9	1	0.07			0.00	0.00
VA	2200	2202	Ground Source Heat Pump with Desuperheater (resistance hea	Single Family	2014	2053	593.20	70.38	4.92	627.16	51%	0.58	74.41	51%	21.03	0.26	177	2	0.00			0.00	0.00
VA	2200	2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Single Family	2014	2053	590.35	70.04	2.85	630.01	52%	0.34	74.75	52%	1.80	0.27	15	2	0.04			0.00	0.00
VA	3030	3030	Base Halogen Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	183.04	20.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	183.04	20.49	0.00	0.00
VA	3030	3032	LEDs (base Halogen 0.5 hrs/day) 2020	Single Family	2020	2053	58.50	6.55	124.54	124.54	68%	13.94	13.94	68%	0.04	0.04	0	0	2.43			124.54	13.94
VA	3130	3130	Base Halogen Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	751.77	84.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	751.77	84.17	0.00	0.00
VA	3130	3132	LEDs (base Halogen 2.5 hrs/day) 2020	Single Family	2020	2053	196.96	22.05	554.81	554.81	74%	62.12	62.12	74%	0.01	0.01	0	0	13.20			554.81	62.12
VA	3230	3230	Base Halogen Lighting - 6 hrs/day 2020	Single Family	2020	2053	496.82	55.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	496.82	55.62	0.00	0.00
VA	3230	3232	LEDs (base Halogen 6 hrs/day) 2020	Single Family	2020	2053	158.78	17.78	338.04	338.04	68%	37.85	37.85	68%	0.00	0.00	0	0	18.12			338.04	37.85
VA	3330	3330	Base CFL Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	35.20	3.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	35.20	3.94	0.00	0.00
VA	3330	3331	LEDs (base CFL 0.5 hrs/day) 2020	Single Family	2020	2053	25.69	2.88	9.50	9.50	27%	1.06	1.06	27%	0.21	0.21	2	2	0.42			0.00	0.00
VA	3430	3430	Base CFL Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	144.30	16.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	144.30	16.16	0.00	0.00
VA	3430	3431	LEDs (base CFL 2.5 hrs/day) 2020	Single Family	2020	2053	105.34	11.79	38.96	38.96	27%	4.36	4.36	27%	0.04	0.04	0	0	2.10			38.96	4.36
VA	3530	3530	Base CFL Lighting - 6 hrs/day 2020	Single Family	2020	2053	95.03	10.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	95.03	10.64	0.00	0.00
VA	3530	3531	LEDs (base CFL 6 hrs/day) 2020	Single Family	2020	2053	69.37	7.77	25.66	25.66	27%	2.87	2.87	27%	0.02	0.02	0	0	3.15			25.66	2.87
VA	3630	3630	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	112.88	12.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	112.88	12.64	0.00	0.00
VA	3630	3632	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Single Family	2020	2053	44.61	4.99	68.27	68.27	60%	7.64	7.64	60%	0.01	0.01	0	0	7.33			68.27	7.64
VA	3730	3730	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	467.66	52.36	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	467.66	52.36	0.00	0.00
VA	3730	3732	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Single Family	2020	2053	184.82	20.69	282.84	282.84	60%	31.67	31.67	60%	0.00	0.00	0	0	36.67			282.84	31.67
VA	3830	3830	Base Halogen (Specialty) Lighting - 6 hrs/day 2020	Single Family	2020	2053	309.62	34.66	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	309.62	34.66	0.00	0.00
VA	3830	3832	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Single Family	2020	2053	122.36	13.70	187.26	187.26	60%	20.97	20.97	60%	0.00	0.00	0	0	54.61			187.26	20.97
VA	3900	3900	Base Fluorescent Fixture 1.8 hrs/day	Single Family	2014	2053	777.81	87.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	777.81	87.08	0.00	0.00
VA	3900	3902	ROB 2L4'T8, 1EB	Single Family	2014	2053	567.97	63.59	209.84	209.84	27%	23.49	23.49	27%	0.04	0.04	0	0	2.44			209.84	23.49

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2014

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	4000	4000	Base Refrigerator	Single Family	2014	2053	991.68	160.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	991.68	160.73	0.00	0.00
VA	4000	4001	Refrigerator (Energy Star)	Single Family	2014	2053	835.60	135.43	156.08	156.08	16%	25.30	25.30	16%	0.04	0.04	0	0	1.92			156.08	25.30
VA	4100	4100	Base Refrigerator--Early Replacement	Single Family	2014	2053	140.69	22.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	140.69	22.80	0.00	0.00
VA	4100	4101	Refrigerator - Early Replacement (Energy Star)	Single Family	2014	2053	77.73	12.60	62.96	62.96	45%	10.20	10.20	45%	0.09	0.09	1	1	0.61			0.00	0.00
VA	4200	4200	Base 2nd Refrigerator - Recycling	Single Family	2014	2053	618.86	100.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	618.86	100.30	0.00	0.00
VA	4200	4201	2nd Refrigerator Recycling	Single Family	2014	2053	159.36	25.83	459.50	459.50	74%	74.48	74.48	74%	0.03	0.03	0	0	2.24			459.50	74.48
VA	4500	4500	Base Freezer	Single Family	2014	2053	417.14	67.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	417.14	67.61	0.00	0.00
VA	4500	4501	Freezer (Energy Star)	Single Family	2014	2053	380.37	61.65	36.77	36.77	9%	5.96	5.96	9%	0.05	0.05	0	0	1.24			36.77	5.96
VA	4600	4600	Base Early Replacement Freezer	Single Family	2014	2053	104.06	16.47	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	104.06	16.47	0.00	0.00
VA	4600	4601	Freezer - Early Replacement (Energy Star)	Single Family	2014	2053	47.80	7.57	56.26	56.26	54%	8.91	8.91	54%	0.04	0.04	0	0	1.47			56.26	8.91
VA	4700	4700	Base 2nd Freezer Recycling	Single Family	2014	2053	32.02	5.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	32.02	5.07	0.00	0.00
VA	4700	4701	2nd Freezer Recycling	Single Family	2014	2053	16.17	2.56	15.85	15.85	50%	2.51	2.51	50%	0.02	0.02	0	0	3.09			15.85	2.51
VA	5000	5000	Base Water Heating (40 gal, EF=0.88)	Single Family	2014	2053	2,760.04	339.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2,760.04	339.93	0.00	0.00
VA	5000	5006	Pipe Wrap	Single Family	2014	2053	2,675.24	329.49	84.80	84.80	3%	10.44	10.44	3%	0.02	0.02	0	0	4.19			84.80	10.44
VA	5000	5007	Hot water turndown 5 degrees	Single Family	2014	2053	2,665.88	328.34	9.36	94.16	3%	1.15	11.60	3%	0.02	0.02	0	0	2.75			9.36	1.15
VA	5000	5008	Hot water turndown 10 degrees	Single Family	2014	2053	2,653.22	326.78	12.66	106.82	4%	1.56	13.16	4%	0.02	0.02	0	0	2.74			12.66	1.56
VA	5000	5010	Hot water turndown 20 degrees	Single Family	2014	2053	2,652.09	326.64	1.13	107.95	4%	0.14	13.29	4%	0.02	0.02	0	0	2.73			1.13	0.14
VA	5000	5009	Hot water turndown 15 degrees	Single Family	2014	2053	2,649.11	326.27	2.98	110.93	4%	0.37	13.66	4%	0.02	0.02	0	0	2.73			2.98	0.37
VA	5000	5015	Low Flow Showerhead 1.5 Gal/Min	Single Family	2014	2053	2,569.93	316.52	79.18	190.11	7%	9.75	23.41	7%	0.02	0.02	0	0	2.62			79.18	9.75
VA	5000	5011	Drain Water Heat Recovery (GFX)	Single Family	2014	2053	2,473.33	304.62	96.60	286.71	10%	11.90	35.31	10%	0.05	0.03	0	0	1.52			96.60	11.90
VA	5000	5014	Faucent Aerators	Single Family	2014	2053	2,420.92	298.17	52.41	339.12	12%	6.46	41.77	12%	0.05	0.03	0	0	1.29			52.41	6.46
VA	5000	5005	DHW Tank Wrap	Single Family	2014	2053	2,279.91	280.80	141.00	480.13	17%	17.37	59.13	17%	0.05	0.04	0	0	1.13			141.00	17.37
VA	5000	5003	Heat Pump Water Heater - Energy Star	Single Family	2014	2053	1,954.44	240.71	325.48	805.60	29%	40.09	99.22	29%	0.06	0.05	1	0	1.09			325.48	40.09
VA	5000	5004	Solar Domestic Water Heating	Single Family	2014	2053	1,041.06	128.22	913.38	1,718.98	62%	112.49	211.71	62%	0.16	0.11	1	1	0.48			0.00	0.00
VA	5000	5012	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	2014	2053	1,038.30	127.88	2.77	1,721.74	62%	0.34	212.05	62%	3.70	0.11	30	1	0.02			0.00	0.00
VA	5000	5013	Energy Star Dishwasher (EF=0.72)	Single Family	2014	2053	1,036.03	127.60	2.27	1,724.01	62%	0.28	212.33	62%	3.64	0.12	30	1	0.02			0.00	0.00
VA	5100	5100	Base Water Heating Early Replacement to Heat Pump Water H	Single Family	2014	2053	487.07	59.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	487.07	59.99	0.00	0.00
VA	5100	5101	Heat Pump Water Heater - Energy Star - Early Replacement	Single Family	2014	2053	417.53	51.42	69.53	69.53	14%	8.56	8.56	14%	0.07	0.07	1	1	1.06			69.53	8.56
VA	5500	5500	Base Clotheswasher (MEF=1.26)	Single Family	2014	2053	74.50	13.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	74.50	13.46	0.00	0.00
VA	5500	5501	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	2014	2053	56.55	10.22	17.95	17.95	24%	3.24	3.24	24%	1.18	1.18	7	7	0.06			0.00	0.00
VA	5600	5600	Base Clothes Dryer (EF=3.01)	Single Family	2014	2053	1,055.90	178.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,055.90	178.70	0.00	0.00
VA	5600	5602	High Efficiency CD (EF=3.01 w/moisture sensor)	Single Family	2014	2053	861.96	145.88	193.94	193.94	18%	32.82	32.82	18%	0.05	0.05	0	0	1.48			193.94	32.82
VA	5600	5601	Heat Pump Dryer	Single Family	2014	2053	430.98	72.94	430.98	624.92	59%	72.94	105.76	59%	0.77	0.55	5	3	0.09			0.00	0.00
VA	5700	5700	Base Dishwasher (EF=0.65)	Single Family	2014	2053	256.25	42.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	256.25	42.02	0.00	0.00
VA	5700	5701	Energy Star Dishwasher (EF=0.72)	Single Family	2014	2053	247.12	40.53	9.13	9.13	4%	1.50	1.50	4%	1.59	1.59	10	10	0.05			0.00	0.00
VA	6000	6000	Base Single Speed Pool Pump (RET)	Single Family	2014	2053	278.12	33.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	278.12	33.07	0.00	0.00
VA	6000	6002	Variable-Speed Pool Pump (<1 hp)	Single Family	2014	2053	77.04	9.16	201.08	201.08	72%	23.91	23.91	72%	0.03	0.03	0	0	2.01			201.08	23.91
VA	6000	6001	PV-Powered Pool Pumps	Single Family	2014	2053	3.08	0.37	73.96	275.04	99%	8.79	32.71	99%	1.02	0.30	9	2	0.06			0.00	0.00
VA	7000	7000	Base Plasma TV	Single Family	2014	2053	135.72	19.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	135.72	19.58	0.00	0.00
VA	7000	7001	Energy Star Plasma TV	Single Family	2014	2053	123.92	17.88	11.80	11.80	9%	1.70	1.70	9%	0.01	0.01	0	0	7.30			11.80	1.70
VA	7000	7002	Plug Load Controls - Smart Power Strip (base plasma TV)	Single Family	2014	2053	122.98	17.74	0.94	12.74	9%	0.14	1.84	9%	4.08	0.31	28	2	0.01			0.00	0.00
VA	7100	7100	Base LCD TV	Single Family	2014	2053	317.27	45.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	317.27	45.78	0.00	0.00
VA	7100	7101	Energy Star LCD TV	Single Family	2014	2053	207.82	29.98	109.45	109.45	34%	15.79	15.79	34%	0.00	0.00	0	0	16.12			109.45	15.79
VA	7100	7102	Plug Load Controls - Smart Power Strip (base LCD TV)	Single Family	2014	2053	203.47	29.36	4.35	113.80	36%	0.63	16.42	36%	4.38	0.17	30	1	0.01			0.00	0.00
VA	7200	7200	Base CRT TV	Single Family	2014	2053	103.11	14.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	103.11	14.88	0.00	0.00
VA	7200	7202	Plug Load Controls - Smart Power Strip (base CRT TV)	Single Family	2014	2053	97.12	14.01	5.99	5.99	6%	0.86	0.86	6%	1.20	1.20	8	8	0.04			0.00	0.00
VA	7300	7300	Base Set-Top Box	Single Family	2014	2053	389.53	56.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	389.53	56.20	0.00	0.00
VA	7400	7400	Base DVD Player	Single Family	2014	2053	47.21	6.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	47.21	6.81	0.00	0.00
VA	7400	7401	Energy Star DVD Player	Single Family	2014	2053	22.25	3.21	24.96	24.96	53%	3.60	3.60	53%	0.01	0.01	0	0	4.08			24.96	3.60
VA	7400	7402	Plug Load Controls - Smart Power Strip (base DVD player)	Single Family	2014	2053	2.42	0.35	19.83	44.78	95%	2.86	6.46	95%	0.74	0.34	5	2	0.07			0.00	0.00
VA	7500	7500	Base Desktop PC	Single Family	2014	2053	423.38	55.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	423.38	55.78	0.00	0.00
VA	7500	7501	Energy Star Desktop PC	Single Family	2014	2053	373.57	49.21	49.81	49.81	12%	6.56	6.56	12%	0.00	0.00	0	0	15.16			49.81	6.56
VA	7500	7502	Plug Load Controls - Smart Power Strip (base Desktop PC)	Single Family	2014	2053	268.77	35.41	104.80	154.61	37%	13.81	20.37	37%	0.08	0.06	1	0	0.67			0.00	0.00
VA	7600	7600	Base Laptop PC	Single Family	2014	2053	75.86	9.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	75.86	9.99	0.00	0.00
VA	7600	7601	Energy Star Laptop PC	Single Family	2014	2053	63.79	8.40	12.07	12.07	16%	1.59	1.59	16%	0.03	0.03	0	0	2.27			12.07	1.59
VA	8000	8000	Base Cooking	Single Family	2014	2053	929.00	296.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	929.00	296.60	0.00	0.00
VA	9000	9000	Base Miscellaneous	Single Family	2014	2053	565.76	74.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	565.76	74.53	0.00	0.00
VA	9900	9900	Base House Use	Single Family	2014	2053	25,081.46	6,210.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25,081.46	6,210.75	0.00	0.00
VA	9900	9901	Indirect Feedback	Single Family	2014	2053	24,708.94	6,118.50	372.52	372.52	1%	92.24	92.24	1%	0.02	0.02	0	0	2.40			372.52	92.24
VA	9900	9902	Direct Feedback	Single Family	2014	2053	23,544.13	5,830.07	1,164.81	1,537.33	6%	288.44	380.68	6%	0.06	0.05	0	0	0.99			0.00	0.00
VA	1000	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	Multi-Family	2014	2053	157.52	93.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	157.52	93.58	0.00	0.00
VA	1000	1024	Self Install Weatherization (CAC)	Multi-Family	2014	2053	155.02	92.09	2.51	2.51	2%	1.49	1.49	2%	0.02	0.02	0	0	4.43			2.51	1.49
VA	1000	1025	Door Weatherization (CAC)	Multi-Family	2014	2053	147.51	87.63	7.51	10.02	6%	4.46	5.95	6%	0.07	0.06	0	0	0.98			0.00	0.00
VA	1000	1022	Programmable Thermostat (CAC)	Multi-Family	2014	2053	146.36	86.95	1.15	11.16	7%	0.68	6.63	7%	0.12	0.07	0	0	0.83			0.00	0.00
VA	1000	1004	Proper Refrigerant Charging and Air Flow (CAC)	Multi-Family	2014	2053	135.85	80.71	10.51	21.67	14%	6.24	12.87	14%	0.12	0.09	0	0	0.74			0.00	0.00
VA	1000	1019	Duct Insulation (CAC)	Multi-Family	2014	2053	135.58	80.54	0.28	21.95	14%	0.16	13.04	14%	0.18	0.09	0	0	0.63			0.00	0.00
VA	1000	1021	Return Duct Modification (CAC)	Multi-Family	2014	2053	134.79	80.08	0.79	22.73	14%	0.47	13.51	14%	0.19	0.10	0	0	0.61			0.00	0.00
VA	1000	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	126.15	74.95	8.64	31.37	20%	5.13	18.64	20%	0.20	0.13	0	0	0.55			0.00	0.00
VA	1000	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	118.61	70.47	7.54	38.91	25%	4.48	23.12	25%	0.24	0.15	0	0	0.46			0.00	0.00
VA	1000	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	106.03	62.99	12.58	51.49	33%	7.48	30.59	33%	0.31	0.19	1	0	0.35			0.00	0.00
VA	1000	1014	Crawlspace insulation (CAC)	Multi-Family	2014	2053	105.66	62.77	0.37	51.87	33%	0.22	30.81	33%	0.35	0.19	1	0	0.32			0.00	0.00
VA	1000	1026	Ceiling Fans (CAC)	Multi-Family	2014	2053	100.02	59.42	5.64	57.50	37%	3.35	34.16	37%	0.40	0.21	1	0	0.26			0.00	0.00
VA	1000	1005	Proper Sizing and Quality Install (CAC)	Multi-Family	2014	2053	90.31	53.65	9.72	67.22	43%	5.77	39.93	43%	0.57	0.26	1	0	0.19			0.00	0.00
VA	1000	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Multi-Family	2014	2053	86.20	51.21	4.11	71.33	45%	2.44	42.37	45%	0.53	0.28	1	0	0.17			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1000	1008	Ceiling R-0 to R-38 Insulation (CAC)	Multi-Family	2014	2053	79.00	46.93	7.20	78.53	50%	4.28	46.65	50%	0.74	0.32	1	1	0.15			0.00	0.00
VA	1000	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Multi-Family	2014	2053	77.23	45.88	1.76	80.29	51%	1.05	47.70	51%	0.83	0.33	1	1	0.14			0.00	0.00
VA	1000	1020	Duct Testing and Sealing (CAC)	Multi-Family	2014	2053	75.24	44.70	1.99	82.28	52%	1.18	48.88	52%	0.88	0.34	1	1	0.13			0.00	0.00
VA	1000	1009	Ceiling R-0 to R-49 Insulation (CAC)	Multi-Family	2014	2053	75.15	44.64	0.09	82.38	52%	0.06	48.94	52%	9.01	0.35	15	1	0.01			0.00	0.00
VA	1000	1029	WINDOWS - Default With Sunscreen (CAC)	Multi-Family	2014	2053	69.95	41.55	5.20	87.58	56%	3.09	52.03	56%	1.08	0.40	2	1	0.08			0.00	0.00
VA	1000	1010	Ceiling R-11 to R-38 Insulaton (CAC)	Multi-Family	2014	2053	68.90	40.93	1.04	88.62	56%	0.62	52.65	56%	2.03	0.42	3	1	0.06			0.00	0.00
VA	1000	1018	Cool Roof (CAC)	Multi-Family	2014	2053	66.71	39.63	2.19	90.82	58%	1.30	53.95	58%	1.93	0.45	3	1	0.05			0.00	0.00
VA	1000	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	Multi-Family	2014	2053	66.09	39.26	0.62	91.43	58%	0.37	54.32	58%	2.47	0.47	4	1	0.05			0.00	0.00
VA	1000	1028	Window Film (CAC)	Multi-Family	2014	2053	62.19	36.95	3.90	95.33	61%	2.32	56.64	61%	1.93	0.53	3	1	0.05			0.00	0.00
VA	1000	1027	Whole House Fans (CAC)	Multi-Family	2014	2053	58.54	34.78	3.65	98.98	63%	2.17	58.80	63%	2.43	0.60	4	1	0.04			0.00	0.00
VA	1000	1011	Ceiling R-11 to R-49 Insulation (CAC)	Multi-Family	2014	2053	58.51	34.76	0.04	99.02	63%	0.02	58.82	63%	11.58	0.60	19	1	0.01			0.00	0.00
VA	1000	1012	Ceiling R-19 to R-38 Insulation (CAC)	Multi-Family	2014	2053	58.40	34.70	0.11	99.12	63%	0.06	58.89	63%	4.03	0.60	7	1	0.03			0.00	0.00
VA	1000	1013	Ceiling R-19 to R-49 Insulation (CAC)	Multi-Family	2014	2053	58.39	34.69	0.01	99.13	63%	0.01	58.89	63%	11.61	0.61	20	1	0.01			0.00	0.00
VA	1000	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	Multi-Family	2014	2053	58.08	34.51	0.31	99.44	63%	0.18	59.08	63%	6.44	0.62	11	1	0.02			0.00	0.00
VA	1000	1015	Basement insulation R-13 (CAC)	Multi-Family	2014	2053	57.95	34.43	0.13	99.57	63%	0.08	59.16	63%	6.52	0.63	11	1	0.02			0.00	0.00
VA	1000	1007	AC Filter Changes (CAC)	Multi-Family	2014	2053	57.78	34.32	0.17	99.75	63%	0.10	59.26	63%	6.33	0.64	11	1	0.01			0.00	0.00
VA	1000	1006	AC Maintenance and/or tune-up (CAC)	Multi-Family	2014	2053	57.60	34.22	0.18	99.93	63%	0.11	59.37	63%	7.24	0.65	12	1	0.01			0.00	0.00
VA	1100	1100	Base Split-System Air Conditioner - Early Replacement (11 SEI	Multi-Family	2014	2053	47.64	28.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	47.64	28.30	0.00	0.00
VA	1100	1122	Self Install Weatherization (CAC early replacement)	Multi-Family	2014	2053	46.84	27.83	0.80	0.80	2%	0.48	0.48	2%	0.01	0.01	0	0	7.59			0.80	0.48
VA	1100	1117	Duct Insulation (CAC early replacement)	Multi-Family	2014	2053	46.46	27.60	0.38	1.19	2%	0.23	0.70	2%	0.02	0.02	0	0	4.95			0.38	0.23
VA	1100	1123	Door Weatherization (CAC early replacement)	Multi-Family	2014	2053	44.26	26.29	2.20	3.39	7%	1.31	2.01	7%	0.04	0.03	0	0	1.63			2.20	1.31
VA	1100	1120	Programmable Thermostat (CAC early replacement)	Multi-Family	2014	2053	43.91	26.09	0.34	3.73	8%	0.20	2.22	8%	0.07	0.04	0	0	1.41			0.34	0.20
VA	1100	1102	Proper Refrigerant Charging and Air Flow (CAC early replacem	Multi-Family	2014	2053	40.08	23.81	3.83	7.56	16%	2.28	4.49	16%	0.07	0.05	0	0	1.23			3.83	2.28
VA	1100	1119	Return Duct Modification (CAC early replacement)	Multi-Family	2014	2053	39.85	23.67	0.23	7.79	16%	0.14	4.63	16%	0.11	0.06	0	0	1.02			0.23	0.14
VA	1100	1112	Crawlspace insulation (CAC early replacement)	Multi-Family	2014	2053	39.71	23.59	0.14	7.94	17%	0.08	4.71	17%	0.17	0.06	0	0	0.69			0.00	0.00
VA	1100	1116	Cool Roof (CAC early replacement)	Multi-Family	2014	2053	35.27	20.95	4.44	12.37	26%	2.64	7.35	26%	0.17	0.10	0	0	0.62			0.00	0.00
VA	1100	1125	Whole House Fans (CAC early replacement)	Multi-Family	2014	2053	28.39	16.87	6.88	19.25	40%	4.09	11.44	40%	0.23	0.14	0	0	0.46			0.00	0.00
VA	1100	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early r	Multi-Family	2014	2053	27.68	16.45	0.71	19.96	42%	0.42	11.86	42%	0.37	0.15	1	0	0.31			0.00	0.00
VA	1100	1103	Proper Sizing and Quality Install (CAC early replacement)	Multi-Family	2014	2053	24.43	14.52	3.25	23.21	49%	1.93	13.79	49%	0.37	0.18	1	0	0.29			0.00	0.00
VA	1100	1118	Duct Testing and Sealing (CAC early replacement)	Multi-Family	2014	2053	23.71	14.08	0.73	23.93	50%	0.43	14.22	50%	0.43	0.19	1	0	0.26			0.00	0.00
VA	1100	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early re	Multi-Family	2014	2053	22.63	13.44	1.08	25.01	53%	0.64	14.86	53%	0.35	0.20	1	0	0.25			0.00	0.00
VA	1100	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Multi-Family	2014	2053	20.74	12.32	1.89	26.90	56%	1.12	15.98	56%	0.50	0.22	1	0	0.23			0.00	0.00
VA	1100	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	20.71	12.31	0.03	26.93	57%	0.02	16.00	57%	5.77	0.22	10	0	0.02			0.00	0.00
VA	1100	1113	Basement insulation R-13 (CAC early replacement)	Multi-Family	2014	2053	20.48	12.17	0.23	27.16	57%	0.14	16.14	57%	0.67	0.23	1	0	0.17			0.00	0.00
VA	1100	1124	Ceiling Fans (CAC early replacement)	Multi-Family	2014	2053	19.95	11.85	0.53	27.69	58%	0.32	16.45	58%	0.74	0.24	1	0	0.14			0.00	0.00
VA	1100	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Multi-Family	2014	2053	19.65	11.67	0.30	27.99	59%	0.18	16.63	59%	1.26	0.25	2	0	0.09			0.00	0.00
VA	1100	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	Multi-Family	2014	2053	18.71	11.12	0.94	28.93	61%	0.56	17.19	61%	1.06	0.27	2	0	0.08			0.00	0.00
VA	1100	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Multi-Family	2014	2053	18.54	11.01	0.17	29.10	61%	0.10	17.29	61%	1.55	0.28	3	0	0.07			0.00	0.00
VA	1100	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	18.53	11.01	0.01	29.11	61%	0.01	17.30	61%	6.45	0.28	11	0	0.02			0.00	0.00
VA	1100	1126	Window Film (CAC early replacement)	Multi-Family	2014	2053	17.68	10.50	0.85	29.97	63%	0.51	17.80	63%	1.56	0.32	3	1	0.06			0.00	0.00
VA	1100	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Multi-Family	2014	2053	17.64	10.48	0.03	30.00	63%	0.02	17.82	63%	2.36	0.32	4	1	0.05			0.00	0.00
VA	1100	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	17.64	10.48	0.00	30.00	63%	0.00	17.82	63%	6.78	0.32	11	1	0.02			0.00	0.00
VA	1100	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality I	Multi-Family	2014	2053	16.74	9.95	0.90	30.90	65%	0.53	18.36	65%	2.57	0.39	4	1	0.03			0.00	0.00
VA	1100	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Multi-Family	2014	2053	16.65	9.89	0.09	30.99	65%	0.05	18.41	65%	3.97	0.40	7	1	0.03			0.00	0.00
VA	1100	1105	AC Filter Changes (CAC early replacement)	Multi-Family	2014	2053	16.60	9.86	0.05	31.04	65%	0.03	18.44	65%	3.89	0.40	7	1	0.02			0.00	0.00
VA	1100	1104	AC Maintenance and/or tune-up (CAC early replacement)	Multi-Family	2014	2053	16.55	9.83	0.05	31.09	65%	0.03	18.47	65%	4.44	0.41	7	1	0.02			0.00	0.00
VA	1200	1200	Base Heat Pump Cooling (13 SEER)	Multi-Family	2014	2053	245.48	145.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	245.48	145.83	0.00	0.00
VA	1200	1219	Duct Insulation (HP cooling)	Multi-Family	2014	2053	243.47	144.64	2.00	2.00	1%	1.19	1.19	1%	0.03	0.03	0	0	4.16			2.00	1.19
VA	1200	1223	Self Install Weatherization (HP cooling)	Multi-Family	2014	2053	239.60	142.34	3.88	5.88	2%	2.30	3.49	2%	0.04	0.03	0	0	2.38			3.88	2.30
VA	1200	1224	Door Weatherization (HP cooling)	Multi-Family	2014	2053	227.99	135.45	11.61	17.49	7%	6.90	10.39	7%	0.05	0.05	0	0	1.38			11.61	6.90
VA	1200	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Multi-Family	2014	2053	189.36	112.50	38.63	56.12	23%	22.95	33.34	23%	0.08	0.07	0	0	1.24			38.63	22.95
VA	1200	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	Multi-Family	2014	2053	175.77	104.42	13.59	69.71	28%	8.08	41.41	28%	0.10	0.08	0	0	0.87			0.00	0.00
VA	1200	1221	Programmable Thermostat (HP cooling)	Multi-Family	2014	2053	172.29	102.35	3.48	73.19	30%	2.07	43.48	30%	0.16	0.08	0	0	0.60			0.00	0.00
VA	1200	1214	Crawlspace insulation (HP cooling)	Multi-Family	2014	2053	171.68	101.99	0.60	73.79	30%	0.36	43.84	30%	0.24	0.08	0	0	0.48			0.00	0.00
VA	1200	1218	Cool Roof (HP cooling)	Multi-Family	2014	2053	152.50	90.60	19.19	92.98	38%	11.40	55.24	38%	0.24	0.12	0	0	0.43			0.00	0.00
VA	1200	1226	Whole House Fans (HP cooling)	Multi-Family	2014	2053	122.76	72.93	29.74	122.72	50%	17.67	72.91	50%	0.33	0.17	1	0	0.32			0.00	0.00
VA	1200	1220	Duct Testing and Sealing (HP cooling)	Multi-Family	2014	2053	119.11	70.76	3.65	126.37	51%	2.17	75.07	51%	0.53	0.18	1	0	0.21			0.00	0.00
VA	1200	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Multi-Family	2014	2053	113.69	67.54	5.42	131.79	54%	3.22	78.29	54%	0.44	0.19	1	0	0.20			0.00	0.00
VA	1200	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	Multi-Family	2014	2053	104.09	61.84	9.59	141.38	58%	5.70	83.99	58%	0.61	0.22	1	0	0.19			0.00	0.00
VA	1200	1205	Proper Sizing and Quality Install (HP cooling)	Multi-Family	2014	2053	93.98	55.83	10.11	151.49	62%	6.01	90.00	62%	0.75	0.25	1	0	0.15			0.00	0.00
VA	1200	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	93.72	55.68	0.26	151.76	62%	0.15	90.16	62%	3.57	0.26	6	0	0.03			0.00	0.00
VA	1200	1215	Basement insulation R-13 (HP cooling)	Multi-Family	2014	2053	92.69	55.07	1.03	152.79	62%	0.61	90.77	62%	0.92	0.26	2	0	0.12			0.00	0.00
VA	1200	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Multi-Family	2014	2053	90.38	53.69	2.31	155.10	63%	1.37	92.14	63%	1.08	0.28	2	0	0.11			0.00	0.00
VA	1200	1225	Ceiling Fans (HP cooling)	Multi-Family	2014	2053	88.02	52.29	2.36	157.46	64%	1.40	93.54	64%	1.05	0.29	2	0	0.10			0.00	0.00
VA	1200	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	Multi-Family	2014	2053	86.67	51.49	1.35	158.80	65%	0.80	94.34	65%	1.73	0.30	3	1	0.07			0.00	0.00
VA	1200	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	86.55	51.42	0.13	158.93	65%	0.07	94.42	65%	3.87	0.30	7	1	0.03			0.00	0.00
VA	1200	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Multi-Family	2014	2053	85.65	50.88	0.90	159.83	65%	0.53	94.95	65%	2.42	0.31	4	1	0.05			0.00	0.00
VA	1200	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	Multi-Family	2014	2053	85.50	50.79	0.15	159.98	65%	0.09	95.04	65%	3.12	0.32	5	1	0.04			0.00	0.00
VA	1200	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	85.47	50.77	0.03	160.01	65%	0.02	95.06	65%	3.93	0.32	7	1	0.03			0.00	0.00
VA	1200	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Multi-Family	2014	2053	84.77	50.36	0.70	160.71	65%	0.42	95.48	65%	7.69	0.35	13	1	0.01			0.00	0.00
VA	1200	1207	Heat Pump Filter Replacement	Multi-Family	2014	2053	84.51	50.21	0.26	160.97	66%	0.15	95.63	66%	5.86	0.36	10	1	0.01			0.00	0.00
VA	1200	1206	Heat pump tune up	Multi-Family	2014	2053	84.25	50.05	0.27	161.23	66%	0.16	95.79	66%	9.46	0.37	16	1	0.01			0.00	0.00
VA	1300	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	Multi-Family	2014	2053	44.29	26.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	44.29	26.31	0.00	0.00
VA	1300	1319	Duct Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	43.93	26.10	0.36	0.36	1%	0.21	0.21	1%	0.03	0.03	0	0	4.25			0.36	0.21

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	1300	1323	Self Install Weatherization (HP cooling Early Replacement)	Multi-Family	2014	2053	43.23	25.68	0.70	1.06	2%	0.42	0.63	2%	0.04	0.03	0	0	2.43			0.70	0.42
VA	1300	1324	Door Weatherization (HP cooling Early Replacement)	Multi-Family	2014	2053	41.18	24.47	2.05	3.11	7%	1.22	1.85	7%	0.05	0.05	0	0	1.38			2.05	1.22
VA	1300	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Ea	Multi-Family	2014	2053	34.20	20.32	6.98	10.09	23%	4.15	5.99	23%	0.08	0.07	0	0	1.27			6.98	4.15
VA	1300	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Re	Multi-Family	2014	2053	31.75	18.86	2.46	12.54	28%	1.46	7.45	28%	0.10	0.08	0	0	0.89			0.00	0.00
VA	1300	1314	Crawlspace insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	31.64	18.80	0.11	12.65	29%	0.07	7.52	29%	0.23	0.08	0	0	0.50			0.00	0.00
VA	1300	1321	Programmable Thermostat (HP cooling Early Replacement)	Multi-Family	2014	2053	31.01	18.42	0.63	13.28	30%	0.37	7.89	30%	0.21	0.08	0	0	0.46			0.00	0.00
VA	1300	1318	Cool Roof (HP cooling Early Replacement)	Multi-Family	2014	2053	27.55	16.36	3.47	16.74	38%	2.06	9.95	38%	0.24	0.12	0	0	0.44			0.00	0.00
VA	1300	1326	Whole House Fans (HP cooling early replacement)	Multi-Family	2014	2053	22.17	13.17	5.37	22.12	50%	3.19	13.14	50%	0.32	0.17	1	0	0.32			0.00	0.00
VA	1300	1320	Duct Testing and Sealing (HP cooling Early Replacement)	Multi-Family	2014	2053	21.51	12.78	0.66	22.78	51%	0.39	13.53	51%	0.52	0.18	1	0	0.21			0.00	0.00
VA	1300	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling E	Multi-Family	2014	2053	20.54	12.20	0.98	23.75	54%	0.58	14.11	54%	0.43	0.19	1	0	0.21			0.00	0.00
VA	1300	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	18.80	11.17	1.73	25.49	58%	1.03	15.14	58%	0.60	0.21	1	0	0.19			0.00	0.00
VA	1300	1305	Proper Sizing and Quality Install (HP cooling Early Replacemer	Multi-Family	2014	2053	16.98	10.09	1.83	27.31	62%	1.09	16.23	62%	0.73	0.25	1	0	0.15			0.00	0.00
VA	1300	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	16.93	10.06	0.05	27.36	62%	0.03	16.25	62%	3.49	0.25	6	0	0.03			0.00	0.00
VA	1300	1315	Basement insulation R-13 (HP cooling Early Replacement)	Multi-Family	2014	2053	16.74	9.95	0.19	27.55	62%	0.11	16.37	62%	0.90	0.26	2	0	0.13			0.00	0.00
VA	1300	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling E	Multi-Family	2014	2053	16.33	9.70	0.42	27.96	63%	0.25	16.61	63%	1.06	0.27	2	0	0.11			0.00	0.00
VA	1300	1325	Ceiling Fans (HP cooling early replacement)	Multi-Family	2014	2053	15.90	9.45	0.43	28.39	64%	0.25	16.87	64%	1.02	0.28	2	0	0.10			0.00	0.00
VA	1300	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Multi-Family	2014	2053	15.66	9.30	0.24	28.63	65%	0.14	17.01	65%	1.69	0.29	3	0	0.07			0.00	0.00
VA	1300	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement	Multi-Family	2014	2053	15.63	9.29	0.02	28.66	65%	0.01	17.02	65%	3.78	0.30	6	0	0.03			0.00	0.00
VA	1300	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacem	Multi-Family	2014	2053	15.47	9.19	0.16	28.82	65%	0.10	17.12	65%	2.37	0.31	4	1	0.05			0.00	0.00
VA	1300	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement	Multi-Family	2014	2053	15.44	9.18	0.03	28.85	65%	0.02	17.14	65%	3.05	0.31	5	1	0.04			0.00	0.00
VA	1300	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement	Multi-Family	2014	2053	15.44	9.17	0.01	28.85	65%	0.00	17.14	65%	3.83	0.31	6	1	0.03			0.00	0.00
VA	1300	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacer	Multi-Family	2014	2053	15.31	9.10	0.13	28.98	65%	0.08	17.22	65%	7.51	0.34	13	1	0.02			0.00	0.00
VA	1300	1307	Heat Pump Filter Replacement	Multi-Family	2014	2053	15.27	9.07	0.05	29.02	66%	0.03	17.24	66%	5.73	0.35	10	1	0.01			0.00	0.00
VA	1300	1306	Heat pump tune up	Multi-Family	2014	2053	15.22	9.04	0.05	29.07	66%	0.03	17.27	66%	9.24	0.37	16	1	0.01			0.00	0.00
VA	1400	1400	Base Room Air Conditioner - EER 10.6	Multi-Family	2014	2053	13.91	8.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.91	8.26	0.00	0.00
VA	1400	1413	Self Install Weatherization (RAC)	Multi-Family	2014	2053	13.69	8.13	0.22	0.22	2%	0.13	0.13	2%	0.01	0.01	0	0	8.99			0.22	0.13
VA	1400	1414	Door Weatherization (RAC)	Multi-Family	2014	2053	13.02	7.74	0.66	0.88	6%	0.39	0.53	6%	0.04	0.03	0	0	1.99			0.66	0.39
VA	1400	1411	Cool Roof (RAC)	Multi-Family	2014	2053	11.57	6.87	1.46	2.34	17%	0.86	1.39	17%	0.13	0.09	0	0	0.82			0.00	0.00
VA	1400	1416	Whole House Fans (RAC)	Multi-Family	2014	2053	9.31	5.53	2.26	4.60	33%	1.34	2.73	33%	0.17	0.13	0	0	0.61			0.00	0.00
VA	1400	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Multi-Family	2014	2053	8.81	5.23	0.51	5.10	37%	0.30	3.03	37%	0.19	0.14	0	0	0.48			0.00	0.00
VA	1400	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Multi-Family	2014	2053	8.59	5.10	0.22	5.32	38%	0.13	3.16	38%	0.29	0.14	0	0	0.39			0.00	0.00
VA	1400	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Multi-Family	2014	2053	8.08	4.80	0.51	5.83	42%	0.30	3.46	42%	0.23	0.15	0	0	0.37			0.00	0.00
VA	1400	1404	Ceiling R-0 to R-38 Insulation (RAC)	Multi-Family	2014	2053	7.44	4.42	0.64	6.47	46%	0.38	3.84	46%	0.36	0.17	1	0	0.31			0.00	0.00
VA	1400	1405	Ceiling R-0 to R-49 Insulation (RAC)	Multi-Family	2014	2053	7.43	4.41	0.02	6.48	47%	0.01	3.85	47%	2.17	0.18	4	0	0.05			0.00	0.00
VA	1400	1415	Ceiling Fans (RAC)	Multi-Family	2014	2053	7.23	4.30	0.19	6.68	48%	0.12	3.97	48%	0.50	0.18	1	0	0.21			0.00	0.00
VA	1400	1417	Window Film (RAC)	Multi-Family	2014	2053	6.58	3.91	0.65	7.33	53%	0.39	4.35	53%	0.50	0.21	1	0	0.18			0.00	0.00
VA	1400	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	Multi-Family	2014	2053	6.52	3.87	0.07	7.39	53%	0.04	4.39	53%	1.00	0.22	2	0	0.11			0.00	0.00
VA	1400	1418	WINDOWS - Default With Sunscreen (RAC)	Multi-Family	2014	2053	6.20	3.69	0.31	7.70	55%	0.18	4.58	55%	0.79	0.24	1	0	0.11			0.00	0.00
VA	1400	1406	Ceiling R-11 to R-38 Insulaton (RAC)	Multi-Family	2014	2053	6.12	3.64	0.08	7.79	56%	0.05	4.63	56%	1.10	0.25	2	0	0.10			0.00	0.00
VA	1400	1407	Ceiling R-11 to R-49 Insulation (RAC)	Multi-Family	2014	2053	6.11	3.63	0.01	7.80	56%	0.00	4.63	56%	2.64	0.25	4	0	0.04			0.00	0.00
VA	1400	1408	Ceiling R-19 to R-38 Insulation (RAC)	Multi-Family	2014	2053	6.10	3.63	0.01	7.81	56%	0.01	4.64	56%	1.84	0.26	3	0	0.06			0.00	0.00
VA	1400	1409	Ceiling R-19 to R-49 Insulation (RAC)	Multi-Family	2014	2053	6.10	3.62	0.00	7.81	56%	0.00	4.64	56%	2.65	0.26	4	0	0.04			0.00	0.00
VA	1400	1403	Room AC Filter Replacement	Multi-Family	2014	2053	6.08	3.61	0.02	7.83	56%	0.01	4.65	56%	2.61	0.26	4	0	0.02			0.00	0.00
VA	1500	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	Multi-Family	2014	2053	1.09	0.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.09	0.65	0.00	0.00
VA	1500	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early	Multi-Family	2014	2053	0.95	0.56	0.15	0.15	13%	0.09	0.09	13%	1.05	1.05	2	2	0.08			0.00	0.00
VA	1600	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	Multi-Family	2014	2053	3.17	1.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.17	1.88	0.00	0.00
VA	1600	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/da	Multi-Family	2014	2053	2.68	1.59	0.49	0.49	15%	0.29	0.29	15%	0.19	0.19	0	0	0.52			0.00	0.00
VA	1700	1700	Base Furnace Fan - Furnace & CAC	Multi-Family	2014	2053	232.33	119.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	232.33	119.17	0.00	0.00
VA	1700	1701	ECM Furnace Fan (variable speed motor) - Cooling	Multi-Family	2014	2053	129.07	66.21	103.26	103.26	44%	52.97	52.97	44%	0.03	0.03	0	0	3.76			103.26	52.97
VA	2000	2000	Base Heat Pump Space Heating (7.7 HSPF)	Multi-Family	2014	2053	362.58	43.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	362.58	43.02	0.00	0.00
VA	2000	2016	Duct Insulation (HP heating)	Multi-Family	2014	2053	359.63	42.67	2.96	2.96	1%	0.35	0.35	1%	0.02	0.02	0	0	3.57			2.96	0.35
VA	2000	2021	Self Install Weatherization (HP heating)	Multi-Family	2014	2053	353.90	41.99	5.72	8.68	2%	0.68	1.03	2%	0.03	0.03	0	0	2.18			5.72	0.68
VA	2000	2022	Door Weatherization (HP heating)	Multi-Family	2014	2053	340.51	40.40	13.39	22.07	6%	1.59	2.62	6%	0.05	0.04	0	0	1.04			13.39	1.59
VA	2000	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Multi-Family	2014	2053	309.14	36.68	31.38	53.45	15%	3.72	6.34	15%	0.11	0.08	1	1	0.65			0.00	0.00
VA	2000	2012	Crawlspace insulation (HP heating)	Multi-Family	2014	2053	308.05	36.55	1.08	54.53	15%	0.13	6.47	15%	0.15	0.08	1	1	0.50			0.00	0.00
VA	2000	2019	Programmable Thermostat (HP heating)	Multi-Family	2014	2053	301.95	35.83	6.10	60.63	17%	0.72	7.19	17%	0.14	0.09	1	1	0.48			0.00	0.00
VA	2000	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Multi-Family	2014	2053	288.21	34.20	13.74	74.37	21%	1.63	8.82	21%	0.20	0.11	2	1	0.32			0.00	0.00
VA	2000	2017	Duct Testing and Sealing (HP heating)	Multi-Family	2014	2053	279.65	33.18	8.57	82.94	23%	1.02	9.84	23%	0.26	0.13	2	1	0.29			0.00	0.00
VA	2000	2006	Ceiling R-0 to R-38 Insulation (HP heating)	Multi-Family	2014	2053	256.05	30.38	23.59	106.53	29%	2.80	12.64	29%	0.29	0.16	2	1	0.27			0.00	0.00
VA	2000	2007	Ceiling R-0 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	255.34	30.30	0.71	107.24	30%	0.08	12.72	30%	1.52	0.17	13	1	0.05			0.00	0.00
VA	2000	2013	Basement insulation R-13 (HP heating)	Multi-Family	2014	2053	252.53	29.96	2.82	110.06	30%	0.33	13.06	30%	0.39	0.18	3	1	0.20			0.00	0.00
VA	2000	2018	Heat Recovery Ventilators (HP heating)	Multi-Family	2014	2053	197.73	23.46	54.80	164.86	45%	6.50	19.56	45%	0.43	0.26	4	2	0.18			0.00	0.00
VA	2000	2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Multi-Family	2014	2053	192.95	22.89	4.78	169.63	47%	0.57	20.13	47%	0.61	0.27	5	2	0.13			0.00	0.00
VA	2000	2008	Ceiling R-11 to R-38 Insulaton (HP heating)	Multi-Family	2014	2053	190.00	22.54	2.95	172.58	48%	0.35	20.48	48%	0.92	0.28	8	2	0.08			0.00	0.00
VA	2000	2009	Ceiling R-11 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	189.73	22.51	0.27	172.86	48%	0.03	20.51	48%	2.04	0.29	17	2	0.04			0.00	0.00
VA	2000	2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	Multi-Family	2014	2053	187.75	22.28	1.97	174.83	48%	0.23	20.74	48%	1.28	0.30	11	2	0.06			0.00	0.00
VA	2000	2003	Ground Source Heat Pump with Desuperheater (HP heating)	Multi-Family	2014	2053	170.46	20.23	17.29	192.12	53%	2.05	22.79	53%	2.45	0.49	21	4	0.03			0.00	0.00
VA	2000	2010	Ceiling R-19 to R-38 Insulation (HP heating)	Multi-Family	2014	2053	170.17	20.19	0.30	192.42	53%	0.04	22.83	53%	1.81	0.49	15	4	0.04			0.00	0.00
VA	2000	2011	Ceiling R-19 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	170.10	20.18	0.06	192.48	53%	0.01	22.84	53%	2.28	0.49	19	4	0.03			0.00	0.00
VA	2000	2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Multi-Family	2014	2053	168.71	20.02	1.39	193.88	53%	0.17	23.00	53%	4.47	0.52	38	4	0.02			0.00	0.00
VA	2000	2005	Heat Pump Filter Replacement	Multi-Family	2014	2053	168.20	19.96	0.51	194.38	54%	0.06	23.06	54%	3.41	0.53	29	4	0.01			0.00	0.00
VA	2000	2004	Heat pump tune up	Multi-Family	2014	2053	167.67	19.89	0.53	194.91	54%	0.06	23.13	54%	5.50	0.54	46	5	0.01			0.00	0.00
VA	2100	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSP	Multi-Family	2014	2053	87.04	10.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	87.04	10.33	0.00	0.00
VA	2100	2116	Duct Insulation (HP heating early replacement)	Multi-Family	2014	2053	86.32	10.24	0.71	0.71	1%	0.08	0.08	1%	0.02	0.02	0	0	4.86			0.71	0.08

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	2100	2121	Self Install Weatherization (HP heating early replacement)	Multi-Family	2014	2053	84.95	10.08	1.37	2.08	2%	0.16	0.25	2%	0.02	0.02	0	0	2.97			1.37	0.16
VA	2100	2122	Door Weatherization (HP heating early replacement)	Multi-Family	2014	2053	82.59	9.80	2.36	4.44	5%	0.28	0.53	5%	0.05	0.04	0	0	1.04			2.36	0.28
VA	2100	2102	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early	Multi-Family	2014	2053	74.98	8.90	7.61	12.05	14%	0.90	1.43	14%	0.08	0.06	1	1	0.89			0.00	0.00
VA	2100	2112	Crawlspace insulation (HP heating early replacement)	Multi-Family	2014	2053	74.72	8.87	0.26	12.32	14%	0.03	1.46	14%	0.11	0.07	1	1	0.68			0.00	0.00
VA	2100	2119	Programmable Thermostat (HP heating early replacement)	Multi-Family	2014	2053	73.24	8.69	1.48	13.79	16%	0.18	1.64	16%	0.10	0.07	1	1	0.66			0.00	0.00
VA	2100	2120	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating e	Multi-Family	2014	2053	69.91	8.29	3.33	17.13	20%	0.40	2.03	20%	0.15	0.08	1	1	0.44			0.00	0.00
VA	2100	2117	Duct Testing and Sealing (HP heating early replacement)	Multi-Family	2014	2053	67.83	8.05	2.08	19.20	22%	0.25	2.28	22%	0.19	0.10	2	1	0.39			0.00	0.00
VA	2100	2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Multi-Family	2014	2053	62.11	7.37	5.72	24.93	29%	0.68	2.96	29%	0.21	0.12	2	1	0.37			0.00	0.00
VA	2100	2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Multi-Family	2014	2053	61.94	7.35	0.17	25.10	29%	0.02	2.98	29%	1.10	0.13	9	1	0.07			0.00	0.00
VA	2100	2113	Basement insulation R-13 (HP heating early replacement)	Multi-Family	2014	2053	61.25	7.27	0.69	25.79	30%	0.08	3.06	30%	0.28	0.13	2	1	0.27			0.00	0.00
VA	2100	2118	Heat Recovery Ventilators (HP heating early replacement)	Multi-Family	2014	2053	47.96	5.69	13.29	39.08	45%	1.58	4.64	45%	0.32	0.19	3	2	0.24			0.00	0.00
VA	2100	2123	WINDOWS - Double-Glazed Clear to Energy Star (HP heating	Multi-Family	2014	2053	46.80	5.55	1.16	40.24	46%	0.14	4.77	46%	0.44	0.20	4	2	0.17			0.00	0.00
VA	2100	2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Multi-Family	2014	2053	46.08	5.47	0.72	40.95	47%	0.08	4.86	47%	0.67	0.21	6	2	0.12			0.00	0.00
VA	2100	2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Multi-Family	2014	2053	46.02	5.46	0.07	41.02	47%	0.01	4.87	47%	1.49	0.21	13	2	0.05			0.00	0.00
VA	2100	2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replaceme	Multi-Family	2014	2053	45.54	5.40	0.48	41.50	48%	0.06	4.92	48%	0.93	0.22	8	2	0.08			0.00	0.00
VA	2100	2103	Ground Source Heat Pump with Desuperheater (HP heating ea	Multi-Family	2014	2053	41.34	4.91	4.19	45.69	52%	0.50	5.42	52%	1.78	0.36	15	3	0.04			0.00	0.00
VA	2100	2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Multi-Family	2014	2053	41.27	4.90	0.07	45.76	53%	0.01	5.43	53%	1.32	0.37	11	3	0.06			0.00	0.00
VA	2100	2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Multi-Family	2014	2053	41.26	4.89	0.02	45.78	53%	0.00	5.43	53%	1.66	0.37	14	3	0.05			0.00	0.00
VA	2100	2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacem	Multi-Family	2014	2053	40.92	4.85	0.34	46.12	53%	0.04	5.47	53%	3.25	0.39	27	3	0.02			0.00	0.00
VA	2100	2105	Heat Pump Filter Replacement (heating)	Multi-Family	2014	2053	40.79	4.84	0.12	46.24	53%	0.01	5.49	53%	2.48	0.39	21	3	0.02			0.00	0.00
VA	2100	2104	Heat pump tune up (heating)	Multi-Family	2014	2053	40.67	4.83	0.13	46.37	53%	0.02	5.50	53%	4.00	0.40	34	3	0.01			0.00	0.00
VA	2200	2200	Base Resistance Space Heating (Primary)	Multi-Family	2014	2053	374.37	44.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	374.37	44.42	0.00	0.00
VA	2200	2201	Air Source Heat Pump (resistance heating)	Multi-Family	2014	2053	295.43	35.05	78.94	78.94	21%	9.37	9.37	21%	0.01	0.01	0	0	5.85			78.94	9.37
VA	2200	2216	Self Install Weatherization	Multi-Family	2014	2053	290.73	34.49	4.70	83.64	22%	0.56	9.92	22%	0.02	0.01	0	0	2.89			4.70	0.56
VA	2200	2217	Door Weatherization (resistance heating)	Multi-Family	2014	2053	277.47	32.92	13.26	96.90	26%	1.57	11.50	26%	0.03	0.02	0	0	1.67			13.26	1.57
VA	2200	2214	Programmable Thermostat (resistance heating)	Multi-Family	2014	2053	271.97	32.27	5.49	102.40	27%	0.65	12.15	27%	0.07	0.02	1	0	0.93			0.00	0.00
VA	2200	2209	Crawlspace insulation (resistance heating)	Multi-Family	2014	2053	270.90	32.14	1.08	103.48	28%	0.13	12.28	28%	0.10	0.02	1	0	0.80			0.00	0.00
VA	2200	2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance he	Multi-Family	2014	2053	258.57	30.68	12.33	115.80	31%	1.46	13.74	31%	0.14	0.03	1	0	0.46			0.00	0.00
VA	2200	2203	Ceiling R-0 to R-38 Insulation (resistance heating)	Multi-Family	2014	2053	234.98	27.88	23.59	139.39	37%	2.80	16.54	37%	0.18	0.06	2	0	0.43			0.00	0.00
VA	2200	2204	Ceiling R-0 to R-49 Insulation (resistance heating)	Multi-Family	2014	2053	234.42	27.81	0.56	139.95	37%	0.07	16.60	37%	1.20	0.06	10	1	0.06			0.00	0.00
VA	2200	2210	Basement insulation R-13 (resistance heating)	Multi-Family	2014	2053	230.44	27.34	3.98	143.93	38%	0.47	17.08	38%	0.26	0.07	2	1	0.29			0.00	0.00
VA	2200	2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance h	Multi-Family	2014	2053	224.09	26.59	6.35	150.28	40%	0.75	17.83	40%	0.28	0.08	2	1	0.27			0.00	0.00
VA	2200	2213	Heat Recovery Ventilators (resistance heating)	Multi-Family	2014	2053	175.46	20.82	48.63	198.91	53%	5.77	23.60	53%	0.30	0.13	3	1	0.25			0.00	0.00
VA	2200	2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	Multi-Family	2014	2053	172.56	20.47	2.91	201.81	54%	0.34	23.94	54%	0.58	0.14	5	1	0.13			0.00	0.00
VA	2200	2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Multi-Family	2014	2053	170.03	20.17	2.53	204.34	55%	0.30	24.24	55%	0.62	0.14	5	1	0.12			0.00	0.00
VA	2200	2206	Ceiling R-11 to R-49 Insulation (resistance heating)	Multi-Family	2014	2053	169.82	20.15	0.21	204.55	55%	0.02	24.27	55%	1.66	0.15	14	1	0.05			0.00	0.00
VA	2200	2202	Ground Source Heat Pump with Desuperheater (resistance hea	Multi-Family	2014	2053	170.00	20.17	-0.18	204.37	55%	-0.02	24.25	55%	-154.51	0.29	-1,302	2	0.00			0.00	0.00
VA	2200	2207	Ceiling R-19 to R-38 Insulation (resistance heating)	Multi-Family	2014	2053	169.66	20.13	0.34	204.71	55%	0.04	24.29	55%	0.99	0.29	8	2	0.08			0.00	0.00
VA	2200	2208	Ceiling R-19 to R-49 Insulation (resistance heating)	Multi-Family	2014	2053	169.61	20.12	0.05	204.77	55%	0.01	24.29	55%	1.67	0.29	14	2	0.05			0.00	0.00
VA	2200	2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Multi-Family	2014	2053	167.68	19.89	1.93	206.69	55%	0.23	24.52	55%	2.01	0.30	17	3	0.04			0.00	0.00
VA	3030	3030	Base Halogen Lighting - 0.5 hrs/day 2020	Multi-Family	2020	2053	21.22	2.38	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	21.22	2.38	0.00	0.00
VA	3030	3032	LEDs (base Halogen 0.5 hrs/day) 2020	Multi-Family	2020	2053	5.56	0.62	15.66	15.66	74%	1.75	1.75	74%	0.03	0.03	0	0	2.64			15.66	1.75
VA	3130	3130	Base Halogen Lighting - 2.5 hrs/day 2020	Multi-Family	2020	2053	88.41	9.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	88.41	9.90	0.00	0.00
VA	3130	3132	LEDs (base Halogen 2.5 hrs/day) 2020	Multi-Family	2020	2053	23.16	2.59	65.25	65.25	74%	7.30	7.30	74%	0.01	0.01	0	0	13.20			65.25	7.30
VA	3230	3230	Base Halogen Lighting - 6 hrs/day 2020	Multi-Family	2020	2053	55.17	6.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	55.17	6.18	0.00	0.00
VA	3230	3232	LEDs (base Halogen 6 hrs/day) 2020	Multi-Family	2020	2053	17.63	1.97	37.54	37.54	68%	4.20	4.20	68%	0.00	0.00	0	0	18.12			37.54	4.20
VA	3330	3330	Base CFL Lighting - 0.5 hrs/day 2020	Multi-Family	2020	2053	3.97	0.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.97	0.44	0.00	0.00
VA	3330	3331	LEDs (base CFL 0.5 hrs/day) 2020	Multi-Family	2020	2053	2.90	0.32	1.07	1.07	27%	0.12	0.12	27%	0.21	0.21	2	2	0.42			0.00	0.00
VA	3430	3430	Base CFL Lighting - 2.5 hrs/day 2020	Multi-Family	2020	2053	16.33	1.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.33	1.83	0.00	0.00
VA	3430	3431	LEDs (base CFL 2.5 hrs/day) 2020	Multi-Family	2020	2053	11.92	1.33	4.41	4.41	27%	0.49	0.49	27%	0.04	0.04	0	0	2.08			4.41	0.49
VA	3530	3530	Base CFL Lighting - 6 hrs/day 2020	Multi-Family	2020	2053	11.03	1.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.03	1.24	0.00	0.00
VA	3530	3531	LEDs (base CFL 6 hrs/day) 2020	Multi-Family	2020	2053	8.05	0.90	2.98	2.98	27%	0.33	0.33	27%	0.02	0.02	0	0	3.17			2.98	0.33
VA	3630	3630	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2020	Multi-Family	2020	2053	9.32	1.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.32	1.04	0.00	0.00
VA	3630	3632	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Multi-Family	2020	2053	3.68	0.41	5.64	5.64	60%	0.63	0.63	60%	0.01	0.01	0	0	7.33			5.64	0.63
VA	3730	3730	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2020	Multi-Family	2020	2053	37.63	4.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	37.63	4.21	0.00	0.00
VA	3730	3732	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Multi-Family	2020	2053	14.87	1.66	22.76	22.76	60%	2.55	2.55	60%	0.00	0.00	0	0	36.67			22.76	2.55
VA	3830	3830	Base Halogen (Specialty) Lighting - 6 hrs/day 2020	Multi-Family	2020	2053	25.80	2.89	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.80	2.89	0.00	0.00
VA	3830	3832	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Multi-Family	2020	2053	10.20	1.14	15.61	15.61	60%	1.75	1.75	60%	0.00	0.00	0	0	54.61			15.61	1.75
VA	3900	3900	Base Fluorescent Fixture 1.8 hrs/day	Multi-Family	2014	2053	59.58	6.67	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	59.58	6.67	0.00	0.00
VA	3900	3902	ROB 2L4'T8, 1EB	Multi-Family	2014	2053	43.51	4.87	16.07	16.07	27%	1.80	1.80	27%	0.04	0.04	0	0	2.45			16.07	1.80
VA	4000	4000	Base Refrigerator	Multi-Family	2014	2053	217.96	35.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	217.96	35.33	0.00	0.00
VA	4000	4001	Refrigerator (Energy Star)	Multi-Family	2014	2053	173.06	28.05	44.90	44.90	21%	7.28	7.28	21%	0.05	0.05	0	0	1.59			44.90	7.28
VA	4100	4100	Base Refrigerator--Early Replacement	Multi-Family	2014	2053	29.59	4.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	29.59	4.80	0.00	0.00
VA	4100	4101	Refrigerator - Early Replacement (Energy Star)	Multi-Family	2014	2053	13.93	2.26	15.67	15.67	53%	2.54	2.54	53%	0.13	0.13	1	1	0.44			0.00	0.00
VA	4200	4200	Base 2nd Refrigerator - Recycling	Multi-Family	2014	2053	3.49	0.57	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.49	0.57	0.00	0.00
VA	4200	4201	2nd Refrigerator Recycling	Multi-Family	2014	2053	0.90	0.15	2.59	2.59	74%	0.42	0.42	74%	0.05	0.05	0	0	1.16			2.59	0.42
VA	4500	4500	Base Freezer	Multi-Family	2014	2053	20.38	3.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	20.38	3.30	0.00	0.00
VA	4500	4501	Freezer (Energy Star)	Multi-Family	2014	2053	18.47	2.99	1.91	1.91	9%	0.31	0.31	9%	0.06	0.06	0	0	1.16			1.91	0.31
VA	4600	4600	Base Early Replacement Freezer	Multi-Family	2014	2053	5.04	0.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.04	0.80	0.00	0.00
VA	4600	4601	Freezer - Early Replacement (Energy Star)	Multi-Family	2014	2053	2.23	0.35	2.81	2.81	56%	0.44	0.44	56%	0.04	0.04	0	0	1.34			2.81	0.44
VA	4700	4700	Base 2nd Freezer Recycling	Multi-Family	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	5000	5000	Base Water Heating (40 gal, EF=0.88)	Multi-Family	2014	2053	795.29	97.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	795.29	97.95	0.00	0.00
VA	5000	5006	Pipe Wrap	Multi-Family	2014	2053	770.86	94.94	24.43	24.43	3%	3.01	3.01	3%	0.02	0.02	0	0	3.30			24.43	3.01
VA	5000	5015	Low Flow Showerhead 1.5 Gal/Min	Multi-Family	2014	2053	745.47	91.81	25.39	49.82	6%	3.13	6.14	6%	0.02	0.02	0	0	3.02			25.39	3.13

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	5000	5008	Hot water turndown 10 degrees	Multi-Family	2014	2053	740.05	91.15	5.42	55.24	7%	0.67	6.80	7%	0.02	0.02	0	0	2.11			5.42	0.67
VA	5000	5007	Hot water turndown 5 degrees	Multi-Family	2014	2053	736.09	90.66	3.96	59.20	7%	0.49	7.29	7%	0.02	0.02	0	0	2.10			3.96	0.49
VA	5000	5009	Hot water turndown 15 degrees	Multi-Family	2014	2053	734.82	90.50	1.27	60.47	8%	0.16	7.45	8%	0.02	0.02	0	0	2.09			1.27	0.16
VA	5000	5010	Hot water turndown 20 degrees	Multi-Family	2014	2053	734.34	90.44	0.48	60.95	8%	0.06	7.51	8%	0.02	0.02	0	0	2.08			0.48	0.06
VA	5000	5014	Faucent Aerators	Multi-Family	2014	2053	719.00	88.55	15.34	76.29	10%	1.89	9.40	10%	0.04	0.02	0	0	1.70			15.34	1.89
VA	5000	5011	Drain Water Heat Recovery (GFX)	Multi-Family	2014	2053	691.97	85.23	27.03	103.32	13%	3.33	12.72	13%	0.07	0.04	1	0	1.17			27.03	3.33
VA	5000	5005	DHW Tank Wrap	Multi-Family	2014	2053	653.13	80.44	38.84	142.16	18%	4.78	17.51	18%	0.06	0.04	0	0	0.90			0.00	0.00
VA	5000	5003	Heat Pump Water Heater - Energy Star	Multi-Family	2014	2053	563.23	69.37	89.91	232.06	29%	11.07	28.58	29%	0.08	0.06	1	0	0.90			0.00	0.00
VA	5000	5004	Solar Domestic Water Heating	Multi-Family	2014	2053	475.22	58.53	88.00	320.07	40%	10.84	39.42	40%	0.20	0.10	2	1	0.38			0.00	0.00
VA	5000	5012	Energy Star CW CEE Tier 2 (MEF=2.0)	Multi-Family	2014	2053	473.22	58.28	2.01	322.07	40%	0.25	39.67	40%	2.25	0.11	18	1	0.03			0.00	0.00
VA	5000	5013	Energy Star Dishwasher (EF=0.72)	Multi-Family	2014	2053	472.18	58.16	1.03	323.11	41%	0.13	39.79	41%	2.93	0.12	24	1	0.02			0.00	0.00
VA	5100	5100	Base Water Heating Early Replacement to Heat Pump Water H	Multi-Family	2014	2053	140.35	17.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	140.35	17.29	0.00	0.00
VA	5100	5101	Heat Pump Water Heater - Energy Star - Early Replacement	Multi-Family	2014	2053	121.03	14.91	19.32	19.32	14%	2.38	2.38	14%	0.08	0.08	1	1	0.88			0.00	0.00
VA	5500	5500	Base Clotheswasher (MEF=1.26)	Multi-Family	2014	2053	13.76	2.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.76	2.49	0.00	0.00
VA	5500	5501	Energy Star CW CEE Tier 2 (MEF=2.0)	Multi-Family	2014	2053	9.84	1.78	3.92	3.92	28%	0.71	0.71	28%	1.21	1.21	7	7	0.06			0.00	0.00
VA	5600	5600	Base Clothes Dryer (EF=3.01)	Multi-Family	2014	2053	258.64	43.77	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	258.64	43.77	0.00	0.00
VA	5600	5602	High Efficiency CD (EF=3.01 w/moisture sensor)	Multi-Family	2014	2053	211.14	35.73	47.51	47.51	18%	8.04	8.04	18%	0.03	0.03	0	0	2.08			47.51	8.04
VA	5600	5601	Heat Pump Dryer	Multi-Family	2014	2053	105.57	17.87	105.57	153.08	59%	17.87	25.91	59%	0.55	0.39	3	2	0.13			0.00	0.00
VA	5700	5700	Base Dishwasher (EF=0.65)	Multi-Family	2014	2053	60.34	9.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	60.34	9.90	0.00	0.00
VA	5700	5701	Energy Star Dishwasher (EF=0.72)	Multi-Family	2014	2053	58.19	9.54	2.15	2.15	4%	0.35	0.35	4%	1.59	1.59	10	10	0.05			0.00	0.00
VA	6000	6000	Base Single Speed Pool Pump (RET)	Multi-Family	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	7000	7000	Base Plasma TV	Multi-Family	2014	2053	18.99	2.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.99	2.74	0.00	0.00
VA	7000	7001	Energy Star Plasma TV	Multi-Family	2014	2053	17.31	2.50	1.68	1.68	9%	0.24	0.24	9%	0.01	0.01	0	0	7.64			1.68	0.24
VA	7000	7002	Plug Load Controls - Smart Power Strip (base plasma TV)	Multi-Family	2014	2053	17.08	2.46	0.23	1.91	10%	0.03	0.28	10%	2.23	0.28	15	2	0.02			0.00	0.00
VA	7100	7100	Base LCD TV	Multi-Family	2014	2053	56.69	8.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	56.69	8.18	0.00	0.00
VA	7100	7101	Energy Star LCD TV	Multi-Family	2014	2053	36.03	5.20	20.66	20.66	36%	2.98	2.98	36%	0.00	0.00	0	0	16.39			20.66	2.98
VA	7100	7102	Plug Load Controls - Smart Power Strip (base LCD TV)	Multi-Family	2014	2053	34.66	5.00	1.37	22.03	39%	0.20	3.18	39%	2.36	0.15	16	1	0.02			0.00	0.00
VA	7200	7200	Base CRT TV	Multi-Family	2014	2053	17.04	2.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.04	2.46	0.00	0.00
VA	7200	7202	Plug Load Controls - Smart Power Strip (base CRT TV)	Multi-Family	2014	2053	15.32	2.21	1.73	1.73	10%	0.25	0.25	10%	0.66	0.66	5	5	0.08			0.00	0.00
VA	7300	7300	Base Set-Top Box	Multi-Family	2014	2053	56.64	8.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	56.64	8.17	0.00	0.00
VA	7400	7400	Base DVD Player	Multi-Family	2014	2053	9.64	1.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.64	1.39	0.00	0.00
VA	7400	7401	Energy Star DVD Player	Multi-Family	2014	2053	4.52	0.65	5.12	5.12	53%	0.74	0.74	53%	0.01	0.01	0	0	4.24			5.12	0.74
VA	7400	7402	Plug Load Controls - Smart Power Strip (base DVD player)	Multi-Family	2014	2053	0.35	0.05	4.17	9.29	96%	0.60	1.34	96%	0.69	0.32	5	2	0.08			0.00	0.00
VA	7500	7500	Base Desktop PC	Multi-Family	2014	2053	70.86	9.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	70.86	9.33	0.00	0.00
VA	7500	7501	Energy Star Desktop PC	Multi-Family	2014	2053	61.76	8.14	9.10	9.10	13%	1.20	1.20	13%	0.00	0.00	0	0	15.00			9.10	1.20
VA	7500	7502	Plug Load Controls - Smart Power Strip (base Desktop PC)	Multi-Family	2014	2053	32.35	4.26	29.41	38.51	54%	3.87	5.07	54%	0.05	0.04	0	0	1.12			29.41	3.87
VA	7600	7600	Base Laptop PC	Multi-Family	2014	2053	14.28	1.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.28	1.88	0.00	0.00
VA	7600	7601	Energy Star Laptop PC	Multi-Family	2014	2053	11.90	1.57	2.38	2.38	17%	0.31	0.31	17%	0.03	0.03	0	0	2.25			2.38	0.31
VA	8000	8000	Base Cooking	Multi-Family	2014	2053	198.97	63.52	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	198.97	63.52	0.00	0.00
VA	9000	9000	Base Miscellaneous	Multi-Family	2014	2053	119.20	15.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	119.20	15.70	0.00	0.00
VA	9900	9900	Base House Use	Multi-Family	2014	2053	4,108.27	1,017.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4,108.27	1,017.30	0.00	0.00
VA	9900	9901	Indirect Feedback	Multi-Family	2014	2053	4,047.26	1,002.19	61.02	61.02	1%	15.11	15.11	1%	0.03	0.03	0	0	1.57			61.02	15.11
VA	9900	9902	Direct Feedback	Multi-Family	2014	2053	3,864.22	956.87	183.04	244.06	6%	45.33	60.43	6%	0.09	0.08	0	0	0.65			0.00	0.00
NC	1000	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	Single Family	2014	2053	50.03	29.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	50.03	29.72	0.00	0.00
NC	1000	1024	Self Install Weatherization (CAC)	Single Family	2014	2053	49.38	29.33	0.66	0.66	1%	0.39	0.39	1%	0.02	0.02	0	0	5.65			0.66	0.39
NC	1000	1022	Programmable Thermostat (CAC)	Single Family	2014	2053	48.98	29.10	0.39	1.05	2%	0.23	0.62	2%	0.06	0.03	0	0	1.65			0.39	0.23
NC	1000	1021	Return Duct Modification (CAC)	Single Family	2014	2053	48.70	28.93	0.28	1.33	3%	0.17	0.79	3%	0.09	0.04	0	0	1.32			0.28	0.17
NC	1000	1019	Duct Insulation (CAC)	Single Family	2014	2053	48.65	28.90	0.05	1.39	3%	0.03	0.82	3%	0.10	0.05	0	0	1.09			0.05	0.03
NC	1000	1004	Proper Refrigerant Charging and Air Flow (CAC)	Single Family	2014	2053	45.16	26.83	3.49	4.88	10%	2.07	2.90	10%	0.09	0.08	0	0	0.98			0.00	0.00
NC	1000	1025	Door Weatherization (CAC)	Single Family	2014	2053	44.29	26.31	0.87	5.75	11%	0.51	3.41	11%	0.08	0.08	0	0	0.86			0.00	0.00
NC	1000	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	41.60	24.71	2.69	8.43	17%	1.60	5.01	17%	0.15	0.10	0	0	0.72			0.00	0.00
NC	1000	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	39.25	23.32	2.35	10.79	22%	1.40	6.41	22%	0.18	0.12	0	0	0.61			0.00	0.00
NC	1000	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Single Family	2014	2053	35.29	20.97	3.95	14.74	29%	2.35	8.76	29%	0.24	0.15	0	0	0.47			0.00	0.00
NC	1000	1005	Proper Sizing and Quality Install (CAC)	Single Family	2014	2053	31.87	18.93	3.43	18.17	36%	2.04	10.79	36%	0.27	0.17	0	0	0.40			0.00	0.00
NC	1000	1014	Crawlspace insulation (CAC)	Single Family	2014	2053	31.56	18.75	0.30	18.47	37%	0.18	10.97	37%	0.33	0.18	1	0	0.35			0.00	0.00
NC	1000	1008	Ceiling R-0 to R-38 Insulation (CAC)	Single Family	2014	2053	30.95	18.39	0.62	19.09	38%	0.37	11.34	38%	0.37	0.18	1	0	0.31			0.00	0.00
NC	1000	1029	WINDOWS - Default With Sunscreen (CAC)	Single Family	2014	2053	27.92	16.58	3.03	22.12	44%	1.80	13.14	44%	0.35	0.21	1	0	0.25			0.00	0.00
NC	1000	1009	Ceiling R-0 to R-49 Insulation (CAC)	Single Family	2014	2053	27.91	16.58	0.01	22.13	44%	0.00	13.15	44%	4.46	0.21	8	0	0.03			0.00	0.00
NC	1000	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Single Family	2014	2053	26.64	15.82	1.27	23.40	47%	0.75	13.90	47%	0.43	0.22	1	0	0.21			0.00	0.00
NC	1000	1026	Ceiling Fans (CAC)	Single Family	2014	2053	26.38	15.67	0.25	23.65	47%	0.15	14.05	47%	0.56	0.22	1	0	0.18			0.00	0.00
NC	1000	1010	Ceiling R-11 to R-38 Insulaton (CAC)	Single Family	2014	2053	25.69	15.26	0.69	24.34	49%	0.41	14.46	49%	0.99	0.24	2	0	0.12			0.00	0.00
NC	1000	1011	Ceiling R-11 to R-49 Insulation (CAC)	Single Family	2014	2053	25.67	15.25	0.03	24.37	49%	0.02	14.48	49%	4.84	0.25	8	0	0.02			0.00	0.00
NC	1000	1020	Duct Testing and Sealing (CAC)	Single Family	2014	2053	25.56	15.18	0.11	24.48	49%	0.06	14.54	49%	1.23	0.25	2	0	0.09			0.00	0.00
NC	1000	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Single Family	2014	2053	25.43	15.11	0.12	24.60	49%	0.07	14.62	49%	1.32	0.26	2	0	0.09			0.00	0.00
NC	1000	1012	Ceiling R-19 to R-38 Insulation (CAC)	Single Family	2014	2053	25.35	15.06	0.08	24.68	49%	0.05	14.66	49%	1.70	0.26	3	0	0.07			0.00	0.00
NC	1000	1018	Cool Roof (CAC)	Single Family	2014	2053	24.92	14.81	0.43	25.11	50%	0.26	14.92	50%	1.80	0.29	3	0	0.06			0.00	0.00
NC	1000	1013	Ceiling R-19 to R-49 Insulation (CAC)	Single Family	2014	2053	24.91	14.80	0.01	25.12	50%	0.00	14.92	50%	4.99	0.29	8	0	0.02			0.00	0.00
NC	1000	1028	Window Film (CAC)	Single Family	2014	2053	24.07	14.30	0.84	25.96	52%	0.50	15.42	52%	1.72	0.34	3	1	0.05			0.00	0.00
NC	1000	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	Single Family	2014	2053	24.03	14.28	0.04	26.01	52%	0.03	15.45	52%	2.47	0.34	4	1	0.05			0.00	0.00
NC	1000	1027	Whole House Fans (CAC)	Single Family	2014	2053	23.39	13.89	0.64	26.65	53%	0.38	15.83	53%	2.51	0.39	4	1	0.04			0.00	0.00
NC	1000	1015	Basement insulation R-13 (CAC)	Single Family	2014	2053	23.37	13.88	0.02	26.67	53%	0.01	15.84	53%	4.51	0.40	8	1	0.03			0.00	0.00
NC	1000	1007	AC Filter Changes (CAC)	Single Family	2014	2053	23.27	13.82	0.10	26.77	53%	0.06	15.90	53%	2.63	0.41	4	1	0.02			0.00	0.00
NC	1000	1006	AC Maintenance and/or tune-up (CAC)	Single Family	2014	2053	23.16	13.76	0.10	26.87	54%	0.06	15.96	54%	3.01	0.42	5	1	0.02			0.00	0.00
NC	1000	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	Single Family	2014	2053	23.14	13.75	0.03	26.90	54%	0.02	15.98	54%	5.60	0.42	9	1	0.02			0.00	0.00

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	1100	1100	Base Split-System Air Conditioner - Early Replacement (11 SEI	Single Family	2014	2053	8.38	4.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.38	4.98	0.00	0.00
NC	1100	1117	Duct Insulation (CAC early replacement)	Single Family	2014	2053	8.31	4.94	0.07	0.07	1%	0.04	0.04	1%	0.01	0.01	0	0	8.15			0.07	0.04
NC	1100	1122	Self Install Weatherization (CAC early replacement)	Single Family	2014	2053	8.20	4.87	0.11	0.18	2%	0.06	0.11	2%	0.02	0.02	0	0	5.32			0.11	0.06
NC	1100	1120	Programmable Thermostat (CAC early replacement)	Single Family	2014	2053	8.14	4.84	0.07	0.24	3%	0.04	0.14	3%	0.06	0.03	0	0	1.56			0.07	0.04
NC	1100	1119	Return Duct Modification (CAC early replacement)	Single Family	2014	2053	8.09	4.81	0.05	0.29	3%	0.03	0.17	3%	0.09	0.04	0	0	1.24			0.05	0.03
NC	1100	1102	Proper Refrigerant Charging and Air Flow (CAC early replacem	Single Family	2014	2053	7.42	4.41	0.67	0.96	11%	0.40	0.57	11%	0.10	0.08	0	0	0.91			0.00	0.00
NC	1100	1123	Door Weatherization (CAC early replacement)	Single Family	2014	2053	7.26	4.31	0.17	1.13	13%	0.10	0.67	13%	0.08	0.08	0	0	0.93			0.00	0.00
NC	1100	1116	Cool Roof (CAC early replacement)	Single Family	2014	2053	6.50	3.86	0.76	1.88	22%	0.45	1.12	22%	0.18	0.12	0	0	0.58			0.00	0.00
NC	1100	1125	Whole House Fans (CAC early replacement)	Single Family	2014	2053	5.29	3.14	1.21	3.09	37%	0.72	1.84	37%	0.24	0.16	0	0	0.44			0.00	0.00
NC	1100	1103	Proper Sizing and Quality Install (CAC early replacement)	Single Family	2014	2053	4.70	2.79	0.59	3.68	44%	0.35	2.19	44%	0.33	0.19	1	0	0.34			0.00	0.00
NC	1100	1112	Crawlspace insulation (CAC early replacement)	Single Family	2014	2053	4.66	2.77	0.04	3.73	44%	0.03	2.21	44%	0.39	0.19	1	0	0.29			0.00	0.00
NC	1100	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early r	Single Family	2014	2053	4.59	2.73	0.07	3.80	45%	0.04	2.25	45%	0.42	0.20	1	0	0.27			0.00	0.00
NC	1100	1113	Basement insulation R-13 (CAC early replacement)	Single Family	2014	2053	4.55	2.70	0.04	3.83	46%	0.02	2.28	46%	0.45	0.20	1	0	0.26			0.00	0.00
NC	1100	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Single Family	2014	2053	4.46	2.65	0.09	3.92	47%	0.05	2.33	47%	0.45	0.21	1	0	0.25			0.00	0.00
NC	1100	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	4.46	2.65	0.00	3.92	47%	0.00	2.33	47%	4.92	0.21	8	0	0.02			0.00	0.00
NC	1100	1118	Duct Testing and Sealing (CAC early replacement)	Single Family	2014	2053	4.42	2.63	0.04	3.96	47%	0.02	2.35	47%	0.57	0.21	1	0	0.19			0.00	0.00
NC	1100	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early re	Single Family	2014	2053	4.22	2.51	0.20	4.16	50%	0.12	2.47	50%	0.47	0.22	1	0	0.19			0.00	0.00
NC	1100	1124	Ceiling Fans (CAC early replacement)	Single Family	2014	2053	4.18	2.49	0.03	4.20	50%	0.02	2.49	50%	0.76	0.23	1	0	0.14			0.00	0.00
NC	1100	1126	Window Film (CAC early replacement)	Single Family	2014	2053	3.87	2.30	0.31	4.51	54%	0.19	2.68	54%	0.81	0.27	1	0	0.11			0.00	0.00
NC	1100	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Single Family	2014	2053	3.77	2.24	0.10	4.61	55%	0.06	2.74	55%	1.19	0.29	2	0	0.10			0.00	0.00
NC	1100	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	Single Family	2014	2053	3.59	2.13	0.18	4.79	57%	0.11	2.85	57%	1.05	0.32	2	1	0.08			0.00	0.00
NC	1100	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	3.59	2.13	0.00	4.80	57%	0.00	2.85	57%	6.12	0.32	10	1	0.02			0.00	0.00
NC	1100	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Single Family	2014	2053	3.57	2.12	0.01	4.81	57%	0.01	2.86	57%	2.13	0.33	4	1	0.05			0.00	0.00
NC	1100	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Single Family	2014	2053	3.57	2.12	0.00	4.81	57%	0.00	2.86	57%	6.14	0.33	10	1	0.02			0.00	0.00
NC	1100	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Single Family	2014	2053	3.57	2.12	0.01	4.82	57%	0.00	2.86	57%	2.93	0.33	5	1	0.04			0.00	0.00
NC	1100	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality I	Single Family	2014	2053	3.48	2.06	0.09	4.91	59%	0.05	2.92	59%	2.86	0.38	5	1	0.03			0.00	0.00
NC	1100	1105	AC Filter Changes (CAC early replacement)	Single Family	2014	2053	3.46	2.06	0.01	4.92	59%	0.01	2.92	59%	3.12	0.39	5	1	0.02			0.00	0.00
NC	1100	1104	AC Maintenance and/or tune-up (CAC early replacement)	Single Family	2014	2053	3.44	2.05	0.02	4.94	59%	0.01	2.93	59%	3.57	0.40	6	1	0.02			0.00	0.00
NC	1100	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Single Family	2014	2053	3.44	2.04	0.00	4.94	59%	0.00	2.94	59%	6.64	0.40	11	1	0.02			0.00	0.00
NC	1200	1200	Base Heat Pump Cooling (13 SEER)	Single Family	2014	2053	126.33	75.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	126.33	75.05	0.00	0.00
NC	1200	1219	Duct Insulation (HP cooling)	Single Family	2014	2053	125.30	74.44	1.03	1.03	1%	0.61	0.61	1%	0.01	0.01	0	0	9.87			1.03	0.61
NC	1200	1223	Self Install Weatherization (HP cooling)	Single Family	2014	2053	123.65	73.46	1.65	2.68	2%	0.98	1.59	2%	0.04	0.03	0	0	2.47			1.65	0.98
NC	1200	1221	Programmable Thermostat (HP cooling)	Single Family	2014	2053	121.15	71.97	2.50	5.18	4%	1.49	3.08	4%	0.07	0.05	0	0	1.38			2.50	1.49
NC	1200	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Single Family	2014	2053	100.62	59.78	20.53	25.71	20%	12.19	15.27	20%	0.08	0.07	0	0	1.32			20.53	12.19
NC	1200	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	Single Family	2014	2053	93.40	55.49	7.22	32.93	26%	4.29	19.57	26%	0.10	0.08	0	0	0.92			0.00	0.00
NC	1200	1224	Door Weatherization (HP cooling)	Single Family	2014	2053	91.61	54.42	1.79	34.73	27%	1.06	20.63	27%	0.09	0.08	0	0	0.81			0.00	0.00
NC	1200	1218	Cool Roof (HP cooling)	Single Family	2014	2053	82.04	48.74	9.57	44.29	35%	5.68	26.31	35%	0.18	0.10	0	0	0.58			0.00	0.00
NC	1200	1205	Proper Sizing and Quality Install (HP cooling)	Single Family	2014	2053	74.07	44.00	7.97	52.26	41%	4.73	31.05	41%	0.22	0.12	0	0	0.51			0.00	0.00
NC	1200	1226	Whole House Fans (HP cooling)	Single Family	2014	2053	60.29	35.82	13.78	66.04	52%	8.19	39.24	52%	0.26	0.15	0	0	0.41			0.00	0.00
NC	1200	1214	Crawlspace insulation (HP cooling)	Single Family	2014	2053	59.71	35.47	0.58	66.62	53%	0.34	39.58	53%	0.38	0.15	1	0	0.30			0.00	0.00
NC	1200	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	Single Family	2014	2053	58.53	34.77	1.18	67.80	54%	0.70	40.28	54%	0.43	0.15	1	0	0.27			0.00	0.00
NC	1200	1215	Basement insulation R-13 (HP cooling)	Single Family	2014	2053	58.05	34.49	0.48	68.28	54%	0.29	40.56	54%	0.44	0.16	1	0	0.26			0.00	0.00
NC	1200	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	Single Family	2014	2053	58.02	34.47	0.04	68.32	54%	0.02	40.59	54%	2.11	0.16	4	0	0.05			0.00	0.00
NC	1200	1220	Duct Testing and Sealing (HP cooling)	Single Family	2014	2053	57.47	34.14	0.54	68.86	55%	0.32	40.91	55%	0.55	0.16	1	0	0.20			0.00	0.00
NC	1200	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Single Family	2014	2053	54.86	32.59	2.62	71.47	57%	1.55	42.46	57%	0.45	0.17	1	0	0.19			0.00	0.00
NC	1200	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Single Family	2014	2053	54.05	32.11	0.81	72.28	57%	0.48	42.94	57%	0.69	0.18	1	0	0.17			0.00	0.00
NC	1200	1225	Ceiling Fans (HP cooling)	Single Family	2014	2053	53.62	31.86	0.43	72.71	58%	0.25	43.20	58%	0.73	0.18	1	0	0.14			0.00	0.00
NC	1200	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	Single Family	2014	2053	52.19	31.00	1.44	74.15	59%	0.85	44.05	59%	1.04	0.20	2	0	0.11			0.00	0.00
NC	1200	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	Single Family	2014	2053	52.05	30.92	0.13	74.28	59%	0.08	44.13	59%	2.35	0.20	4	0	0.05			0.00	0.00
NC	1200	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Single Family	2014	2053	51.83	30.79	0.22	74.50	59%	0.13	44.26	59%	1.47	0.20	2	0	0.08			0.00	0.00
NC	1200	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	Single Family	2014	2053	51.67	30.70	0.16	74.66	59%	0.09	44.35	59%	1.89	0.21	3	0	0.06			0.00	0.00
NC	1200	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	Single Family	2014	2053	51.64	30.68	0.03	74.69	59%	0.02	44.37	59%	2.37	0.21	4	0	0.05			0.00	0.00
NC	1200	1207	Heat Pump Filter Replacement	Single Family	2014	2053	51.42	30.55	0.22	74.91	59%	0.13	44.50	59%	2.22	0.21	4	0	0.03			0.00	0.00
NC	1200	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Single Family	2014	2053	51.26	30.45	0.16	75.07	59%	0.10	44.60	59%	4.83	0.22	8	0	0.02			0.00	0.00
NC	1200	1206	Heat pump tune up	Single Family	2014	2053	51.03	30.32	0.23	75.30	60%	0.14	44.74	60%	3.59	0.23	6	0	0.02			0.00	0.00
NC	1300	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	Single Family	2014	2053	21.98	13.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	21.98	13.06	0.00	0.00
NC	1300	1319	Duct Insulation (HP cooling Early Replacement)	Single Family	2014	2053	21.81	12.95	0.18	0.18	1%	0.11	0.11	1%	0.01	0.01	0	0	9.73			0.18	0.11
NC	1300	1323	Self Install Weatherization (HP cooling Early Replacement)	Single Family	2014	2053	21.52	12.78	0.29	0.47	2%	0.17	0.28	2%	0.04	0.03	0	0	2.43			0.29	0.17
NC	1300	1321	Programmable Thermostat (HP cooling Early Replacement)	Single Family	2014	2053	21.08	12.52	0.44	0.90	4%	0.26	0.54	4%	0.07	0.05	0	0	1.36			0.44	0.26
NC	1300	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Ea	Single Family	2014	2053	17.51	10.40	3.57	4.47	20%	2.12	2.66	20%	0.08	0.07	0	0	1.31			3.57	2.12
NC	1300	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Re	Single Family	2014	2053	16.25	9.66	1.26	5.73	26%	0.75	3.40	26%	0.10	0.08	0	0	0.91			0.00	0.00
NC	1300	1324	Door Weatherization (HP cooling Early Replacement)	Single Family	2014	2053	15.89	9.44	0.36	6.09	28%	0.22	3.62	28%	0.08	0.08	0	0	0.93			0.00	0.00
NC	1300	1318	Cool Roof (HP cooling Early Replacement)	Single Family	2014	2053	14.23	8.45	1.66	7.75	35%	0.99	4.61	35%	0.18	0.10	0	0	0.57			0.00	0.00
NC	1300	1305	Proper Sizing and Quality Install (HP cooling Early Replacemer	Single Family	2014	2053	12.85	7.63	1.38	9.14	42%	0.82	5.43	42%	0.22	0.12	0	0	0.50			0.00	0.00
NC	1300	1326	Whole House Fans (HP cooling early replacement)	Single Family	2014	2053	10.46	6.21	2.39	11.53	52%	1.42	6.85	52%	0.26	0.15	0	0	0.40			0.00	0.00
NC	1300	1314	Crawlspace insulation (HP cooling Early Replacement)	Single Family	2014	2053	10.36	6.15	0.10	11.63	53%	0.06	6.91	53%	0.39	0.15	1	0	0.30			0.00	0.00
NC	1300	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Single Family	2014	2053	10.15	6.03	0.20	11.83	54%	0.12	7.03	54%	0.43	0.16	1	0	0.26			0.00	0.00
NC	1300	1315	Basement insulation R-13 (HP cooling Early Replacement)	Single Family	2014	2053	10.07	5.98	0.08	11.91	54%	0.05	7.08	54%	0.44	0.16	1	0	0.26			0.00	0.00
NC	1300	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Single Family	2014	2053	10.06	5.98	0.01	11.92	54%	0.00	7.08	54%	2.15	0.16	4	0	0.05			0.00	0.00
NC	1300	1320	Duct Testing and Sealing (HP cooling Early Replacement)	Single Family	2014	2053	9.97	5.92	0.09	12.01	55%	0.06	7.14	55%	0.56	0.16	1	0	0.20			0.00	0.00
NC	1300	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling E	Single Family	2014	2053	9.52	5.65	0.45	12.47	57%	0.27	7.41	57%	0.46	0.17	1	0	0.19			0.00	0.00
NC	1300	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling I	Single Family	2014	2053	9.38	5.57	0.14	12.61	57%	0.08	7.49	57%	0.70	0.18	1	0	0.16			0.00	0.00
NC	1300	1325	Ceiling Fans (HP cooling early replacement)	Single Family	2014	2053	9.30	5.53	0.07	12.68	58%	0.04	7.53	58%	0.75	0.18	1	0	0.14			0.00	0.00
NC	1300	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Single Family	2014	2053	9.05	5.38	0.25	12.93	59%	0.15	7.68	59%	1.06	0.20	2	0	0.11			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	1300	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement	Single Family	2014	2053	9.03	5.36	0.02	12.95	59%	0.01	7.70	59%	2.39	0.20	4	0	0.05			0.00	0.00
NC	1300	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacem	Single Family	2014	2053	8.99	5.34	0.04	12.99	59%	0.02	7.72	59%	1.50	0.21	3	0	0.08			0.00	0.00
NC	1300	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement	Single Family	2014	2053	8.96	5.33	0.03	13.02	59%	0.02	7.74	59%	1.92	0.21	3	0	0.06			0.00	0.00
NC	1300	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement	Single Family	2014	2053	8.96	5.32	0.01	13.03	59%	0.00	7.74	59%	2.42	0.21	4	0	0.05			0.00	0.00
NC	1300	1307	Heat Pump Filter Replacement	Single Family	2014	2053	8.92	5.30	0.04	13.07	59%	0.02	7.76	59%	2.26	0.22	4	0	0.03			0.00	0.00
NC	1300	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacer	Single Family	2014	2053	8.89	5.28	0.03	13.09	60%	0.02	7.78	60%	4.91	0.23	8	0	0.02			0.00	0.00
NC	1300	1306	Heat pump tune up	Single Family	2014	2053	8.85	5.26	0.04	13.13	60%	0.02	7.80	60%	3.65	0.24	6	0	0.02			0.00	0.00
NC	1400	1400	Base Room Air Conditioner - EER 10.6	Single Family	2014	2053	6.82	4.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.82	4.05	0.00	0.00
NC	1400	1413	Self Install Weatherization (RAC)	Single Family	2014	2053	6.73	4.00	0.09	0.09	1%	0.05	0.05	1%	0.05	0.05	0	0	1.92			0.09	0.05
NC	1400	1414	Door Weatherization (RAC)	Single Family	2014	2053	6.60	3.92	0.13	0.22	3%	0.08	0.13	3%	0.23	0.15	0	0	0.32			0.00	0.00
NC	1400	1411	Cool Roof (RAC)	Single Family	2014	2053	5.91	3.51	0.69	0.91	13%	0.41	0.54	13%	0.45	0.38	1	1	0.23			0.00	0.00
NC	1400	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Single Family	2014	2053	5.58	3.31	0.33	1.24	18%	0.20	0.74	18%	0.43	0.39	1	1	0.20			0.00	0.00
NC	1400	1417	Window Film (RAC)	Single Family	2014	2053	4.41	2.62	1.17	2.41	35%	0.70	1.43	35%	0.49	0.44	1	1	0.18			0.00	0.00
NC	1400	1416	Whole House Fans (RAC)	Single Family	2014	2053	3.59	2.13	0.82	3.23	47%	0.49	1.92	47%	0.79	0.53	1	1	0.13			0.00	0.00
NC	1400	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Single Family	2014	2053	3.53	2.10	0.05	3.28	48%	0.03	1.95	48%	1.24	0.54	2	1	0.09			0.00	0.00
NC	1400	1404	Ceiling R-0 to R-38 Insulation (RAC)	Single Family	2014	2053	3.47	2.06	0.07	3.35	49%	0.04	1.99	49%	1.41	0.56	2	1	0.08			0.00	0.00
NC	1400	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Single Family	2014	2053	3.28	1.95	0.19	3.54	52%	0.11	2.10	52%	1.15	0.59	2	1	0.08			0.00	0.00
NC	1400	1405	Ceiling R-0 to R-49 Insulation (RAC)	Single Family	2014	2053	3.28	1.95	0.00	3.54	52%	0.00	2.10	52%	8.33	0.59	14	1	0.01			0.00	0.00
NC	1400	1415	Ceiling Fans (RAC)	Single Family	2014	2053	3.25	1.93	0.03	3.56	52%	0.02	2.12	52%	2.21	0.60	4	1	0.05			0.00	0.00
NC	1400	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	Single Family	2014	2053	3.24	1.92	0.01	3.58	52%	0.01	2.13	52%	3.53	0.61	6	1	0.03			0.00	0.00
NC	1400	1406	Ceiling R-11 to R-38 Insulaton (RAC)	Single Family	2014	2053	3.16	1.88	0.08	3.65	54%	0.05	2.17	54%	3.55	0.68	6	1	0.03			0.00	0.00
NC	1400	1418	WINDOWS - Default With Sunscreen (RAC)	Single Family	2014	2053	3.01	1.79	0.15	3.81	56%	0.09	2.26	56%	2.85	0.76	5	1	0.03			0.00	0.00
NC	1400	1407	Ceiling R-11 to R-49 Insulation (RAC)	Single Family	2014	2053	3.01	1.79	0.01	3.81	56%	0.00	2.26	56%	9.07	0.78	15	1	0.01			0.00	0.00
NC	1400	1408	Ceiling R-19 to R-38 Insulation (RAC)	Single Family	2014	2053	3.00	1.78	0.01	3.82	56%	0.01	2.27	56%	6.31	0.79	11	1	0.02			0.00	0.00
NC	1400	1409	Ceiling R-19 to R-49 Insulation (RAC)	Single Family	2014	2053	3.00	1.78	0.00	3.82	56%	0.00	2.27	56%	9.12	0.79	15	1	0.01			0.00	0.00
NC	1400	1403	Room AC Filter Replacement	Single Family	2014	2053	2.98	1.77	0.01	3.83	56%	0.01	2.28	56%	6.97	0.81	12	1	0.01			0.00	0.00
NC	1500	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	Single Family	2014	2053	2.03	1.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.03	1.21	0.00	0.00
NC	1500	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early	Single Family	2014	2053	1.76	1.05	0.27	0.27	13%	0.16	0.16	13%	0.73	0.73	1	1	0.11			0.00	0.00
NC	1600	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	Single Family	2014	2053	1.49	0.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.49	0.88	0.00	0.00
NC	1600	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/da	Single Family	2014	2053	1.26	0.75	0.23	0.23	15%	0.13	0.13	15%	0.18	0.18	0	0	0.52			0.00	0.00
NC	1700	1700	Base Furnace Fan - Furnace & CAC	Single Family	2014	2053	85.65	43.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	85.65	43.93	0.00	0.00
NC	1700	1701	ECM Furnace Fan (variable speed motor) - Cooling	Single Family	2014	2053	47.58	24.41	38.07	38.07	44%	19.53	19.53	44%	0.03	0.03	0	0	3.79			38.07	19.53
NC	2000	2000	Base Heat Pump Space Heating (7.7 HSPF)	Single Family	2014	2053	167.75	19.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	167.75	19.90	0.00	0.00
NC	2000	2016	Duct Insulation (HP heating)	Single Family	2014	2053	166.38	19.74	1.37	1.37	1%	0.16	0.16	1%	0.01	0.01	0	0	8.49			1.37	0.16
NC	2000	2021	Self Install Weatherization (HP heating)	Single Family	2014	2053	164.19	19.48	2.19	3.56	2%	0.26	0.42	2%	0.03	0.02	0	0	2.26			2.19	0.26
NC	2000	2019	Programmable Thermostat (HP heating)	Single Family	2014	2053	160.87	19.09	3.33	6.88	4%	0.39	0.82	4%	0.05	0.04	0	0	1.23			3.33	0.39
NC	2000	2022	Door Weatherization (HP heating)	Single Family	2014	2053	158.99	18.86	1.88	8.76	5%	0.22	1.04	5%	0.09	0.05	1	0	0.62			0.00	0.00
NC	2000	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Single Family	2014	2053	144.34	17.13	14.65	23.41	14%	1.74	2.78	14%	0.11	0.08	1	1	0.68			0.00	0.00
NC	2000	2018	Heat Recovery Ventilators (HP heating)	Single Family	2014	2053	113.02	13.41	31.32	54.73	33%	3.72	6.49	33%	0.16	0.13	1	1	0.47			0.00	0.00
NC	2000	2012	Crawlspace insulation (HP heating)	Single Family	2014	2053	112.55	13.35	0.47	55.20	33%	0.06	6.55	33%	0.21	0.13	2	1	0.37			0.00	0.00
NC	2000	2006	Ceiling R-0 to R-38 Insulation (HP heating)	Single Family	2014	2053	110.33	13.09	2.22	57.42	34%	0.26	6.81	34%	0.23	0.13	2	1	0.33			0.00	0.00
NC	2000	2013	Basement insulation R-13 (HP heating)	Single Family	2014	2053	109.94	13.04	0.39	57.81	34%	0.05	6.86	34%	0.24	0.13	2	1	0.32			0.00	0.00
NC	2000	2007	Ceiling R-0 to R-49 Insulation (HP heating)	Single Family	2014	2053	109.87	13.04	0.07	57.88	35%	0.01	6.87	35%	1.16	0.14	10	1	0.07			0.00	0.00
NC	2000	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Single Family	2014	2053	104.87	12.44	5.00	62.88	37%	0.59	7.46	37%	0.25	0.14	2	1	0.26			0.00	0.00
NC	2000	2017	Duct Testing and Sealing (HP heating)	Single Family	2014	2053	103.89	12.33	0.98	63.86	38%	0.12	7.58	38%	0.31	0.15	3	1	0.24			0.00	0.00
NC	2000	2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Single Family	2014	2053	102.40	12.15	1.49	65.35	39%	0.18	7.75	39%	0.39	0.15	3	1	0.20			0.00	0.00
NC	2000	2008	Ceiling R-11 to R-38 Insulaton (HP heating)	Single Family	2014	2053	99.66	11.82	2.74	68.09	41%	0.33	8.08	41%	0.57	0.17	5	1	0.14			0.00	0.00
NC	2000	2009	Ceiling R-11 to R-49 Insulation (HP heating)	Single Family	2014	2053	99.40	11.79	0.25	68.34	41%	0.03	8.11	41%	1.28	0.17	11	1	0.06			0.00	0.00
NC	2000	2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	Single Family	2014	2053	99.22	11.77	0.19	68.53	41%	0.02	8.13	41%	0.80	0.18	7	1	0.10			0.00	0.00
NC	2000	2010	Ceiling R-19 to R-38 Insulation (HP heating)	Single Family	2014	2053	98.92	11.74	0.30	68.83	41%	0.04	8.17	41%	1.02	0.18	9	2	0.08			0.00	0.00
NC	2000	2003	Ground Source Heat Pump with Desuperheater (HP heating)	Single Family	2014	2053	90.17	10.70	8.75	77.58	46%	1.04	9.20	46%	2.07	0.39	17	3	0.03			0.00	0.00
NC	2000	2011	Ceiling R-19 to R-49 Insulation (HP heating)	Single Family	2014	2053	90.11	10.69	0.06	77.64	46%	0.01	9.21	46%	1.41	0.39	12	3	0.05			0.00	0.00
NC	2000	2005	Heat Pump Filter Replacement	Single Family	2014	2053	89.72	10.65	0.38	78.02	47%	0.05	9.26	47%	1.32	0.40	11	3	0.04			0.00	0.00
NC	2000	2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Single Family	2014	2053	89.44	10.61	0.28	78.31	47%	0.03	9.29	47%	2.88	0.41	24	3	0.03			0.00	0.00
NC	2000	2004	Heat pump tune up	Single Family	2014	2053	89.04	10.56	0.40	78.70	47%	0.05	9.34	47%	2.14	0.42	18	4	0.03			0.00	0.00
NC	2100	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSP	Single Family	2014	2053	32.77	3.89	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	32.77	3.89	0.00	0.00
NC	2100	2116	Duct Insulation (HP heating early replacement)	Single Family	2014	2053	32.50	3.86	0.27	0.27	1%	0.03	0.03	1%	0.01	0.01	0	0	9.40			0.27	0.03
NC	2100	2121	Self Install Weatherization (HP heating early replacement)	Single Family	2014	2053	32.07	3.81	0.43	0.69	2%	0.05	0.08	2%	0.03	0.02	0	0	2.51			0.43	0.05
NC	2100	2119	Programmable Thermostat (HP heating early replacement)	Single Family	2014	2053	31.42	3.73	0.65	1.34	4%	0.08	0.16	4%	0.05	0.03	0	0	1.36			0.65	0.08
NC	2100	2122	Door Weatherization (HP heating early replacement)	Single Family	2014	2053	31.04	3.68	0.38	1.73	5%	0.05	0.21	5%	0.08	0.04	1	0	0.72			0.00	0.00
NC	2100	2102	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early	Single Family	2014	2053	28.18	3.34	2.86	4.59	14%	0.34	0.54	14%	0.10	0.08	1	1	0.75			0.00	0.00
NC	2100	2118	Heat Recovery Ventilators (HP heating early replacement)	Single Family	2014	2053	22.06	2.62	6.11	10.70	33%	0.73	1.27	33%	0.15	0.12	1	1	0.52			0.00	0.00
NC	2100	2112	Crawlspace insulation (HP heating early replacement)	Single Family	2014	2053	21.54	2.56	0.52	11.22	34%	0.06	1.33	34%	0.19	0.12	2	1	0.40			0.00	0.00
NC	2100	2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Single Family	2014	2053	21.12	2.51	0.42	11.65	36%	0.05	1.38	36%	0.22	0.12	2	1	0.35			0.00	0.00
NC	2100	2113	Basement insulation R-13 (HP heating early replacement)	Single Family	2014	2053	20.69	2.46	0.43	12.07	37%	0.05	1.43	37%	0.22	0.13	2	1	0.35			0.00	0.00
NC	2100	2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	20.68	2.45	0.01	12.09	37%	0.00	1.43	37%	1.09	0.13	9	1	0.07			0.00	0.00
NC	2100	2120	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating e	Single Family	2014	2053	19.74	2.34	0.94	13.03	40%	0.11	1.55	40%	0.23	0.14	2	1	0.27			0.00	0.00
NC	2100	2117	Duct Testing and Sealing (HP heating early replacement)	Single Family	2014	2053	19.55	2.32	0.18	13.21	40%	0.02	1.57	40%	0.29	0.14	2	1	0.25			0.00	0.00
NC	2100	2123	WINDOWS - Double-Glazed Clear to Energy Star (HP heating	Single Family	2014	2053	19.27	2.29	0.28	13.49	41%	0.03	1.60	41%	0.37	0.14	3	1	0.21			0.00	0.00
NC	2100	2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Single Family	2014	2053	18.76	2.23	0.52	14.01	43%	0.06	1.66	43%	0.53	0.16	4	1	0.14			0.00	0.00
NC	2100	2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	18.71	2.22	0.05	14.06	43%	0.01	1.67	43%	1.20	0.16	10	1	0.06			0.00	0.00
NC	2100	2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replaceme	Single Family	2014	2053	18.51	2.20	0.20	14.26	44%	0.02	1.69	44%	0.75	0.17	6	1	0.10			0.00	0.00
NC	2100	2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Single Family	2014	2053	18.46	2.19	0.06	14.31	44%	0.01	1.70	44%	0.97	0.17	8	1	0.08			0.00	0.00
NC	2100	2103	Ground Source Heat Pump with Desuperheater (HP heating ea	Single Family	2014	2053	16.82	2.00	1.63	15.94	49%	0.19	1.89	49%	1.96	0.35	17	3	0.04			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	2100	2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Single Family	2014	2053	16.81	1.99	0.01	15.96	49%	0.00	1.89	49%	1.34	0.36	11	3	0.06			0.00	0.00
NC	2100	2105	Heat Pump Filter Replacement (heating)	Single Family	2014	2053	16.74	1.99	0.07	16.03	49%	0.01	1.90	49%	1.25	0.36	11	3	0.04			0.00	0.00
NC	2100	2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacem	Single Family	2014	2053	16.69	1.98	0.05	16.08	49%	0.01	1.91	49%	2.72	0.37	23	3	0.03			0.00	0.00
NC	2100	2104	Heat pump tune up (heating)	Single Family	2014	2053	16.61	1.97	0.07	16.15	49%	0.01	1.92	49%	2.02	0.37	17	3	0.03			0.00	0.00
NC	2200	2200	Base Resistance Space Heating (Primary)	Single Family	2014	2053	78.22	9.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	78.22	9.28	0.00	0.00
NC	2200	2201	Air Source Heat Pump (resistance heating)	Single Family	2014	2053	62.31	7.39	15.91	15.91	20%	1.89	1.89	20%	0.02	0.02	0	0	3.91			15.91	1.89
NC	2200	2216	Self Install Weatherization	Single Family	2014	2053	61.49	7.30	0.82	16.73	21%	0.10	1.99	21%	0.03	0.02	0	0	2.02			0.82	0.10
NC	2200	2214	Programmable Thermostat (resistance heating)	Single Family	2014	2053	60.24	7.15	1.25	17.98	23%	0.15	2.13	23%	0.05	0.02	0	0	1.42			1.25	0.15
NC	2200	2217	Door Weatherization (resistance heating)	Single Family	2014	2053	59.04	7.00	1.21	19.19	25%	0.14	2.28	25%	0.06	0.02	0	0	0.95			0.00	0.00
NC	2200	2213	Heat Recovery Ventilators (resistance heating)	Single Family	2014	2053	46.23	5.48	12.81	32.00	41%	1.52	3.80	41%	0.17	0.08	1	1	0.46			0.00	0.00
NC	2200	2203	Ceiling R-0 to R-38 Insulation (resistance heating)	Single Family	2014	2053	45.24	5.37	0.98	32.98	42%	0.12	3.91	42%	0.22	0.09	2	1	0.35			0.00	0.00
NC	2200	2209	Crawlspace insulation (resistance heating)	Single Family	2014	2053	44.83	5.32	0.41	33.39	43%	0.05	3.96	43%	0.24	0.09	2	1	0.32			0.00	0.00
NC	2200	2210	Basement insulation R-13 (resistance heating)	Single Family	2014	2053	44.24	5.25	0.59	33.98	43%	0.07	4.03	43%	0.25	0.09	2	1	0.31			0.00	0.00
NC	2200	2204	Ceiling R-0 to R-49 Insulation (resistance heating)	Single Family	2014	2053	44.22	5.25	0.02	34.00	43%	0.00	4.03	43%	1.42	0.09	12	1	0.05			0.00	0.00
NC	2200	2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance he	Single Family	2014	2053	42.21	5.01	2.01	36.02	46%	0.24	4.27	46%	0.26	0.10	2	1	0.25			0.00	0.00
NC	2200	2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance h	Single Family	2014	2053	41.52	4.93	0.69	36.71	47%	0.08	4.36	47%	0.35	0.10	3	1	0.22			0.00	0.00
NC	2200	2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	Single Family	2014	2053	40.31	4.78	1.21	37.91	48%	0.14	4.50	48%	0.54	0.12	5	1	0.14			0.00	0.00
NC	2200	2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Single Family	2014	2053	40.06	4.75	0.25	38.16	49%	0.03	4.53	49%	0.59	0.12	5	1	0.13			0.00	0.00
NC	2200	2206	Ceiling R-11 to R-49 Insulation (resistance heating)	Single Family	2014	2053	39.97	4.74	0.09	38.25	49%	0.01	4.54	49%	1.56	0.12	13	1	0.05			0.00	0.00
NC	2200	2207	Ceiling R-19 to R-38 Insulation (resistance heating)	Single Family	2014	2053	39.83	4.73	0.14	38.39	49%	0.02	4.55	49%	0.93	0.13	8	1	0.08			0.00	0.00
NC	2200	2208	Ceiling R-19 to R-49 Insulation (resistance heating)	Single Family	2014	2053	39.81	4.72	0.02	38.41	49%	0.00	4.56	49%	1.57	0.13	13	1	0.05			0.00	0.00
NC	2200	2202	Ground Source Heat Pump with Desuperheater (resistance hea	Single Family	2014	2053	39.48	4.68	0.33	38.74	50%	0.04	4.60	50%	26.32	0.35	222	3	0.00			0.00	0.00
NC	2200	2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Single Family	2014	2053	39.31	4.66	0.17	38.91	50%	0.02	4.62	50%	1.97	0.36	17	3	0.04			0.00	0.00
NC	3030	3030	Base Halogen Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	4.06	0.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.06	0.45	0.00	0.00
NC	3030	3032	LEDs (base Halogen 0.5 hrs/day) 2020	Single Family	2020	2053	1.30	0.15	2.76	2.76	68%	0.31	0.31	68%	0.04	0.04	0	0	2.44			2.76	0.31
NC	3130	3130	Base Halogen Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	16.58	1.86	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.58	1.86	0.00	0.00
NC	3130	3132	LEDs (base Halogen 2.5 hrs/day) 2020	Single Family	2020	2053	4.34	0.49	12.24	12.24	74%	1.37	1.37	74%	0.01	0.01	0	0	13.20			12.24	1.37
NC	3230	3230	Base Halogen Lighting - 6 hrs/day 2020	Single Family	2020	2053	10.97	1.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.97	1.23	0.00	0.00
NC	3230	3232	LEDs (base Halogen 6 hrs/day) 2020	Single Family	2020	2053	3.51	0.39	7.47	7.47	68%	0.84	0.84	68%	0.00	0.00	0	0	18.15			7.47	0.84
NC	3330	3330	Base CFL Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	1.87	0.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.87	0.21	0.00	0.00
NC	3330	3331	LEDs (base CFL 0.5 hrs/day) 2020	Single Family	2020	2053	1.37	0.15	0.51	0.51	27%	0.06	0.06	27%	0.20	0.20	2	2	0.43			0.00	0.00
NC	3430	3430	Base CFL Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	7.58	0.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.58	0.85	0.00	0.00
NC	3430	3431	LEDs (base CFL 2.5 hrs/day) 2020	Single Family	2020	2053	5.54	0.62	2.05	2.05	27%	0.23	0.23	27%	0.04	0.04	0	0	2.11			2.05	0.23
NC	3530	3530	Base CFL Lighting - 6 hrs/day 2020	Single Family	2020	2053	4.94	0.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.94	0.55	0.00	0.00
NC	3530	3531	LEDs (base CFL 6 hrs/day) 2020	Single Family	2020	2053	3.61	0.40	1.33	1.33	27%	0.15	0.15	27%	0.02	0.02	0	0	3.13			1.33	0.15
NC	3630	3630	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2020	Single Family	2020	2053	8.78	0.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.78	0.98	0.00	0.00
NC	3630	3632	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Single Family	2020	2053	3.47	0.39	5.31	5.31	60%	0.59	0.59	60%	0.01	0.01	0	0	7.30			5.31	0.59
NC	3730	3730	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2020	Single Family	2020	2053	36.55	4.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	36.55	4.09	0.00	0.00
NC	3730	3732	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Single Family	2020	2053	14.44	1.62	22.11	22.11	60%	2.47	2.47	60%	0.00	0.00	0	0	36.70			22.11	2.47
NC	3830	3830	Base Halogen (Specialty) Lighting - 6 hrs/day 2020	Single Family	2020	2053	24.20	2.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.20	2.71	0.00	0.00
NC	3830	3832	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Single Family	2020	2053	9.56	1.07	14.63	14.63	60%	1.64	1.64	60%	0.00	0.00	0	0	54.64			14.63	1.64
NC	3900	3900	Base Fluorescent Fixture 1.8 hrs/day	Single Family	2014	2053	54.27	6.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	54.27	6.08	0.00	0.00
NC	3900	3902	ROB 2L4'T8, 1EB	Single Family	2014	2053	39.63	4.44	14.64	14.64	27%	1.64	1.64	27%	0.04	0.04	0	0	2.44			14.64	1.64
NC	4000	4000	Base Refrigerator	Single Family	2014	2053	47.87	7.76	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	47.87	7.76	0.00	0.00
NC	4000	4001	Refrigerator (Energy Star)	Single Family	2014	2053	40.33	6.54	7.53	7.53	16%	1.22	1.22	16%	0.04	0.04	0	0	1.92			7.53	1.22
NC	4100	4100	Base Refrigerator--Early Replacement	Single Family	2014	2053	6.82	1.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.82	1.11	0.00	0.00
NC	4100	4101	Refrigerator - Early Replacement (Energy Star)	Single Family	2014	2053	3.77	0.61	3.05	3.05	45%	0.49	0.49	45%	0.09	0.09	1	1	0.61			0.00	0.00
NC	4200	4200	Base 2nd Refrigerator - Recycling	Single Family	2014	2053	23.56	3.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	23.56	3.82	0.00	0.00
NC	4200	4201	2nd Refrigerator Recycling	Single Family	2014	2053	6.07	0.98	17.49	17.49	74%	2.84	2.84	74%	0.03	0.03	0	0	2.33			17.49	2.84
NC	4500	4500	Base Freezer	Single Family	2014	2053	31.46	5.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	31.46	5.10	0.00	0.00
NC	4500	4501	Freezer (Energy Star)	Single Family	2014	2053	28.69	4.65	2.77	2.77	9%	0.45	0.45	9%	0.05	0.05	0	0	1.46			2.77	0.45
NC	4600	4600	Base Early Replacement Freezer	Single Family	2014	2053	6.58	1.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.58	1.04	0.00	0.00
NC	4600	4601	Freezer - Early Replacement (Energy Star)	Single Family	2014	2053	3.02	0.48	3.56	3.56	54%	0.56	0.56	54%	0.04	0.04	0	0	1.46			3.56	0.56
NC	4700	4700	Base 2nd Freezer Recycling	Single Family	2014	2053	7.09	1.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.09	1.12	0.00	0.00
NC	4700	4701	2nd Freezer Recycling	Single Family	2014	2053	3.58	0.57	3.51	3.51	50%	0.56	0.56	50%	0.02	0.02	0	0	3.66			3.51	0.56
NC	5000	5000	Base Water Heating (40 gal, EF=0.88)	Single Family	2014	2053	189.05	23.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	189.05	23.28	0.00	0.00
NC	5000	5006	Pipe Wrap	Single Family	2014	2053	183.24	22.57	5.81	5.81	3%	0.72	0.72	3%	0.02	0.02	0	0	3.61			5.81	0.72
NC	5000	5007	Hot water turndown 5 degrees	Single Family	2014	2053	182.60	22.49	0.64	6.45	3%	0.08	0.79	3%	0.02	0.02	0	0	2.42			0.64	0.08
NC	5000	5009	Hot water turndown 15 degrees	Single Family	2014	2053	182.40	22.46	0.20	6.65	4%	0.03	0.82	4%	0.02	0.02	0	0	2.41			0.20	0.03
NC	5000	5010	Hot water turndown 20 degrees	Single Family	2014	2053	182.32	22.46	0.08	6.73	4%	0.01	0.83	4%	0.02	0.02	0	0	2.41			0.08	0.01
NC	5000	5008	Hot water turndown 10 degrees	Single Family	2014	2053	181.46	22.35	0.86	7.59	4%	0.11	0.94	4%	0.02	0.02	0	0	2.41			0.86	0.11
NC	5000	5015	Low Flow Showerhead 1.5 Gal/Min	Single Family	2014	2053	176.03	21.68	5.42	13.02	7%	0.67	1.60	7%	0.03	0.02	0	0	2.26			5.42	0.67
NC	5000	5011	Drain Water Heat Recovery (GFX)	Single Family	2014	2053	169.42	20.87	6.62	19.63	10%	0.81	2.42	10%	0.06	0.03	0	0	1.31			6.62	0.81
NC	5000	5014	Faucent Aerators	Single Family	2014	2053	165.83	20.42	3.59	23.22	12%	0.44	2.86	12%	0.05	0.04	0	0	1.11			3.59	0.44
NC	5000	5005	DHW Tank Wrap	Single Family	2014	2053	156.73	19.30	9.10	32.32	17%	1.12	3.98	17%	0.05	0.04	0	0	1.00			0.00	0.00
NC	5000	5003	Heat Pump Water Heater - Energy Star	Single Family	2014	2053	133.71	16.47	23.02	55.34	29%	2.84	6.82	29%	0.08	0.06	1	0	0.91			0.00	0.00
NC	5000	5004	Solar Domestic Water Heating	Single Family	2014	2053	71.07	8.75	62.64	117.99	62%	7.72	14.53	62%	0.19	0.13	2	1	0.41			0.00	0.00
NC	5000	5012	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	2014	2053	70.88	8.73	0.19	118.17	63%	0.02	14.55	63%	4.86	0.13	39	1	0.01			0.00	0.00
NC	5000	5013	Energy Star Dishwasher (EF=0.72)	Single Family	2014	2053	70.72	8.71	0.15	118.33	63%	0.02	14.57	63%	4.54	0.14	37	1	0.01			0.00	0.00
NC	5100	5100	Base Water Heating Early Replacement to Heat Pump Water H	Single Family	2014	2053	33.36	4.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	33.36	4.11	0.00	0.00
NC	5100	5101	Heat Pump Water Heater - Energy Star - Early Replacement	Single Family	2014	2053	28.60	3.52	4.76	4.76	14%	0.59	0.59	14%	0.08	0.08	1	1	0.92			0.00	0.00
NC	5500	5500	Base Clotheswasher (MEF=1.26)	Single Family	2014	2053	3.38	0.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.38	0.61	0.00	0.00
NC	5500	5501	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	2014	2053	2.56	0.46	0.81	0.81	24%	0.15	0.15	24%	1.33	1.33	7	7	0.06			0.00	0.00
NC	5600	5600	Base Clothes Dryer (EF=3.01)	Single Family	2014	2053	50.79	8.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	50.79	8.60	0.00	0.00

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	5600	5602	High Efficiency CD (EF=3.01 w/moisture sensor)	Single Family	2014	2053	41.46	7.02	9.33	9.33	18%	1.58	1.58	18%	0.05	0.05	0	0	1.53			9.33	1.58
NC	5600	5601	Heat Pump Dryer	Single Family	2014	2053	20.73	3.51	20.73	30.06	59%	3.51	5.09	59%	0.75	0.53	4	3	0.09			0.00	0.00
NC	5700	5700	Base Dishwasher (EF=0.65)	Single Family	2014	2053	6.77	1.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.77	1.11	0.00	0.00
NC	5700	5701	Energy Star Dishwasher (EF=0.72)	Single Family	2014	2053	6.53	1.07	0.24	0.24	4%	0.04	0.04	4%	1.70	1.70	10	10	0.04			0.00	0.00
NC	6000	6000	Base Single Speed Pool Pump (RET)	Single Family	2014	2053	13.47	1.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.47	1.60	0.00	0.00
NC	6000	6002	Variable-Speed Pool Pump (<1 hp)	Single Family	2014	2053	3.73	0.44	9.74	9.74	72%	1.16	1.16	72%	0.03	0.03	0	0	2.01			9.74	1.16
NC	6000	6001	PV-Powered Pool Pumps	Single Family	2014	2053	0.15	0.02	3.58	13.32	99%	0.43	1.58	99%	1.02	0.30	9	2	0.06			0.00	0.00
NC	7000	7000	Base Plasma TV	Single Family	2014	2053	9.20	1.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.20	1.33	0.00	0.00
NC	7000	7001	Energy Star Plasma TV	Single Family	2014	2053	8.40	1.21	0.80	0.80	9%	0.12	0.12	9%	0.01	0.01	0	0	6.83			0.80	0.12
NC	7000	7002	Plug Load Controls - Smart Power Strip (base plasma TV)	Single Family	2014	2053	8.34	1.20	0.06	0.86	9%	0.01	0.12	9%	4.37	0.33	30	2	0.01			0.00	0.00
NC	7100	7100	Base LCD TV	Single Family	2014	2053	10.93	1.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.93	1.58	0.00	0.00
NC	7100	7101	Energy Star LCD TV	Single Family	2014	2053	7.16	1.03	3.77	3.77	34%	0.54	0.54	34%	0.00	0.00	0	0	15.08			3.77	0.54
NC	7100	7102	Plug Load Controls - Smart Power Strip (base LCD TV)	Single Family	2014	2053	7.01	1.01	0.15	3.92	36%	0.02	0.57	36%	4.68	0.18	32	1	0.01			0.00	0.00
NC	7200	7200	Base CRT TV	Single Family	2014	2053	5.33	0.77	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.33	0.77	0.00	0.00
NC	7200	7202	Plug Load Controls - Smart Power Strip (base CRT TV)	Single Family	2014	2053	5.02	0.72	0.31	0.31	6%	0.04	0.04	6%	1.29	1.29	9	9	0.04			0.00	0.00
NC	7300	7300	Base Set-Top Box	Single Family	2014	2053	15.22	2.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.22	2.20	0.00	0.00
NC	7400	7400	Base DVD Player	Single Family	2014	2053	1.66	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.66	0.24	0.00	0.00
NC	7400	7401	Energy Star DVD Player	Single Family	2014	2053	0.78	0.11	0.88	0.88	53%	0.13	0.13	53%	0.02	0.02	0	0	3.77			0.88	0.13
NC	7400	7402	Plug Load Controls - Smart Power Strip (base DVD player)	Single Family	2014	2053	0.08	0.01	0.70	1.57	95%	0.10	0.23	95%	0.80	0.36	6	3	0.07			0.00	0.00
NC	7500	7500	Base Desktop PC	Single Family	2014	2053	17.75	2.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.75	2.34	0.00	0.00
NC	7500	7501	Energy Star Desktop PC	Single Family	2014	2053	15.66	2.06	2.09	2.09	12%	0.28	0.28	12%	0.00	0.00	0	0	15.18			2.09	0.28
NC	7500	7502	Plug Load Controls - Smart Power Strip (base Desktop PC)	Single Family	2014	2053	11.27	1.48	4.39	6.48	37%	0.58	0.85	37%	0.08	0.06	1	0	0.67			0.00	0.00
NC	7600	7600	Base Laptop PC	Single Family	2014	2053	2.54	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.54	0.33	0.00	0.00
NC	7600	7601	Energy Star Laptop PC	Single Family	2014	2053	2.13	0.28	0.40	0.40	16%	0.05	0.05	16%	0.03	0.03	0	0	2.28			0.40	0.05
NC	8000	8000	Base Cooking	Single Family	2014	2053	47.21	15.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	47.21	15.07	0.00	0.00
NC	9000	9000	Base Miscellaneous	Single Family	2014	2053	67.94	8.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	67.94	8.95	0.00	0.00
NC	9900	9900	Base House Use	Single Family	2014	2053	1,379.15	341.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,379.15	341.51	0.00	0.00
NC	9900	9901	Indirect Feedback	Single Family	2014	2053	1,358.66	336.44	20.48	20.48	1%	5.07	5.07	1%	0.02	0.02	0	0	2.73			20.48	5.07
NC	9900	9902	Direct Feedback	Single Family	2014	2053	1,294.61	320.58	64.05	84.53	6%	15.86	20.93	6%	0.05	0.04	0	0	1.12			64.05	15.86
NC	1000	1000	Base Split-System Air Conditioner - (13 SEER, 11.09 EER)	Multi-Family	2014	2053	7.75	4.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.75	4.60	0.00	0.00
NC	1000	1024	Self Install Weatherization (CAC)	Multi-Family	2014	2053	7.63	4.53	0.12	0.12	2%	0.07	0.07	2%	0.02	0.02	0	0	4.23			0.12	0.07
NC	1000	1025	Door Weatherization (CAC)	Multi-Family	2014	2053	7.26	4.31	0.37	0.49	6%	0.22	0.29	6%	0.07	0.06	0	0	1.00			0.00	0.00
NC	1000	1004	Proper Refrigerant Charging and Air Flow (CAC)	Multi-Family	2014	2053	6.74	4.00	0.52	1.01	13%	0.31	0.60	13%	0.12	0.09	0	0	0.71			0.00	0.00
NC	1000	1019	Duct Insulation (CAC)	Multi-Family	2014	2053	6.72	3.99	0.01	1.03	13%	0.01	0.61	13%	0.18	0.09	0	0	0.65			0.00	0.00
NC	1000	1022	Programmable Thermostat (CAC)	Multi-Family	2014	2053	6.67	3.96	0.05	1.08	14%	0.03	0.64	14%	0.15	0.10	0	0	0.63			0.00	0.00
NC	1000	1001	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	6.24	3.71	0.43	1.51	19%	0.25	0.90	19%	0.21	0.13	0	0	0.52			0.00	0.00
NC	1000	1021	Return Duct Modification (CAC)	Multi-Family	2014	2053	6.21	3.69	0.04	1.54	20%	0.02	0.92	20%	0.24	0.13	0	0	0.47			0.00	0.00
NC	1000	1002	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	5.84	3.47	0.37	1.91	25%	0.22	1.14	25%	0.25	0.16	0	0	0.44			0.00	0.00
NC	1000	1026	Ceiling Fans (CAC)	Multi-Family	2014	2053	5.53	3.28	0.31	2.23	29%	0.18	1.32	29%	0.28	0.17	0	0	0.37			0.00	0.00
NC	1000	1014	Crawlspace insulation (CAC)	Multi-Family	2014	2053	5.51	3.27	0.02	2.25	29%	0.01	1.33	29%	0.33	0.17	1	0	0.35			0.00	0.00
NC	1000	1003	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Multi-Family	2014	2053	4.92	2.92	0.58	2.83	37%	0.35	1.68	37%	0.35	0.21	1	0	0.32			0.00	0.00
NC	1000	1008	Ceiling R-0 to R-38 Insulation (CAC)	Multi-Family	2014	2053	4.51	2.68	0.41	3.24	42%	0.24	1.93	42%	0.63	0.26	1	0	0.18			0.00	0.00
NC	1000	1023	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Multi-Family	2014	2053	4.31	2.56	0.21	3.45	44%	0.12	2.05	44%	0.54	0.28	1	0	0.16			0.00	0.00
NC	1000	1030	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Multi-Family	2014	2053	4.21	2.50	0.10	3.54	46%	0.06	2.10	46%	0.74	0.29	1	0	0.15			0.00	0.00
NC	1000	1005	Proper Sizing and Quality Install (CAC)	Multi-Family	2014	2053	3.80	2.26	0.41	3.95	51%	0.24	2.35	51%	0.82	0.35	1	1	0.13			0.00	0.00
NC	1000	1020	Duct Testing and Sealing (CAC)	Multi-Family	2014	2053	3.70	2.20	0.10	4.05	52%	0.06	2.41	52%	0.92	0.36	2	1	0.12			0.00	0.00
NC	1000	1009	Ceiling R-0 to R-49 Insulation (CAC)	Multi-Family	2014	2053	3.70	2.20	0.00	4.05	52%	0.00	2.41	52%	8.89	0.37	15	1	0.01			0.00	0.00
NC	1000	1029	WINDOWS - Default With Sunscreen (CAC)	Multi-Family	2014	2053	3.44	2.04	0.26	4.31	56%	0.15	2.56	56%	1.06	0.41	2	1	0.08			0.00	0.00
NC	1000	1010	Ceiling R-11 to R-38 Insulaton (CAC)	Multi-Family	2014	2053	3.39	2.01	0.05	4.36	56%	0.03	2.59	56%	2.00	0.43	3	1	0.06			0.00	0.00
NC	1000	1018	Cool Roof (CAC)	Multi-Family	2014	2053	3.28	1.95	0.11	4.47	58%	0.06	2.65	58%	1.90	0.47	3	1	0.05			0.00	0.00
NC	1000	1017	Wall Blow-in R-0 to R-13 Insulation (CAC)	Multi-Family	2014	2053	3.25	1.93	0.03	4.50	58%	0.02	2.67	58%	2.44	0.48	4	1	0.05			0.00	0.00
NC	1000	1028	Window Film (CAC)	Multi-Family	2014	2053	3.06	1.82	0.19	4.69	61%	0.11	2.79	61%	1.91	0.54	3	1	0.05			0.00	0.00
NC	1000	1027	Whole House Fans (CAC)	Multi-Family	2014	2053	2.88	1.71	0.18	4.87	63%	0.11	2.89	63%	2.40	0.61	4	1	0.04			0.00	0.00
NC	1000	1011	Ceiling R-11 to R-49 Insulation (CAC)	Multi-Family	2014	2053	2.88	1.71	0.00	4.87	63%	0.00	2.89	63%	11.43	0.61	19	1	0.01			0.00	0.00
NC	1000	1012	Ceiling R-19 to R-38 Insulation (CAC)	Multi-Family	2014	2053	2.87	1.71	0.01	4.88	63%	0.00	2.90	63%	3.98	0.61	7	1	0.03			0.00	0.00
NC	1000	1013	Ceiling R-19 to R-49 Insulation (CAC)	Multi-Family	2014	2053	2.87	1.71	0.00	4.88	63%	0.00	2.90	63%	11.46	0.62	19	1	0.01			0.00	0.00
NC	1000	1016	Floor R-0 to R-19 Insulation-Batts (CAC)	Multi-Family	2014	2053	2.86	1.70	0.02	4.89	63%	0.01	2.91	63%	6.36	0.63	11	1	0.02			0.00	0.00
NC	1000	1015	Basement insulation R-13 (CAC)	Multi-Family	2014	2053	2.85	1.69	0.01	4.90	63%	0.00	2.91	63%	6.44	0.64	11	1	0.02			0.00	0.00
NC	1000	1007	AC Filter Changes (CAC)	Multi-Family	2014	2053	2.84	1.69	0.01	4.91	63%	0.01	2.92	63%	7.74	0.65	13	1	0.01			0.00	0.00
NC	1000	1006	AC Maintenance and/or tune-up (CAC)	Multi-Family	2014	2053	2.83	1.68	0.01	4.92	63%	0.01	2.92	63%	8.85	0.67	15	1	0.01			0.00	0.00
NC	1100	1100	Base Split-System Air Conditioner - Early Replacement (11 SEI	Multi-Family	2014	2053	2.32	1.38	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.32	1.38	0.00	0.00
NC	1100	1122	Self Install Weatherization (CAC early replacement)	Multi-Family	2014	2053	2.28	1.36	0.04	0.04	2%	0.02	0.02	2%	0.01	0.01	0	0	7.17			0.04	0.02
NC	1100	1117	Duct Insulation (CAC early replacement)	Multi-Family	2014	2053	2.26	1.35	0.02	0.06	2%	0.01	0.03	2%	0.02	0.02	0	0	4.97			0.02	0.01
NC	1100	1123	Door Weatherization (CAC early replacement)	Multi-Family	2014	2053	2.16	1.28	0.11	0.16	7%	0.06	0.10	7%	0.04	0.03	0	0	1.64			0.11	0.06
NC	1100	1102	Proper Refrigerant Charging and Air Flow (CAC early replacem	Multi-Family	2014	2053	1.97	1.17	0.19	0.35	15%	0.11	0.21	15%	0.08	0.06	0	0	1.17			0.19	0.11
NC	1100	1120	Programmable Thermostat (CAC early replacement)	Multi-Family	2014	2053	1.95	1.16	0.02	0.37	16%	0.01	0.22	16%	0.09	0.06	0	0	1.04			0.02	0.01
NC	1100	1119	Return Duct Modification (CAC early replacement)	Multi-Family	2014	2053	1.94	1.15	0.01	0.38	16%	0.01	0.22	16%	0.14	0.06	0	0	0.83			0.00	0.00
NC	1100	1112	Crawlspace insulation (CAC early replacement)	Multi-Family	2014	2053	1.93	1.15	0.01	0.38	17%	0.00	0.23	17%	0.17	0.06	0	0	0.69			0.00	0.00
NC	1100	1116	Cool Roof (CAC early replacement)	Multi-Family	2014	2053	1.72	1.02	0.22	0.60	26%	0.13	0.36	26%	0.17	0.10	0	0	0.62			0.00	0.00
NC	1100	1125	Whole House Fans (CAC early replacement)	Multi-Family	2014	2053	1.38	0.82	0.34	0.94	40%	0.20	0.56	40%	0.23	0.15	0	0	0.46			0.00	0.00
NC	1100	1128	WINDOWS - Double-Glazed Clear to Energy Star (CAC early r	Multi-Family	2014	2053	1.35	0.80	0.03	0.97	42%	0.02	0.58	42%	0.36	0.15	1	0	0.31			0.00	0.00
NC	1100	1106	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Multi-Family	2014	2053	1.24	0.73	0.11	1.08	47%	0.07	0.64	47%	0.41	0.18	1	0	0.28			0.00	0.00
NC	1100	1118	Duct Testing and Sealing (CAC early replacement)	Multi-Family	2014	2053	1.20	0.71	0.04	1.12	48%	0.02	0.67	48%	0.43	0.19	1	0	0.25			0.00	0.00
NC	1100	1121	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early re	Multi-Family	2014	2053	1.14	0.68	0.05	1.17	51%	0.03	0.70	51%	0.36	0.20	1	0	0.25			0.00	0.00

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS Year 2014
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	1100	1103	Proper Sizing and Quality Install (CAC early replacement)	Multi-Family	2014	2053	1.01	0.60	0.13	1.31	56%	0.08	0.78	56%	0.55	0.23	1	0	0.20			0.00	0.00
NC	1100	1124	Ceiling Fans (CAC early replacement)	Multi-Family	2014	2053	0.98	0.58	0.03	1.34	58%	0.02	0.79	58%	0.58	0.24	1	0	0.18			0.00	0.00
NC	1100	1107	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	0.98	0.58	0.00	1.34	58%	0.00	0.79	58%	5.90	0.24	10	0	0.02			0.00	0.00
NC	1100	1113	Basement insulation R-13 (CAC early replacement)	Multi-Family	2014	2053	0.97	0.58	0.01	1.35	58%	0.01	0.80	58%	0.68	0.25	1	0	0.17			0.00	0.00
NC	1100	1108	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Multi-Family	2014	2053	0.96	0.57	0.01	1.36	59%	0.01	0.81	59%	1.25	0.26	2	0	0.09			0.00	0.00
NC	1100	1127	WINDOWS - Default With Sunscreen (CAC early replacement)	Multi-Family	2014	2053	0.91	0.54	0.05	1.41	61%	0.03	0.84	61%	1.05	0.28	2	0	0.08			0.00	0.00
NC	1100	1115	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Multi-Family	2014	2053	0.90	0.54	0.01	1.42	61%	0.01	0.84	61%	1.55	0.29	3	0	0.07			0.00	0.00
NC	1100	1109	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	0.90	0.54	0.00	1.42	61%	0.00	0.84	61%	6.44	0.29	11	0	0.02			0.00	0.00
NC	1100	1126	Window Film (CAC early replacement)	Multi-Family	2014	2053	0.86	0.51	0.04	1.46	63%	0.02	0.87	63%	1.56	0.33	3	1	0.06			0.00	0.00
NC	1100	1110	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Multi-Family	2014	2053	0.86	0.51	0.00	1.46	63%	0.00	0.87	63%	2.35	0.33	4	1	0.05			0.00	0.00
NC	1100	1111	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Multi-Family	2014	2053	0.86	0.51	0.00	1.46	63%	0.00	0.87	63%	6.76	0.33	11	1	0.02			0.00	0.00
NC	1100	1101	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality I	Multi-Family	2014	2053	0.82	0.48	0.04	1.50	65%	0.03	0.89	65%	2.56	0.40	4	1	0.03			0.00	0.00
NC	1100	1114	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Multi-Family	2014	2053	0.81	0.48	0.00	1.51	65%	0.00	0.90	65%	3.96	0.41	7	1	0.03			0.00	0.00
NC	1100	1105	AC Filter Changes (CAC early replacement)	Multi-Family	2014	2053	0.81	0.48	0.00	1.51	65%	0.00	0.90	65%	4.80	0.42	8	1	0.01			0.00	0.00
NC	1100	1104	AC Maintenance and/or tune-up (CAC early replacement)	Multi-Family	2014	2053	0.81	0.48	0.00	1.51	65%	0.00	0.90	65%	5.49	0.42	9	1	0.01			0.00	0.00
NC	1200	1200	Base Heat Pump Cooling (13 SEER)	Multi-Family	2014	2053	11.87	7.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.87	7.05	0.00	0.00
NC	1200	1219	Duct Insulation (HP cooling)	Multi-Family	2014	2053	11.77	6.99	0.10	0.10	1%	0.06	0.06	1%	0.03	0.03	0	0	4.16			0.10	0.06
NC	1200	1223	Self Install Weatherization (HP cooling)	Multi-Family	2014	2053	11.58	6.88	0.19	0.28	2%	0.11	0.17	2%	0.04	0.04	0	0	2.24			0.19	0.11
NC	1200	1224	Door Weatherization (HP cooling)	Multi-Family	2014	2053	11.02	6.55	0.56	0.85	7%	0.33	0.50	7%	0.05	0.05	0	0	1.38			0.56	0.33
NC	1200	1202	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Multi-Family	2014	2053	9.15	5.44	1.87	2.71	23%	1.11	1.61	23%	0.09	0.08	0	0	1.17			1.87	1.11
NC	1200	1204	Proper Refrigerant Charging and Air Flow (HP cooling)	Multi-Family	2014	2053	8.50	5.05	0.66	3.37	28%	0.39	2.00	28%	0.11	0.08	0	0	0.82			0.00	0.00
NC	1200	1214	Crawlspace insulation (HP cooling)	Multi-Family	2014	2053	8.47	5.03	0.03	3.40	29%	0.02	2.02	29%	0.23	0.08	0	0	0.49			0.00	0.00
NC	1200	1221	Programmable Thermostat (HP cooling)	Multi-Family	2014	2053	8.30	4.93	0.17	3.57	30%	0.10	2.12	30%	0.21	0.09	0	0	0.45			0.00	0.00
NC	1200	1218	Cool Roof (HP cooling)	Multi-Family	2014	2053	7.37	4.38	0.93	4.49	38%	0.55	2.67	38%	0.24	0.12	0	0	0.43			0.00	0.00
NC	1200	1226	Whole House Fans (HP cooling)	Multi-Family	2014	2053	5.93	3.53	1.44	5.93	50%	0.85	3.52	50%	0.33	0.17	1	0	0.32			0.00	0.00
NC	1200	1208	Ceiling R-0 to R-38 Insulation (HP cooling)	Multi-Family	2014	2053	5.43	3.23	0.50	6.43	54%	0.30	3.82	54%	0.57	0.20	1	0	0.20			0.00	0.00
NC	1200	1220	Duct Testing and Sealing (HP cooling)	Multi-Family	2014	2053	5.27	3.13	0.16	6.59	56%	0.10	3.92	56%	0.61	0.21	1	0	0.18			0.00	0.00
NC	1200	1222	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Multi-Family	2014	2053	5.03	2.99	0.24	6.83	58%	0.14	4.06	58%	0.51	0.22	1	0	0.17			0.00	0.00
NC	1200	1205	Proper Sizing and Quality Install (HP cooling)	Multi-Family	2014	2053	4.54	2.70	0.49	7.32	62%	0.29	4.35	62%	0.74	0.26	1	0	0.15			0.00	0.00
NC	1200	1209	Ceiling R-0 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	4.53	2.69	0.01	7.34	62%	0.01	4.36	62%	3.57	0.26	6	0	0.03			0.00	0.00
NC	1200	1225	Ceiling Fans (HP cooling)	Multi-Family	2014	2053	4.41	2.62	0.12	7.45	63%	0.07	4.43	63%	0.81	0.27	1	0	0.13			0.00	0.00
NC	1200	1215	Basement insulation R-13 (HP cooling)	Multi-Family	2014	2053	4.36	2.59	0.05	7.50	63%	0.03	4.46	63%	0.95	0.28	2	0	0.12			0.00	0.00
NC	1200	1227	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Multi-Family	2014	2053	4.26	2.53	0.11	7.61	64%	0.06	4.52	64%	1.11	0.29	2	0	0.10			0.00	0.00
NC	1200	1210	Ceiling R-11 to R-38 Insulaton (HP cooling)	Multi-Family	2014	2053	4.19	2.49	0.07	7.68	65%	0.04	4.56	65%	1.74	0.30	3	1	0.07			0.00	0.00
NC	1200	1211	Ceiling R-11 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	4.18	2.49	0.01	7.68	65%	0.00	4.56	65%	3.87	0.30	7	1	0.03			0.00	0.00
NC	1200	1216	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Multi-Family	2014	2053	4.14	2.46	0.04	7.72	65%	0.03	4.59	65%	2.42	0.31	4	1	0.05			0.00	0.00
NC	1200	1212	Ceiling R-19 to R-38 Insulation (HP cooling)	Multi-Family	2014	2053	4.13	2.46	0.01	7.73	65%	0.00	4.59	65%	3.12	0.32	5	1	0.04			0.00	0.00
NC	1200	1213	Ceiling R-19 to R-49 Insulation (HP cooling)	Multi-Family	2014	2053	4.13	2.46	0.00	7.73	65%	0.00	4.59	65%	3.93	0.32	7	1	0.03			0.00	0.00
NC	1200	1217	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Multi-Family	2014	2053	4.10	2.43	0.03	7.77	65%	0.02	4.61	65%	7.69	0.35	13	1	0.01			0.00	0.00
NC	1200	1207	Heat Pump Filter Replacement	Multi-Family	2014	2053	4.09	2.43	0.01	7.78	66%	0.01	4.62	66%	5.82	0.36	10	1	0.01			0.00	0.00
NC	1200	1206	Heat pump tune up	Multi-Family	2014	2053	4.07	2.42	0.01	7.79	66%	0.01	4.63	66%	9.38	0.37	16	1	0.01			0.00	0.00
NC	1300	1300	Base Heat Pump Cooling - Early Replacement (13 SEER)	Multi-Family	2014	2053	2.14	1.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.14	1.27	0.00	0.00
NC	1300	1319	Duct Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	2.13	1.26	0.02	0.02	1%	0.01	0.01	1%	0.03	0.03	0	0	4.26			0.02	0.01
NC	1300	1323	Self Install Weatherization (HP cooling Early Replacement)	Multi-Family	2014	2053	2.09	1.24	0.03	0.05	2%	0.02	0.03	2%	0.04	0.03	0	0	2.29			0.03	0.02
NC	1300	1324	Door Weatherization (HP cooling Early Replacement)	Multi-Family	2014	2053	1.99	1.18	0.10	0.15	7%	0.06	0.09	7%	0.05	0.05	0	0	1.38			0.10	0.06
NC	1300	1302	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Ea	Multi-Family	2014	2053	1.66	0.98	0.34	0.49	23%	0.20	0.29	23%	0.09	0.07	0	0	1.20			0.34	0.20
NC	1300	1304	Proper Refrigerant Charging and Air Flow (HP cooling Early Re	Multi-Family	2014	2053	1.54	0.91	0.12	0.61	28%	0.07	0.36	28%	0.11	0.08	0	0	0.84			0.00	0.00
NC	1300	1314	Crawlspace insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	1.53	0.91	0.01	0.61	29%	0.00	0.36	29%	0.23	0.08	0	0	0.50			0.00	0.00
NC	1300	1321	Programmable Thermostat (HP cooling Early Replacement)	Multi-Family	2014	2053	1.50	0.89	0.03	0.64	30%	0.02	0.38	30%	0.21	0.09	0	0	0.46			0.00	0.00
NC	1300	1318	Cool Roof (HP cooling Early Replacement)	Multi-Family	2014	2053	1.33	0.79	0.17	0.81	38%	0.10	0.48	38%	0.24	0.12	0	0	0.44			0.00	0.00
NC	1300	1326	Whole House Fans (HP cooling early replacement)	Multi-Family	2014	2053	1.07	0.64	0.26	1.07	50%	0.15	0.64	50%	0.32	0.17	1	0	0.32			0.00	0.00
NC	1300	1308	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	0.98	0.58	0.09	1.16	54%	0.05	0.69	54%	0.55	0.20	1	0	0.21			0.00	0.00
NC	1300	1320	Duct Testing and Sealing (HP cooling Early Replacement)	Multi-Family	2014	2053	0.95	0.57	0.03	1.19	56%	0.02	0.71	56%	0.60	0.21	1	0	0.18			0.00	0.00
NC	1300	1322	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling E	Multi-Family	2014	2053	0.91	0.54	0.04	1.23	58%	0.03	0.73	58%	0.50	0.22	1	0	0.18			0.00	0.00
NC	1300	1305	Proper Sizing and Quality Install (HP cooling Early Replacemer	Multi-Family	2014	2053	0.82	0.49	0.09	1.32	62%	0.05	0.79	62%	0.72	0.25	1	0	0.15			0.00	0.00
NC	1300	1309	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	0.82	0.49	0.00	1.32	62%	0.00	0.79	62%	3.49	0.26	6	0	0.03			0.00	0.00
NC	1300	1325	Ceiling Fans (HP cooling early replacement)	Multi-Family	2014	2053	0.80	0.47	0.02	1.35	63%	0.01	0.80	63%	0.79	0.27	1	0	0.13			0.00	0.00
NC	1300	1315	Basement insulation R-13 (HP cooling Early Replacement)	Multi-Family	2014	2053	0.79	0.47	0.01	1.35	63%	0.01	0.80	63%	0.92	0.27	2	0	0.12			0.00	0.00
NC	1300	1327	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling I	Multi-Family	2014	2053	0.77	0.46	0.02	1.37	64%	0.01	0.82	64%	1.09	0.28	2	0	0.11			0.00	0.00
NC	1300	1310	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Multi-Family	2014	2053	0.76	0.45	0.01	1.39	65%	0.01	0.82	65%	1.69	0.29	3	0	0.07			0.00	0.00
NC	1300	1311	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	0.76	0.45	0.00	1.39	65%	0.00	0.82	65%	3.78	0.30	6	0	0.03			0.00	0.00
NC	1300	1316	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacem	Multi-Family	2014	2053	0.75	0.45	0.01	1.39	65%	0.00	0.83	65%	2.36	0.31	4	1	0.05			0.00	0.00
NC	1300	1312	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	0.75	0.44	0.00	1.40	65%	0.00	0.83	65%	3.05	0.31	5	1	0.04			0.00	0.00
NC	1300	1313	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	2014	2053	0.75	0.44	0.00	1.40	65%	0.00	0.83	65%	3.83	0.31	6	1	0.03			0.00	0.00
NC	1300	1317	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacer	Multi-Family	2014	2053	0.74	0.44	0.01	1.40	65%	0.00	0.83	65%	7.49	0.34	13	1	0.02			0.00	0.00
NC	1300	1307	Heat Pump Filter Replacement	Multi-Family	2014	2053	0.74	0.44	0.00	1.40	65%	0.00	0.83	65%	5.67	0.35	10	1	0.01			0.00	0.00
NC	1300	1306	Heat pump tune up	Multi-Family	2014	2053	0.74	0.44	0.00	1.41	66%	0.00	0.84	66%	9.15	0.36	15	1	0.01			0.00	0.00
NC	1400	1400	Base Room Air Conditioner - EER 10.6	Multi-Family	2014	2053	0.67	0.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.67	0.40	0.00	0.00
NC	1400	1413	Self Install Weatherization (RAC)	Multi-Family	2014	2053	0.66	0.39	0.01	0.01	2%	0.01	0.01	2%	0.01	0.01	0	0	8.46			0.01	0.01
NC	1400	1414	Door Weatherization (RAC)	Multi-Family	2014	2053	0.63	0.37	0.03	0.04	6%	0.02	0.03	6%	0.04	0.03	0	0	1.99			0.03	0.02
NC	1400	1411	Cool Roof (RAC)	Multi-Family	2014	2053	0.56	0.33	0.07	0.11	17%	0.04	0.07	17%	0.13	0.09	0	0	0.82			0.00	0.00
NC	1400	1416	Whole House Fans (RAC)	Multi-Family	2014	2053	0.45	0.27	0.11	0.22	33%	0.06	0.13	33%	0.17	0.13	0	0	0.61			0.00	0.00
NC	1400	1412	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Multi-Family	2014	2053	0.42	0.25	0.02	0.25	37%	0.01	0.15	37%	0.20	0.14	0	0	0.45			0.00	0.00
NC	1400	1402	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Multi-Family	2014	2053	0.40	0.24	0.03	0.27	40%	0.01	0.16	40%	0.20	0.14	0	0	0.42			0.00	0.00

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	1400	1419	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Multi-Family	2014	2053	0.39	0.23	0.01	0.28	42%	0.01	0.17	42%	0.31	0.15	1	0	0.37			0.00	0.00
NC	1400	1404	Ceiling R-0 to R-38 Insulation (RAC)	Multi-Family	2014	2053	0.36	0.21	0.03	0.31	46%	0.02	0.18	46%	0.36	0.17	1	0	0.31			0.00	0.00
NC	1400	1415	Ceiling Fans (RAC)	Multi-Family	2014	2053	0.35	0.21	0.01	0.32	48%	0.01	0.19	48%	0.40	0.18	1	0	0.26			0.00	0.00
NC	1400	1405	Ceiling R-0 to R-49 Insulation (RAC)	Multi-Family	2014	2053	0.35	0.21	0.00	0.32	48%	0.00	0.19	48%	2.23	0.18	4	0	0.05			0.00	0.00
NC	1400	1417	Window Film (RAC)	Multi-Family	2014	2053	0.32	0.19	0.03	0.35	53%	0.02	0.21	53%	0.51	0.21	1	0	0.18			0.00	0.00
NC	1400	1410	Wall Blow-in R-0 to R-13 Insulation (RAC)	Multi-Family	2014	2053	0.31	0.19	0.00	0.36	53%	0.00	0.21	53%	1.00	0.22	2	0	0.11			0.00	0.00
NC	1400	1418	WINDOWS - Default With Sunscreen (RAC)	Multi-Family	2014	2053	0.30	0.18	0.01	0.37	55%	0.01	0.22	55%	0.79	0.24	1	0	0.11			0.00	0.00
NC	1400	1406	Ceiling R-11 to R-38 Insulaton (RAC)	Multi-Family	2014	2053	0.29	0.18	0.00	0.37	56%	0.00	0.22	56%	1.10	0.25	2	0	0.10			0.00	0.00
NC	1400	1407	Ceiling R-11 to R-49 Insulation (RAC)	Multi-Family	2014	2053	0.29	0.17	0.00	0.38	56%	0.00	0.22	56%	2.65	0.25	4	0	0.04			0.00	0.00
NC	1400	1408	Ceiling R-19 to R-38 Insulation (RAC)	Multi-Family	2014	2053	0.29	0.17	0.00	0.38	56%	0.00	0.22	56%	1.84	0.25	3	0	0.06			0.00	0.00
NC	1400	1409	Ceiling R-19 to R-49 Insulation (RAC)	Multi-Family	2014	2053	0.29	0.17	0.00	0.38	56%	0.00	0.22	56%	2.65	0.25	4	0	0.04			0.00	0.00
NC	1400	1403	Room AC Filter Replacement	Multi-Family	2014	2053	0.29	0.17	0.00	0.38	56%	0.00	0.22	56%	2.40	0.26	4	0	0.03			0.00	0.00
NC	1500	1500	Base Room Air Conditioner, Early Replacement - EER 9.7	Multi-Family	2014	2053	0.05	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.03	0.00	0.00
NC	1500	1501	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early	Multi-Family	2014	2053	0.05	0.03	0.01	0.01	13%	0.00	0.00	13%	0.96	0.96	2	2	0.09			0.00	0.00
NC	1600	1600	Base Dehumidifier (40 pints/day, 1.5 liters/kWh)	Multi-Family	2014	2053	0.19	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.11	0.00	0.00
NC	1600	1601	10% better than Energy Star Dehumidifier ROB (35-45 pints/da	Multi-Family	2014	2053	0.16	0.09	0.03	0.03	15%	0.02	0.02	15%	0.19	0.19	0	0	0.52			0.00	0.00
NC	1700	1700	Base Furnace Fan - Furnace & CAC	Multi-Family	2014	2053	11.33	5.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.33	5.81	0.00	0.00
NC	1700	1701	ECM Furnace Fan (variable speed motor) - Cooling	Multi-Family	2014	2053	6.30	3.23	5.04	5.04	44%	2.58	2.58	44%	0.03	0.03	0	0	3.79			5.04	2.58
NC	2000	2000	Base Heat Pump Space Heating (7.7 HSPF)	Multi-Family	2014	2053	17.55	2.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.55	2.08	0.00	0.00
NC	2000	2016	Duct Insulation (HP heating)	Multi-Family	2014	2053	17.41	2.07	0.14	0.14	1%	0.02	0.02	1%	0.02	0.02	0	0	3.57			0.14	0.02
NC	2000	2021	Self Install Weatherization (HP heating)	Multi-Family	2014	2053	17.13	2.03	0.28	0.42	2%	0.03	0.05	2%	0.03	0.03	0	0	2.05			0.28	0.03
NC	2000	2022	Door Weatherization (HP heating)	Multi-Family	2014	2053	16.49	1.96	0.65	1.07	6%	0.08	0.13	6%	0.05	0.04	0	0	1.04			0.65	0.08
NC	2000	2002	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Multi-Family	2014	2053	14.97	1.78	1.52	2.59	15%	0.18	0.31	15%	0.12	0.09	1	1	0.61			0.00	0.00
NC	2000	2012	Crawlspace insulation (HP heating)	Multi-Family	2014	2053	14.93	1.77	0.04	2.63	15%	0.00	0.31	15%	0.15	0.09	1	1	0.50			0.00	0.00
NC	2000	2019	Programmable Thermostat (HP heating)	Multi-Family	2014	2053	14.63	1.74	0.30	2.92	17%	0.04	0.35	17%	0.14	0.09	1	1	0.48			0.00	0.00
NC	2000	2020	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Multi-Family	2014	2053	13.96	1.66	0.67	3.59	20%	0.08	0.43	20%	0.21	0.11	2	1	0.30			0.00	0.00
NC	2000	2006	Ceiling R-0 to R-38 Insulation (HP heating)	Multi-Family	2014	2053	12.79	1.52	1.18	4.77	27%	0.14	0.57	27%	0.28	0.16	2	1	0.28			0.00	0.00
NC	2000	2017	Duct Testing and Sealing (HP heating)	Multi-Family	2014	2053	12.41	1.47	0.38	5.15	29%	0.05	0.61	29%	0.30	0.17	3	1	0.25			0.00	0.00
NC	2000	2007	Ceiling R-0 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	12.37	1.47	0.03	5.18	30%	0.00	0.61	30%	1.52	0.18	13	1	0.05			0.00	0.00
NC	2000	2013	Basement insulation R-13 (HP heating)	Multi-Family	2014	2053	12.26	1.46	0.11	5.29	30%	0.01	0.63	30%	0.39	0.18	3	2	0.20			0.00	0.00
NC	2000	2018	Heat Recovery Ventilators (HP heating)	Multi-Family	2014	2053	9.60	1.14	2.66	7.95	45%	0.32	0.94	45%	0.43	0.26	4	2	0.18			0.00	0.00
NC	2000	2023	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Multi-Family	2014	2053	9.37	1.11	0.23	8.18	47%	0.03	0.97	47%	0.61	0.27	5	2	0.13			0.00	0.00
NC	2000	2008	Ceiling R-11 to R-38 Insulaton (HP heating)	Multi-Family	2014	2053	9.23	1.09	0.14	8.33	47%	0.02	0.99	47%	0.91	0.29	8	2	0.08			0.00	0.00
NC	2000	2009	Ceiling R-11 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	9.21	1.09	0.01	8.34	48%	0.00	0.99	48%	2.04	0.29	17	2	0.04			0.00	0.00
NC	2000	2014	Floor R-0 to R-19 Insulation-Batts (HP heating)	Multi-Family	2014	2053	9.14	1.08	0.08	8.42	48%	0.01	1.00	48%	1.28	0.30	11	3	0.06			0.00	0.00
NC	2000	2003	Ground Source Heat Pump with Desuperheater (HP heating)	Multi-Family	2014	2053	8.30	0.98	0.84	9.26	53%	0.10	1.10	53%	2.59	0.51	22	4	0.03			0.00	0.00
NC	2000	2010	Ceiling R-19 to R-38 Insulation (HP heating)	Multi-Family	2014	2053	8.28	0.98	0.01	9.27	53%	0.00	1.10	53%	1.81	0.51	15	4	0.04			0.00	0.00
NC	2000	2011	Ceiling R-19 to R-49 Insulation (HP heating)	Multi-Family	2014	2053	8.28	0.98	0.00	9.28	53%	0.00	1.10	53%	2.27	0.51	19	4	0.03			0.00	0.00
NC	2000	2015	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Multi-Family	2014	2053	8.21	0.97	0.07	9.34	53%	0.01	1.11	53%	4.44	0.54	37	5	0.02			0.00	0.00
NC	2000	2005	Heat Pump Filter Replacement	Multi-Family	2014	2053	8.19	0.97	0.02	9.37	53%	0.00	1.11	53%	3.36	0.54	28	5	0.01			0.00	0.00
NC	2000	2004	Heat pump tune up	Multi-Family	2014	2053	8.16	0.97	0.03	9.39	54%	0.00	1.11	54%	5.43	0.56	46	5	0.01			0.00	0.00
NC	2100	2100	Base Heat Pump Space Heating - Early Replacement (7.7 HSP	Multi-Family	2014	2053	4.23	0.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.23	0.50	0.00	0.00
NC	2100	2116	Duct Insulation (HP heating early replacement)	Multi-Family	2014	2053	4.19	0.50	0.03	0.03	1%	0.00	0.00	1%	0.02	0.02	0	0	4.88			0.03	0.00
NC	2100	2121	Self Install Weatherization (HP heating early replacement)	Multi-Family	2014	2053	4.13	0.49	0.07	0.10	2%	0.01	0.01	2%	0.02	0.02	0	0	2.80			0.07	0.01
NC	2100	2122	Door Weatherization (HP heating early replacement)	Multi-Family	2014	2053	4.01	0.48	0.11	0.22	5%	0.01	0.03	5%	0.05	0.04	0	0	1.05			0.11	0.01
NC	2100	2102	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early	Multi-Family	2014	2053	3.64	0.43	0.37	0.59	14%	0.04	0.07	14%	0.08	0.07	1	1	0.84			0.00	0.00
NC	2100	2112	Crawlspace insulation (HP heating early replacement)	Multi-Family	2014	2053	3.59	0.43	0.06	0.64	15%	0.01	0.08	15%	0.11	0.07	1	1	0.69			0.00	0.00
NC	2100	2119	Programmable Thermostat (HP heating early replacement)	Multi-Family	2014	2053	3.51	0.42	0.07	0.71	17%	0.01	0.08	17%	0.10	0.07	1	1	0.66			0.00	0.00
NC	2100	2120	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating e	Multi-Family	2014	2053	3.35	0.40	0.16	0.87	21%	0.02	0.10	21%	0.16	0.09	1	1	0.41			0.00	0.00
NC	2100	2106	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Multi-Family	2014	2053	3.07	0.36	0.28	1.16	27%	0.03	0.14	27%	0.21	0.12	2	1	0.37			0.00	0.00
NC	2100	2117	Duct Testing and Sealing (HP heating early replacement)	Multi-Family	2014	2053	2.98	0.35	0.09	1.25	30%	0.01	0.15	30%	0.22	0.13	2	1	0.34			0.00	0.00
NC	2100	2107	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Multi-Family	2014	2053	2.97	0.35	0.01	1.26	30%	0.00	0.15	30%	1.11	0.13	9	1	0.07			0.00	0.00
NC	2100	2113	Basement insulation R-13 (HP heating early replacement)	Multi-Family	2014	2053	2.82	0.34	0.15	1.40	33%	0.02	0.17	33%	0.29	0.15	2	1	0.27			0.00	0.00
NC	2100	2118	Heat Recovery Ventilators (HP heating early replacement)	Multi-Family	2014	2053	2.21	0.26	0.61	2.02	48%	0.07	0.24	48%	0.33	0.20	3	2	0.23			0.00	0.00
NC	2100	2123	WINDOWS - Double-Glazed Clear to Energy Star (HP heating	Multi-Family	2014	2053	2.16	0.26	0.05	2.07	49%	0.01	0.25	49%	0.46	0.21	4	2	0.17			0.00	0.00
NC	2100	2108	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Multi-Family	2014	2053	2.13	0.25	0.03	2.10	50%	0.00	0.25	50%	0.70	0.22	6	2	0.11			0.00	0.00
NC	2100	2109	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Multi-Family	2014	2053	2.12	0.25	0.00	2.11	50%	0.00	0.25	50%	1.56	0.22	13	2	0.05			0.00	0.00
NC	2100	2114	Floor R-0 to R-19 Insulation-Batts (HP heating early replaceme	Multi-Family	2014	2053	2.02	0.24	0.10	2.20	52%	0.01	0.26	52%	0.98	0.25	8	2	0.08			0.00	0.00
NC	2100	2103	Ground Source Heat Pump with Desuperheater (HP heating ea	Multi-Family	2014	2053	1.84	0.22	0.19	2.39	57%	0.02	0.28	57%	2.07	0.40	17	3	0.03			0.00	0.00
NC	2100	2110	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Multi-Family	2014	2053	1.83	0.22	0.00	2.39	57%	0.00	0.28	57%	1.44	0.40	12	3	0.05			0.00	0.00
NC	2100	2111	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Multi-Family	2014	2053	1.83	0.22	0.00	2.40	57%	0.00	0.28	57%	1.81	0.40	15	3	0.04			0.00	0.00
NC	2100	2115	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacem	Multi-Family	2014	2053	1.82	0.22	0.02	2.41	57%	0.00	0.29	57%	3.54	0.42	30	4	0.02			0.00	0.00
NC	2100	2105	Heat Pump Filter Replacement (heating)	Multi-Family	2014	2053	1.81	0.22	0.01	2.42	57%	0.00	0.29	57%	2.68	0.42	23	4	0.02			0.00	0.00
NC	2100	2104	Heat pump tune up (heating)	Multi-Family	2014	2053	1.81	0.21	0.01	2.42	57%	0.00	0.29	57%	4.32	0.43	36	4	0.01			0.00	0.00
NC	2200	2200	Base Resistance Space Heating (Primary)	Multi-Family	2014	2053	17.86	2.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.86	2.12	0.00	0.00
NC	2200	2201	Air Source Heat Pump (resistance heating)	Multi-Family	2014	2053	14.10	1.67	3.77	3.77	21%	0.45	0.45	21%	0.01	0.01	0	0	5.51			3.77	0.45
NC	2200	2216	Self Install Weatherization	Multi-Family	2014	2053	13.87	1.65	0.22	3.99	22%	0.03	0.47	22%	0.02	0.01	0	0	2.72			0.22	0.03
NC	2200	2217	Door Weatherization (resistance heating)	Multi-Family	2014	2053	13.24	1.57	0.63	4.62	26%	0.08	0.55	26%	0.03	0.02	0	0	1.67			0.63	0.08
NC	2200	2214	Programmable Thermostat (resistance heating)	Multi-Family	2014	2053	12.98	1.54	0.26	4.89	27%	0.03	0.58	27%	0.07	0.02	1	0	0.93			0.00	0.00
NC	2200	2209	Crawlspace insulation (resistance heating)	Multi-Family	2014	2053	12.91	1.53	0.07	4.95	28%	0.01	0.59	28%	0.10	0.02	1	0	0.80			0.00	0.00
NC	2200	2203	Ceiling R-0 to R-38 Insulation (resistance heating)	Multi-Family	2014	2053	11.73	1.39	1.18	6.13	34%	0.14	0.73	34%	0.17	0.05	1	0	0.45			0.00	0.00
NC	2200	2215	Comprehensive Shell Air Sealing - Inf. Reduction (resistance he	Multi-Family	2014	2053	11.20	1.33	0.53	6.66	37%	0.06	0.79	37%	0.16	0.06	1	0	0.39			0.00	0.00
NC	2200	2204	Ceiling R-0 to R-49 Insulation (resistance heating)	Multi-Family	2014	2053	11.17	1.33	0.03	6.69	37%	0.00	0.79	37%	1.20	0.06	10	1	0.06			0.00	0.00
NC	2200	2210	Basement insulation R-13 (resistance heating)	Multi-Family	2014	2053	10.93	1.30	0.25	6.94	39%	0.03	0.82	39%	0.27	0.07	2	1	0.29			0.00	0.00

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	2200	2218	WINDOWS - Double-Glazed Clear to Energy Star (resistance h	Multi-Family	2014	2053	10.63	1.26	0.30	7.24	41%	0.04	0.86	41%	0.29	0.08	2	1	0.27			0.00	0.00
NC	2200	2213	Heat Recovery Ventilators (resistance heating)	Multi-Family	2014	2053	8.32	0.99	2.31	9.54	53%	0.27	1.13	53%	0.31	0.13	3	1	0.25			0.00	0.00
NC	2200	2205	Ceiling R-11 to R-38 Insulaton (resistance heating)	Multi-Family	2014	2053	8.18	0.97	0.14	9.68	54%	0.02	1.15	54%	0.58	0.14	5	1	0.13			0.00	0.00
NC	2200	2211	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Multi-Family	2014	2053	8.03	0.95	0.16	9.84	55%	0.02	1.17	55%	0.62	0.15	5	1	0.12			0.00	0.00
NC	2200	2206	Ceiling R-11 to R-49 Insulation (resistance heating)	Multi-Family	2014	2053	8.02	0.95	0.01	9.85	55%	0.00	1.17	55%	1.68	0.15	14	1	0.05			0.00	0.00
NC	2200	2202	Ground Source Heat Pump with Desuperheater (resistance hea	Multi-Family	2014	2053	8.03	0.95	-0.01	9.84	55%	0.00	1.17	55%	-165.85	0.30	-1,398	2	0.00			0.00	0.00
NC	2200	2207	Ceiling R-19 to R-38 Insulation (resistance heating)	Multi-Family	2014	2053	8.01	0.95	0.02	9.85	55%	0.00	1.17	55%	1.00	0.30	8	3	0.08			0.00	0.00
NC	2200	2208	Ceiling R-19 to R-49 Insulation (resistance heating)	Multi-Family	2014	2053	8.01	0.95	0.00	9.86	55%	0.00	1.17	55%	1.68	0.30	14	3	0.05			0.00	0.00
NC	2200	2212	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Multi-Family	2014	2053	7.92	0.94	0.09	9.95	56%	0.01	1.18	56%	2.03	0.31	17	3	0.04			0.00	0.00
NC	3030	3030	Base Halogen Lighting - 0.5 hrs/day 2020	Multi-Family	2020	2053	0.70	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.70	0.08	0.00	0.00
NC	3030	3032	LEDs (base Halogen 0.5 hrs/day) 2020	Multi-Family	2020	2053	0.18	0.02	0.52	0.52	74%	0.06	0.06	74%	0.03	0.03	0	0	2.66			0.52	0.06
NC	3130	3130	Base Halogen Lighting - 2.5 hrs/day 2020	Multi-Family	2020	2053	2.90	0.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.90	0.32	0.00	0.00
NC	3130	3132	LEDs (base Halogen 2.5 hrs/day) 2020	Multi-Family	2020	2053	0.76	0.09	2.14	2.14	74%	0.24	0.24	74%	0.01	0.01	0	0	13.19			2.14	0.24
NC	3230	3230	Base Halogen Lighting - 6 hrs/day 2020	Multi-Family	2020	2053	1.81	0.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.81	0.20	0.00	0.00
NC	3230	3232	LEDs (base Halogen 6 hrs/day) 2020	Multi-Family	2020	2053	0.58	0.06	1.23	1.23	68%	0.14	0.14	68%	0.00	0.00	0	0	18.11			1.23	0.14
NC	3330	3330	Base CFL Lighting - 0.5 hrs/day 2020	Multi-Family	2020	2053	0.19	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.02	0.00	0.00
NC	3330	3331	LEDs (base CFL 0.5 hrs/day) 2020	Multi-Family	2020	2053	0.14	0.02	0.05	0.05	27%	0.01	0.01	27%	0.21	0.21	2	2	0.42			0.00	0.00
NC	3430	3430	Base CFL Lighting - 2.5 hrs/day 2020	Multi-Family	2020	2053	0.79	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.79	0.09	0.00	0.00
NC	3430	3431	LEDs (base CFL 2.5 hrs/day) 2020	Multi-Family	2020	2053	0.58	0.06	0.21	0.21	27%	0.02	0.02	27%	0.04	0.04	0	0	2.08			0.21	0.02
NC	3530	3530	Base CFL Lighting - 6 hrs/day 2020	Multi-Family	2020	2053	0.53	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.53	0.06	0.00	0.00
NC	3530	3531	LEDs (base CFL 6 hrs/day) 2020	Multi-Family	2020	2053	0.39	0.04	0.14	0.14	27%	0.02	0.02	27%	0.02	0.02	0	0	3.17			0.14	0.02
NC	3630	3630	Base Halogen (Specialty) Lighting - 0.5 hrs/day 2020	Multi-Family	2020	2053	0.92	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.92	0.10	0.00	0.00
NC	3630	3632	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Multi-Family	2020	2053	0.36	0.04	0.56	0.56	60%	0.06	0.06	60%	0.01	0.01	0	0	7.35			0.56	0.06
NC	3730	3730	Base Halogen (Specialty) Lighting - 2.5 hrs/day 2020	Multi-Family	2020	2053	3.70	0.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.70	0.41	0.00	0.00
NC	3730	3732	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Multi-Family	2020	2053	1.46	0.16	2.24	2.24	60%	0.25	0.25	60%	0.00	0.00	0	0	36.61			2.24	0.25
NC	3830	3830	Base Halogen (Specialty) Lighting - 6 hrs/day 2020	Multi-Family	2020	2053	2.54	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.54	0.28	0.00	0.00
NC	3830	3832	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Multi-Family	2020	2053	1.00	0.11	1.54	1.54	60%	0.17	0.17	60%	0.00	0.00	0	0	54.68			1.54	0.17
NC	3900	3900	Base Fluorescent Fixture 1.8 hrs/day	Multi-Family	2014	2053	2.88	0.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.88	0.32	0.00	0.00
NC	3900	3902	ROB 2L4'T8, 1EB	Multi-Family	2014	2053	2.11	0.24	0.78	0.78	27%	0.09	0.09	27%	0.04	0.04	0	0	2.45			0.78	0.09
NC	4000	4000	Base Refrigerator	Multi-Family	2014	2053	10.53	1.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.53	1.71	0.00	0.00
NC	4000	4001	Refrigerator (Energy Star)	Multi-Family	2014	2053	8.36	1.36	2.17	2.17	21%	0.35	0.35	21%	0.05	0.05	0	0	1.59			2.17	0.35
NC	4100	4100	Base Refrigerator--Early Replacement	Multi-Family	2014	2053	1.43	0.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.43	0.23	0.00	0.00
NC	4100	4101	Refrigerator - Early Replacement (Energy Star)	Multi-Family	2014	2053	0.67	0.11	0.76	0.76	53%	0.12	0.12	53%	0.13	0.13	1	1	0.44			0.00	0.00
NC	4200	4200	Base 2nd Refrigerator - Recycling	Multi-Family	2014	2053	0.17	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.17	0.03	0.00	0.00
NC	4200	4201	2nd Refrigerator Recycling	Multi-Family	2014	2053	0.04	0.01	0.12	0.12	74%	0.02	0.02	74%	0.05	0.05	0	0	1.16			0.12	0.02
NC	4500	4500	Base Freezer	Multi-Family	2014	2053	0.98	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.98	0.16	0.00	0.00
NC	4500	4501	Freezer (Energy Star)	Multi-Family	2014	2053	0.89	0.14	0.09	0.09	9%	0.01	0.01	9%	0.06	0.06	0	0	1.16			0.09	0.01
NC	4600	4600	Base Early Replacement Freezer	Multi-Family	2014	2053	0.24	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.24	0.04	0.00	0.00
NC	4600	4601	Freezer - Early Replacement (Energy Star)	Multi-Family	2014	2053	0.11	0.02	0.14	0.14	56%	0.02	0.02	56%	0.04	0.04	0	0	1.34			0.14	0.02
NC	4700	4700	Base 2nd Freezer Recycling	Multi-Family	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5000	5000	Base Water Heating (40 gal, EF=0.88)	Multi-Family	2014	2053	37.17	4.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	37.17	4.58	0.00	0.00
NC	5000	5006	Pipe Wrap	Multi-Family	2014	2053	36.03	4.44	1.14	1.14	3%	0.14	0.14	3%	0.02	0.02	0	0	3.26			1.14	0.14
NC	5000	5015	Low Flow Showerhead 1.5 Gal/Min	Multi-Family	2014	2053	34.84	4.29	1.19	2.33	6%	0.15	0.29	6%	0.02	0.02	0	0	2.99			1.19	0.15
NC	5000	5007	Hot water turndown 5 degrees	Multi-Family	2014	2053	34.65	4.27	0.19	2.52	7%	0.02	0.31	7%	0.02	0.02	0	0	2.09			0.19	0.02
NC	5000	5008	Hot water turndown 10 degrees	Multi-Family	2014	2053	34.39	4.24	0.26	2.78	7%	0.03	0.34	7%	0.02	0.02	0	0	2.07			0.26	0.03
NC	5000	5009	Hot water turndown 15 degrees	Multi-Family	2014	2053	34.33	4.23	0.06	2.84	8%	0.01	0.35	8%	0.02	0.02	0	0	2.06			0.06	0.01
NC	5000	5010	Hot water turndown 20 degrees	Multi-Family	2014	2053	34.30	4.23	0.02	2.86	8%	0.00	0.35	8%	0.02	0.02	0	0	2.06			0.02	0.00
NC	5000	5014	Faucent Aerators	Multi-Family	2014	2053	33.59	4.14	0.72	3.58	10%	0.09	0.44	10%	0.04	0.02	0	0	1.68			0.72	0.09
NC	5000	5011	Drain Water Heat Recovery (GFX)	Multi-Family	2014	2053	32.33	3.98	1.26	4.84	13%	0.16	0.60	13%	0.07	0.04	1	0	1.15			1.26	0.16
NC	5000	5005	DHW Tank Wrap	Multi-Family	2014	2053	30.51	3.76	1.81	6.66	18%	0.22	0.82	18%	0.06	0.04	0	0	0.89			0.00	0.00
NC	5000	5003	Heat Pump Water Heater - Energy Star	Multi-Family	2014	2053	26.31	3.24	4.20	10.86	29%	0.52	1.34	29%	0.08	0.06	1	0	0.89			0.00	0.00
NC	5000	5004	Solar Domestic Water Heating	Multi-Family	2014	2053	22.20	2.73	4.11	14.97	40%	0.51	1.84	40%	0.20	0.10	2	1	0.37			0.00	0.00
NC	5000	5012	Energy Star CW CEE Tier 2 (MEF=2.0)	Multi-Family	2014	2053	22.11	2.72	0.09	15.06	41%	0.01	1.85	41%	2.28	0.11	19	1	0.03			0.00	0.00
NC	5000	5013	Energy Star Dishwasher (EF=0.72)	Multi-Family	2014	2053	22.06	2.72	0.05	15.11	41%	0.01	1.86	41%	2.75	0.12	22	1	0.02			0.00	0.00
NC	5100	5100	Base Water Heating Early Replacement to Heat Pump Water H	Multi-Family	2014	2053	6.56	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.56	0.81	0.00	0.00
NC	5100	5101	Heat Pump Water Heater - Energy Star - Early Replacement	Multi-Family	2014	2053	5.66	0.70	0.90	0.90	14%	0.11	0.11	14%	0.08	0.08	1	1	0.87			0.00	0.00
NC	5500	5500	Base Clotheswasher (MEF=1.26)	Multi-Family	2014	2053	0.67	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.67	0.12	0.00	0.00
NC	5500	5501	Energy Star CW CEE Tier 2 (MEF=2.0)	Multi-Family	2014	2053	0.48	0.09	0.19	0.19	28%	0.03	0.03	28%	1.21	1.21	7	7	0.06			0.00	0.00
NC	5600	5600	Base Clothes Dryer (EF=3.01)	Multi-Family	2014	2053	12.52	2.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.52	2.12	0.00	0.00
NC	5600	5602	High Efficiency CD (EF=3.01 w/moisture sensor)	Multi-Family	2014	2053	10.22	1.73	2.30	2.30	18%	0.39	0.39	18%	0.03	0.03	0	0	2.23			2.30	0.39
NC	5600	5601	Heat Pump Dryer	Multi-Family	2014	2053	5.11	0.86	5.11	7.41	59%	0.86	1.25	59%	0.51	0.36	3	2	0.14			0.00	0.00
NC	5700	5700	Base Dishwasher (EF=0.65)	Multi-Family	2014	2053	2.92	0.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.92	0.48	0.00	0.00
NC	5700	5701	Energy Star Dishwasher (EF=0.72)	Multi-Family	2014	2053	2.82	0.46	0.10	0.10	4%	0.02	0.02	4%	1.48	1.48	9	9	0.05			0.00	0.00
NC	6000	6000	Base Single Speed Pool Pump (RET)	Multi-Family	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7000	7000	Base Plasma TV	Multi-Family	2014	2053	0.70	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.70	0.10	0.00	0.00
NC	7000	7001	Energy Star Plasma TV	Multi-Family	2014	2053	0.64	0.09	0.06	0.06	9%	0.01	0.01	9%	0.01	0.01	0	0	5.87			0.06	0.01
NC	7000	7002	Plug Load Controls - Smart Power Strip (base plasma TV)	Multi-Family	2014	2053	0.63	0.09	0.01	0.07	10%	0.00	0.01	10%	2.90	0.36	20	2	0.02			0.00	0.00
NC	7100	7100	Base LCD TV	Multi-Family	2014	2053	2.10	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.10	0.30	0.00	0.00
NC	7100	7101	Energy Star LCD TV	Multi-Family	2014	2053	1.34	0.19	0.77	0.77	36%	0.11	0.11	36%	0.00	0.00	0	0	12.57			0.77	0.11
NC	7100	7102	Plug Load Controls - Smart Power Strip (base LCD TV)	Multi-Family	2014	2053	1.29	0.19	0.05	0.82	39%	0.01	0.12	39%	3.08	0.20	21	1	0.02			0.00	0.00
NC	7200	7200	Base CRT TV	Multi-Family	2014	2053	0.63	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.63	0.09	0.00	0.00
NC	7200	7202	Plug Load Controls - Smart Power Strip (base CRT TV)	Multi-Family	2014	2053	0.57	0.08	0.06	0.06	10%	0.01	0.01	10%	0.85	0.85	6	6	0.06			0.00	0.00
NC	7300	7300	Base Set-Top Box	Multi-Family	2014	2053	2.10	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.10	0.30	0.00	0.00
NC	7400	7400	Base DVD Player	Multi-Family	2014	2053	0.35	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.35	0.05	0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	7400	7401	Energy Star DVD Player	Multi-Family	2014	2053	0.17	0.02	0.19	0.19	53%	0.03	0.03	53%	0.02	0.02	0	0	3.21			0.19	0.03
NC	7400	7402	Plug Load Controls - Smart Power Strip (base DVD player)	Multi-Family	2014	2053	0.01	0.00	0.15	0.34	96%	0.02	0.05	96%	0.91	0.42	6	3	0.06			0.00	0.00
NC	7500	7500	Base Desktop PC	Multi-Family	2014	2053	3.42	0.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.42	0.45	0.00	0.00
NC	7500	7501	Energy Star Desktop PC	Multi-Family	2014	2053	2.98	0.39	0.44	0.44	13%	0.06	0.06	13%	0.00	0.00	0	0	14.98			0.44	0.06
NC	7500	7502	Plug Load Controls - Smart Power Strip (base Desktop PC)	Multi-Family	2014	2053	1.56	0.21	1.42	1.86	54%	0.19	0.25	54%	0.05	0.04	0	0	1.12			1.42	0.19
NC	7600	7600	Base Laptop PC	Multi-Family	2014	2053	0.69	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.69	0.09	0.00	0.00
NC	7600	7601	Energy Star Laptop PC	Multi-Family	2014	2053	0.58	0.08	0.12	0.12	17%	0.02	0.02	17%	0.03	0.03	0	0	2.25			0.12	0.02
NC	8000	8000	Base Cooking	Multi-Family	2014	2053	9.65	3.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.65	3.08	0.00	0.00
NC	9000	9000	Base Miscellaneous	Multi-Family	2014	2053	15.81	2.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.81	2.08	0.00	0.00
NC	9900	9900	Base House Use	Multi-Family	2014	2053	205.57	50.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	205.57	50.90	0.00	0.00
NC	9900	9901	Indirect Feedback	Multi-Family	2014	2053	202.51	50.15	3.05	3.05	1%	0.76	0.76	1%	0.03	0.03	0	0	1.62			3.05	0.76
NC	9900	9902	Direct Feedback	Multi-Family	2014	2053	193.36	47.88	9.16	12.21	6%	2.27	3.02	6%	0.09	0.07	0	0	0.67			0.00	0.00

APPENDIX H

Base Avoided Costs

Residential Electric New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2014

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	100	100	Base Code Home - IECC 2006	Single Family	2013	2054	242.08	59.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	242.1	59.94	0.00	0.00
VA	100	101	Energy Star Home	Single Family	2013	2054	188.72	55.15	53.35	53.35	22%	4.80	4.80	8%	0.06	0.06	1	1	1.14			53.35	4.80
VA	100	100	Base Code Home - IECC 2006	Multi-Family	2013	2054	39.65	9.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	39.6	9.82	0.00	0.00
VA	100	101	Energy Star Home	Multi-Family	2013	2054	30.91	9.03	8.74	8.74	22%	0.79	0.79	8%	0.06	0.06	1	1	1.33			8.74	0.79
NC	100	100	Base Code Home - IECC 2006	Single Family	2013	2054	13.31	3.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.3	3.30	0.00	0.00
NC	100	101	Energy Star Home	Single Family	2013	2054	10.38	3.03	2.93	2.93	22%	0.26	0.26	8%	0.06	0.06	1	1	1.29			2.93	0.26
NC	100	100	Base Code Home - IECC 2006	Multi-Family	2013	2054	1.98	0.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.0	0.49	0.00	0.00
NC	100	101	Energy Star Home	Multi-Family	2013	2054	1.55	0.45	0.44	0.44	22%	0.04	0.04	8%	0.05	0.05	1	1	1.37			0.44	0.04

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Office	2020	2054	1,085.70	202.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,085.70	202.10	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Office	2020	2054	1,077.27	201.32	8.43	8.43	1%	0.78	0.78	0%	0.01	0.01	0	0	6.72			8.43	0.78
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	2020	2054	996.47	189.29	80.81	89.24	8%	12.03	12.82	6%	0.01	0.01	0	0	6.12			80.81	12.03
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Office	2020	2054	894.97	170.39	101.49	190.73	18%	18.89	31.71	16%	0.02	0.02	0	0	3.41			101.49	18.89
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	2020	2054	781.10	149.20	113.87	304.60	28%	21.20	52.91	26%	0.04	0.02	0	0	1.64			113.87	21.20
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Office	2020	2054	723.19	146.50	57.91	362.51	33%	2.70	55.60	28%	0.05	0.03	1	0	1.07			57.91	2.70
VA	1030	1034	ROB 4L4' LED Tube, 2020	Office	2020	2054	606.67	124.81	116.53	479.03	44%	21.69	77.29	38%	0.24	0.08	1	0	0.31			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Office	2020	2054	554.88	115.17	51.79	530.82	49%	9.64	86.93	43%	0.20	0.09	1	1	0.37			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Office	2020	2054	18.36	3.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.36	3.42	0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Office	2020	2054	18.21	3.40	0.15	0.15	1%	0.01	0.01	0%	0.01	0.01	0	0	3.90			0.15	0.01
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Office	2020	2054	16.84	3.20	1.37	1.51	8%	0.20	0.22	6%	0.02	0.02	0	0	3.56			1.37	0.20
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Office	2020	2054	15.09	2.87	1.75	3.26	18%	0.33	0.54	16%	0.02	0.02	0	0	2.69			1.75	0.33
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Office	2020	2054	13.17	2.52	1.92	5.18	28%	0.36	0.90	26%	0.05	0.03	0	0	1.29			1.92	0.36
VA	1130	1134	ROB 2L4' LED Tube, 2020	Office	2020	2054	12.54	2.40	0.64	5.82	32%	0.12	1.02	30%	0.18	0.05	1	0	0.41			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Office	2020	2054	11.61	2.35	0.93	6.75	37%	0.04	1.06	31%	0.10	0.06	2	0	0.57			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Office	2020	2054	10.62	2.17	0.99	7.74	42%	0.18	1.25	36%	0.25	0.08	1	0	0.30			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Office	2014	2054	39.84	7.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	39.84	7.42	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Office	2014	2054	37.93	7.24	1.90	1.90	5%	0.18	0.18	2%	0.00	0.00	0	0	18.89			1.90	0.18
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Office	2014	2054	35.09	6.81	2.85	4.75	12%	0.42	0.60	8%	0.03	0.02	0	0	2.75			2.85	0.42
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Office	2014	2054	31.44	6.14	3.65	8.40	21%	0.68	1.28	17%	0.08	0.04	0	0	0.81			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	2014	2054	27.24	5.94	4.19	12.59	32%	0.20	1.48	20%	0.09	0.06	2	1	0.59			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Office	2014	2054	23.78	5.30	3.47	16.06	40%	0.65	2.12	29%	0.19	0.09	1	1	0.34			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Office	2020	2054	368.56	68.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	368.56	68.61	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Office	2020	2054	88.80	16.53	279.76	279.76	76%	52.08	52.08	76%	0.00	0.00	0	0	16.88			279.76	52.08
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Office	2020	2054	132.68	24.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	132.68	24.70	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Office	2020	2054	34.53	6.43	98.15	98.15	74%	18.27	18.27	74%	0.00	0.00	0	0	14.15			98.15	18.27
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Office	2020	2054	97.67	18.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	97.67	18.18	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Office	2020	2054	33.85	6.30	63.82	63.82	65%	11.88	11.88	65%	0.01	0.01	0	0	10.19			63.82	11.88
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Office	2020	2054	24.08	4.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.08	4.48	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Office	2020	2054	17.41	3.24	6.67	6.67	28%	1.24	1.24	28%	0.05	0.05	0	0	1.22			6.67	1.24
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Office	2020	2054	30.77	5.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	30.77	5.73	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Office	2020	2054	22.77	4.24	8.00	8.00	26%	1.49	1.49	26%	0.04	0.04	0	0	1.62			8.00	1.49
VA	1800	1800	BaseMetal Halide, 465W	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1850	1850	Base CFL Exit Sign	Office	2014	2054	12.87	2.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.87	2.40	0.00	0.00
VA	1850	1851	LED Exit Sign	Office	2014	2054	7.23	1.35	5.64	5.64	44%	1.05	1.05	44%	0.02	0.02	0	0	2.61			5.64	1.05
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Office	2014	2054	88.06	1.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	88.06	1.21	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Office	2014	2054	77.56	0.73	10.50	10.50	12%	0.48	0.48	39%	0.04	0.04	1	1	1.81			10.50	0.48
VA	1900	1902	LED Outdoor Area Lighting	Office	2014	2054	37.32	0.18	40.24	50.74	58%	0.55	1.03	85%	0.08	0.07	6	4	0.77			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Office	2014	2054	26.35	0.04	10.97	61.71	70%	0.14	1.17	96%	0.54	0.16	44	8	0.12			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Office	2014	2054	136.14	95.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	136.14	95.24	0.00	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	Office	2014	2054	135.53	94.82	0.61	0.61	0%	0.42	0.42	0%	0.01	0.01	0	0	19.88			0.61	0.42
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	2014	2054	123.96	86.72	11.57	12.18	9%	8.09	8.52	9%	0.03	0.03	0	0	4.52			11.57	8.09
VA	2000	2005	Chiller Tune Up/Diagnostics	Office	2014	2054	123.59	86.60	0.37	12.55	9%	0.13	8.65	9%	0.02	0.03	0	0	3.68			0.37	0.13
VA	2000	2013	High Efficiency Chiller Motors	Office	2014	2054	123.37	86.44	0.22	12.77	9%	0.16	8.80	9%	0.04	0.03	0	0	2.95			0.22	0.16
VA	2000	2006	VSD for Chiller Pumps and Towers	Office	2014	2054	122.56	86.16	0.81	13.58	10%	0.28	9.09	10%	0.03	0.03	0	0	2.70			0.81	0.28
VA	2000	2003	EMS - Chiller	Office	2014	2054	113.99	84.66	8.56	22.14	16%	1.50	10.58	11%	0.05	0.03	0	0	1.54			8.56	1.50
VA	2000	2008	New Economizer - Chiller	Office	2014	2054	106.64	83.37	7.36	29.50	22%	1.29	11.87	12%	0.05	0.04	0	0	1.16			7.36	1.29
VA	2000	2002	Window Film (Standard) - Chiller	Office	2014	2054	106.60	83.35	0.03	29.53	22%	0.02	11.89	12%	0.09	0.04	0	0	1.06			0.03	0.02
VA	2000	2012	Duct Testing/Sealing - Chiller	Office	2014	2054	86.35	69.18	20.25	49.79	37%	14.17	26.06	27%	0.15	0.08	0	0	0.79			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	Office	2014	2054	86.08	68.99	0.27	50.05	37%	0.19	26.25	28%	0.22	0.09	0	0	0.42			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Office	2014	2054	85.82	68.81	0.27	50.32	37%	0.19	26.44	28%	1.87	0.09	3	0	0.05			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Office	2014	2054	617.70	432.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	617.70	432.16	0.00	0.00
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Office	2014	2054	475.63	332.76	142.07	142.07	23%	99.40	99.40	23%	0.02	0.02	0	0	4.76			142.07	99.40
VA	2100	2111	Economizer Repair - DX	Office	2014	2054	454.22	310.29	21.40	163.48	26%	22.47	121.87	28%	0.05	0.03	0	0	1.70			21.40	22.47
VA	2100	2108	Optimize Controls - DX	Office	2014	2054	446.47	308.93	7.76	171.23	28%	1.36	123.23	29%	0.06	0.03	0	0	0.98			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	Office	2014	2054	437.24	302.47	9.23	180.46	29%	6.46	129.68	30%	0.10	0.03	0	0	0.95			0.00	0.00
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Office	2014	2054	436.45	302.20	0.79	181.25	29%	0.28	129.96	30%	0.09	0.03	0	0	0.87			0.00	0.00
VA	2100	2109	Economizer - DX	Office	2014	2054	388.46	293.81	47.98	229.24	37%	8.39	138.35	32%	0.07	0.04	0	0	0.86			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Office	2014	2054	364.84	277.28	23.62	252.86	41%	16.52	154.87	36%	0.19	0.05	0	0	0.64			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Office	2014	2054	357.09	275.93	7.76	260.61	42%	1.36	156.23	36%	0.10	0.06	1	0	0.59			0.00	0.00
VA	2100	2107	Cool Roof - DX	Office	2014	2054	354.04	273.80	3.05	263.66	43%	2.13	158.36	37%	0.25	0.06	0	0	0.38			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Office	2014	2054	353.96	273.78	0.08	263.74	43%	0.01	158.38	37%	0.20	0.06	1	0	0.32			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Office	2014	2054	351.66	272.18	2.29	266.04	43%	1.60	159.98	37%	2.07	0.08	3	0	0.05			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Office	2014	2054	421.72	295.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	421.72	295.04	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014	2054	369.56	258.55	52.16	52.16	12%	36.49	36.49	12%	0.02	0.02	0	0	6.66			52.16	36.49
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Office	2014	2054	67.57	47.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	67.57	47.28	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Office	2014	2054	334.29	100.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	334.29	100.92	0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	Office	2014	2054	268.04	95.92	66.25	66.25	20%	5.00	5.00	5%	0.01	0.01	0	0	4.89			66.25	5.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Office	2014	2054	263.67	94.60	4.36	70.62	21%	1.32	6.32	6%	0.02	0.01	0	0	3.79			4.36	1.32
VA	3000	3003	Demand Controlled Ventilation	Office	2014	2054	249.34	86.38	14.34	84.95	25%	8.22	14.54	14%	0.60	0.11	1	1	0.18			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Office	2014	2054	57.92	17.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	57.92	17.49	0.00	0.00
VA	3100	3102	Variable Speed Drive Control, 15 HP	Office	2014	2054	46.44	16.62	11.48	11.48	20%	0.87	0.87	5%	0.00	0.00	0	0	17.70			11.48	0.87
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Office	2014	2054	46.16	16.53	0.28	11.76	20%	0.08	0.95	5%	0.01	0.00	0	0	8.36			0.28	0.08
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Office	2014	2054	43.11	15.70	3.06	14.81	26%	0.83	1.78	10%	0.02	0.01	0	0	3.70			3.06	0.83

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	3100	3103	Air Handler Optimization, 15 HP	Office	2014	2054	38.98	15.39	4.12	18.94	33%	0.31	2.09	12%	0.02	0.01	0	0	2.82			4.12	0.31
VA	3100	3105	Energy Recovery Ventilation (ERV)	Office	2014	2054	38.07	14.87	0.91	19.85	34%	0.52	2.61	15%	0.23	0.02	0	0	0.50			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	Office	2014	2054	36.00	13.69	2.07	21.92	38%	1.19	3.80	22%	0.72	0.09	1	0	0.15			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Office	2014	2054	36.51	11.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	36.51	11.02	0.00	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	Office	2014	2054	33.02	10.76	3.49	3.49	10%	0.26	0.26	2%	0.01	0.01	0	0	3.79			3.49	0.26
VA	3200	3202	Variable Speed Drive Control, 40 HP	Office	2014	2054	26.48	10.27	6.54	10.04	27%	0.49	0.76	7%	0.02	0.02	0	0	3.18			6.54	0.49
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Office	2014	2054	26.36	10.23	0.12	10.15	28%	0.04	0.79	7%	0.10	0.02	0	0	0.94			0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	Office	2014	2054	24.93	9.41	1.43	11.59	32%	0.82	1.61	15%	0.65	0.10	1	1	0.16			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Office	2014	2054	98.08	13.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	98.08	13.75	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Office	2014	2054	97.41	13.66	0.66	0.66	1%	0.09	0.09	1%	0.00	0.00	0	0	54.69			0.66	0.09
VA	4100	4109	Energy-Star Freezer, glass door	Office	2014	2054	97.25	13.64	0.16	0.82	1%	0.02	0.12	1%	0.00	0.00	0	0	27.98			0.16	0.02
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Office	2014	2054	95.47	13.39	1.78	2.61	3%	0.25	0.37	3%	0.00	0.00	0	0	25.64			1.78	0.25
VA	4100	4107	Energy-Star Freezer, solid door	Office	2014	2054	95.40	13.38	0.07	2.67	3%	0.01	0.37	3%	0.01	0.00	0	0	11.19			0.07	0.01
VA	4100	4108	Energy-Star Refrigerator, glass door	Office	2014	2054	94.86	13.30	0.55	3.22	3%	0.08	0.45	3%	0.01	0.00	0	0	9.45			0.55	0.08
VA	4100	4106	Energy-Star Refrigerator, solid door	Office	2014	2054	94.61	13.27	0.24	3.46	4%	0.03	0.49	4%	0.01	0.00	0	0	9.01			0.24	0.03
VA	4100	4110	Energy Star Ice Machines	Office	2014	2054	94.28	13.22	0.34	3.80	4%	0.05	0.53	4%	0.02	0.00	0	0	3.34			0.34	0.05
VA	4100	4112	Reach-in unit occupancy sensors	Office	2014	2054	94.27	13.22	0.01	3.81	4%	0.00	0.53	4%	0.27	0.01	2	0	0.23			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Office	2014	2054	94.25	13.22	0.02	3.83	4%	0.00	0.54	4%	0.31	0.01	2	0	0.19			0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Office	2014	2054	94.19	13.21	0.06	3.89	4%	0.01	0.55	4%	6.64	0.11	47	1	0.01			0.00	0.00
VA	5000	5000	Base Desktop PC	Office	2014	2054	40.10	5.56	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	40.10	5.56	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Office	2014	2054	21.62	4.28	18.48	18.48	46%	1.28	1.28	23%	0.01	0.01	0	0	4.80			18.48	1.28
VA	5000	5002	Energy Star or Better PC	Office	2014	2054	16.81	3.61	4.81	23.29	58%	0.67	1.95	35%	0.02	0.01	0	0	2.37			4.81	0.67
VA	5100	5100	Base Laptop PC	Office	2014	2054	3.65	0.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.65	0.51	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Office	2014	2054	2.96	0.41	0.69	0.69	19%	0.10	0.10	19%	0.01	0.01	0	0	6.47			0.69	0.10
VA	5100	5101	Laptop Network Power Management Enabling	Office	2014	2054	2.90	0.40	0.06	0.75	21%	0.01	0.10	21%	0.99	0.09	7	1	0.05			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Office	2014	2054	8.50	1.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.50	1.18	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Office	2014	2054	4.89	0.68	3.62	3.62	43%	0.50	0.50	43%	0.00	0.00	0	0	67.43			3.62	0.50
VA	5200	5202	Monitor Power Management Enabling - CRT	Office	2014	2054	4.23	0.63	0.65	4.27	50%	0.05	0.55	46%	0.01	0.00	0	0	5.72			0.65	0.05
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Office	2014	2054	3.90	0.59	0.33	4.60	54%	0.05	0.59	50%	0.11	0.01	1	0	0.48			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Office	2014	2054	7.61	1.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.61	1.06	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Office	2014	2054	6.61	0.92	0.99	0.99	13%	0.14	0.14	13%	0.01	0.01	0	0	8.01			0.99	0.14
VA	5300	5302	Monitor Power Management Enabling - LCD	Office	2014	2054	6.12	0.88	0.49	1.49	20%	0.03	0.17	16%	0.06	0.03	1	0	0.78			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Office	2014	2054	5.64	0.87	0.48	1.97	26%	0.02	0.19	18%	0.18	0.06	5	1	0.26			0.00	0.00
VA	5400	5400	Base Copier	Office	2014	2054	13.93	1.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.93	1.93	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Office	2014	2054	12.54	1.74	1.38	1.38	10%	0.19	0.19	10%	0.00	0.00	0	0	40.67			1.38	0.19
VA	5400	5402	Copier Power Management Enabling	Office	2014	2054	12.00	1.70	0.54	1.93	14%	0.04	0.23	12%	0.07	0.02	1	0	0.74			0.00	0.00
VA	5500	5500	Base Multifunction	Office	2014	2054	2.37	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.37	0.33	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Office	2014	2054	1.77	0.25	0.59	0.59	25%	0.08	0.08	25%	0.01	0.01	0	0	11.01			0.59	0.08
VA	5500	5501	Multifunction Power Management Enabling	Office	2014	2054	1.45	0.22	0.32	0.92	39%	0.02	0.10	32%	0.21	0.08	3	1	0.25			0.00	0.00
VA	5600	5600	Base Printer	Office	2014	2054	13.79	1.91	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.79	1.91	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Office	2014	2054	9.00	1.25	4.80	4.80	35%	0.67	0.67	35%	0.00	0.00	0	0	50.63			4.80	0.67
VA	5600	5601	Printer Power Management Enabling	Office	2014	2054	7.36	1.13	1.64	6.44	47%	0.11	0.78	41%	0.04	0.01	1	0	1.15			1.64	0.11
VA	5700	5700	Base Data Center/Server Room	Office	2014	2054	72.12	10.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	72.12	10.01	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Office	2014	2054	64.91	9.01	7.21	7.21	10%	1.00	1.00	10%	0.00	0.00	0	0	144.38			7.21	1.00
VA	5700	5702	Data Center Best Practices	Office	2014	2054	56.65	7.86	8.26	15.47	21%	1.15	2.15	21%	0.00	0.00	0	0	58.78			8.26	1.15
VA	5700	5703	Data Center State of the Art practices	Office	2014	2054	53.48	7.42	3.17	18.64	26%	0.44	2.59	26%	0.00	0.00	0	0	30.49			3.17	0.44
VA	6000	6000	Base Water Heating	Office	2014	2054	82.67	11.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	82.67	11.17	0.00	0.00
VA	6000	6007	Heat Trap	Office	2014	2054	78.39	10.59	4.28	4.28	5%	0.58	0.58	5%	0.01	0.01	0	0	4.76			4.28	0.58
VA	6000	6002	High Efficiency Water Heater (electric)	Office	2014	2054	76.82	10.38	1.57	5.85	7%	0.21	0.79	7%	0.03	0.02	0	0	2.55			1.57	0.21
VA	6000	6004	Tankless Water Heater	Office	2014	2054	71.06	9.60	5.76	11.61	14%	0.78	1.57	14%	0.04	0.03	0	0	1.82			5.76	0.78
VA	6000	6008	Solar Water Heater	Office	2014	2054	33.25	4.49	37.80	49.41	60%	5.11	6.67	60%	0.05	0.05	0	0	1.56			37.80	5.11
VA	6000	6003	Hot Water Pipe Insulation	Office	2014	2054	32.90	4.44	0.35	49.77	60%	0.05	6.72	60%	0.11	0.05	1	0	0.66			0.00	0.00
VA	6000	6006	Heat Recovery Unit	Office	2014	2054	30.76	4.16	2.14	51.90	63%	0.29	7.01	63%	0.11	0.05	1	0	0.58			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	Office	2014	2054	29.84	4.03	0.92	52.83	64%	0.12	7.14	64%	0.33	0.05	2	0	0.22			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Office	2014	2054	15.06	2.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.06	2.19	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Office	2014	2054	12.80	2.03	2.26	2.26	15%	0.16	0.16	8%	0.02	0.02	0	0	2.10			2.26	0.16
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Office	2014	2054	11.57	1.94	1.23	3.49	23%	0.09	0.25	12%	0.05	0.03	1	0	1.14			1.23	0.09
VA	7100	7100	Base Non-Refrigerated Vending Machines	Office	2014	2054	0.39	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.06	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Office	2014	2054	0.22	0.04	0.17	0.17	43%	0.01	0.01	21%	0.41	0.41	6	6	0.13			0.00	0.00
VA	7200	7200	Base Oven	Office	2014	2054	4.43	0.66	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.43	0.66	0.00	0.00
VA	7300	7300	Base Fryer	Office	2014	2054	2.80	0.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.80	0.42	0.00	0.00
VA	7400	7400	Base Steamer	Office	2014	2054	5.82	0.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.82	0.87	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Office	2014	2054	61.27	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	61.27	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014	2054	57.82	0.00	3.46	3.46	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	3.73			3.46	0.00
VA	8100	8100	Base Heating, Other Electric	Office	2014	2054	61.90	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	61.90	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Office	2014	2054	531.51	77.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	531.51	77.37	0.00	0.00
VA	9500	9501	Xmisc	Office	2014	2054	531.51	77.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Restaurant	2020	2054	14.87	2.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.87	2.94	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Restaurant	2020	2054	14.85	2.93	0.02	0.02	0%	0.00	0.00	0%	0.01	0.01	0	0	6.75			0.02	0.00
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Restaurant	2020	2054	13.73	2.76	1.12	1.15	8%	0.18	0.18	6%	0.01	0.01	0	0	6.11			1.12	0.18
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Restaurant	2020	2054	12.30	2.48	1.43	2.57	17%	0.28	0.46	16%	0.03	0.02	0	0	1.89			1.43	0.28
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	2020	2054	10.73	2.17	1.56	4.14	28%	0.31	0.77	26%	0.07	0.04	0	0	0.91			0.00	0.00
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Restaurant	2020	2054	10.58	2.16	0.15	4.29	29%	0.01	0.78	26%	0.13	0.04	3	0	0.44			0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage — Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1030	1034	ROB 4L4' LED Tube, 2020	Restaurant	2020	2054	8.88	1.82	1.71	5.99	40%	0.34	1.11	38%	0.40	0.14	2	1	0.18			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Restaurant	2020	2054	8.12	1.67	0.76	6.75	45%	0.15	1.26	43%	0.33	0.16	2	1	0.22			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Restaurant	2020	2054	88.32	17.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	88.32	17.43	0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Restaurant	2020	2054	88.18	17.42	0.14	0.14	0%	0.01	0.01	0%	0.02	0.02	0	0	3.22			0.14	0.01
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Restaurant	2020	2054	81.51	16.38	6.67	6.81	8%	1.04	1.06	6%	0.02	0.02	0	0	2.93			6.67	1.04
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Restaurant	2020	2054	73.03	14.70	8.48	15.29	17%	1.67	2.73	16%	0.04	0.03	0	0	1.49			8.48	1.67
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	2020	2054	63.74	12.87	9.29	24.58	28%	1.83	4.57	26%	0.09	0.05	0	0	0.72			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Restaurant	2020	2054	60.66	12.26	3.08	27.66	31%	0.61	5.17	30%	0.32	0.08	2	0	0.22			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Restaurant	2020	2054	55.48	11.24	5.18	32.84	37%	1.02	6.20	36%	0.40	0.13	2	1	0.18			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Restaurant	2020	2054	54.70	11.20	0.78	33.62	38%	0.04	6.23	36%	0.26	0.14	5	1	0.22			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Restaurant	2020	2054	73.49	14.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	73.49	14.51	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Restaurant	2020	2054	15.60	3.08	57.89	57.89	79%	11.43	11.43	79%	0.01	0.01	0	0	8.69			57.89	11.43
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Restaurant	2020	2054	26.46	5.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	26.46	5.22	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Restaurant	2020	2054	6.09	1.20	20.37	20.37	77%	4.02	4.02	77%	0.01	0.01	0	0	7.31			20.37	4.02
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Restaurant	2020	2054	19.48	3.84	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.48	3.84	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Restaurant	2020	2054	6.05	1.19	13.43	13.43	69%	2.65	2.65	69%	0.01	0.01	0	0	5.34			13.43	2.65
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Restaurant	2020	2054	12.55	2.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.55	2.48	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Restaurant	2020	2054	9.07	1.79	3.48	3.48	28%	0.69	0.69	28%	0.08	0.08	0	0	0.71			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Restaurant	2020	2054	16.04	3.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.04	3.17	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Restaurant	2020	2054	11.87	2.34	4.17	4.17	26%	0.82	0.82	26%	0.06	0.06	0	0	0.95			0.00	0.00
VA	1800	1800	BaseMetal Halide, 465W	Restaurant	2014	2054	0.34	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.34	0.07	0.00	0.00
VA	1800	1801	T5 (240W) (base metal halide)	Restaurant	2014	2054	0.22	0.04	0.11	0.11	34%	0.02	0.02	34%	0.02	0.02	0	0	5.32			0.11	0.02
VA	1800	1806	Occupancy Sensor, High Bay T5	Restaurant	2014	2054	0.21	0.04	0.01	0.12	36%	0.00	0.02	34%	0.04	0.02	1	0	1.39			0.01	0.00
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Restaurant	2014	2054	0.20	0.04	0.02	0.14	41%	0.00	0.03	38%	1.06	0.14	7	1	0.07			0.00	0.00
VA	1850	1850	Base CFL Exit Sign	Restaurant	2014	2054	4.21	0.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.21	0.83	0.00	0.00
VA	1850	1851	LED Exit Sign	Restaurant	2014	2054	1.75	0.35	2.46	2.46	58%	0.49	0.49	58%	0.06	0.06	0	0	1.08			2.46	0.49
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Restaurant	2014	2054	102.87	6.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	102.87	6.81	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Restaurant	2014	2054	85.98	3.48	16.89	16.89	16%	3.34	3.34	49%	0.07	0.07	0	0	1.27			16.89	3.34
VA	1900	1902	LED Outdoor Area Lighting	Restaurant	2014	2054	41.37	0.52	44.61	61.50	60%	2.96	6.29	92%	0.16	0.13	2	1	0.44			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Restaurant	2014	2054	29.27	-0.20	12.11	73.60	72%	0.73	7.02	103%	1.02	0.28	17	3	0.07			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Restaurant	2014	2054	84.79	53.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	84.79	53.08	0.00	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	Restaurant	2014	2054	78.62	49.22	6.17	6.17	7%	3.86	3.86	7%	0.02	0.02	0	0	7.73			6.17	3.86
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Restaurant	2014	2054	71.91	45.02	6.71	12.88	15%	4.20	8.07	15%	0.02	0.02	0	0	5.22			6.71	4.20
VA	2000	2005	Chiller Tune Up/Diagnostics	Restaurant	2014	2054	71.78	44.98	0.13	13.02	15%	0.04	8.11	15%	0.02	0.02	0	0	4.39			0.13	0.04
VA	2000	2003	EMS - Chiller	Restaurant	2014	2054	65.68	44.04	6.09	19.11	23%	0.93	9.04	17%	0.04	0.02	0	0	1.86			6.09	0.93
VA	2000	2012	Duct Testing/Sealing - Chiller	Restaurant	2014	2054	54.07	36.77	11.62	30.73	36%	7.27	16.31	31%	0.11	0.06	0	0	0.99			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Restaurant	2014	2054	449.34	281.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	449.34	281.30	0.00	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	Restaurant	2014	2054	449.20	281.22	0.13	0.13	0%	0.08	0.08	0%	0.01	0.01	0	0	8.33			0.13	0.08
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Restaurant	2014	2054	345.89	216.54	103.32	103.45	23%	64.68	64.76	23%	0.02	0.02	0	0	5.90			103.32	64.68
VA	2100	2115	Window Film (Standard) - DX	Restaurant	2014	2054	320.80	200.83	25.09	128.53	29%	15.70	80.47	29%	0.02	0.02	0	0	4.09			25.09	15.70
VA	2100	2108	Optimize Controls - DX	Restaurant	2014	2054	315.20	199.98	5.60	134.14	30%	0.86	81.33	29%	0.04	0.02	0	0	1.25			5.60	0.86
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Restaurant	2014	2054	314.84	199.87	0.36	134.49	30%	0.11	81.44	29%	0.07	0.02	0	0	1.10			0.36	0.11
VA	2100	2106	Prog. Thermostat - DX	Restaurant	2014	2054	307.83	198.79	7.01	141.50	31%	1.07	82.51	29%	0.06	0.02	0	0	0.92			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Restaurant	2014	2054	290.41	187.88	17.42	158.93	35%	10.91	93.42	33%	0.13	0.03	0	0	0.87			0.00	0.00
VA	2100	2111	Economizer Repair - DX	Restaurant	2014	2054	276.94	175.36	13.46	172.39	38%	12.52	105.94	38%	0.12	0.04	0	0	0.72			0.00	0.00
VA	2100	2107	Cool Roof - DX	Restaurant	2014	2054	268.19	169.88	8.76	181.15	40%	5.48	111.42	40%	0.14	0.05	0	0	0.65			0.00	0.00
VA	2100	2109	Economizer - DX	Restaurant	2014	2054	262.70	169.04	5.48	186.63	42%	0.84	112.26	40%	0.15	0.05	1	0	0.41			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Restaurant	2014	2054	262.55	169.01	0.15	186.78	42%	0.02	112.29	40%	0.16	0.05	1	0	0.40			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Restaurant	2014	2054	259.35	167.01	3.20	189.99	42%	2.00	114.29	41%	1.57	0.07	3	0	0.06			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Restaurant	2014	2054	140.83	88.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	140.83	88.17	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	2014	2054	123.41	77.26	17.42	17.42	12%	10.90	10.90	12%	0.01	0.01	0	0	8.27			17.42	10.90
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Restaurant	2014	2054	16.99	10.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.99	10.64	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Restaurant	2014	2054	150.38	38.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	150.38	38.78	0.00	0.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Restaurant	2014	2054	147.78	38.11	2.59	2.59	2%	0.67	0.67	2%	0.11	0.11	0	0	0.78			0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	Restaurant	2014	2054	103.43	35.29	44.35	46.94	31%	2.82	3.49	9%	0.08	0.09	1	1	0.77			0.00	0.00
VA	3000	3003	Demand Controlled Ventilation	Restaurant	2014	2054	89.51	28.28	13.92	60.86	40%	7.01	10.50	27%	0.85	0.26	2	2	0.12			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Restaurant	2014	2054	637.81	95.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	637.81	95.50	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Restaurant	2014	2054	609.06	91.20	28.75	28.75	5%	4.31	4.31	5%	0.00	0.00	0	0	13.77			28.75	4.31
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Restaurant	2014	2054	600.41	89.90	8.65	37.40	6%	1.29	5.60	6%	0.01	0.00	0	0	8.57			8.65	1.29
VA	4100	4109	Energy-Star Freezer, glass door	Restaurant	2014	2054	590.83	88.47	9.58	46.98	7%	1.43	7.03	7%	0.01	0.01	0	0	7.58			9.58	1.43
VA	4100	4107	Energy-Star Freezer, solid door	Restaurant	2014	2054	586.86	87.87	3.97	50.95	8%	0.60	7.63	8%	0.02	0.01	0	0	3.05			3.97	0.60
VA	4100	4108	Energy-Star Refrigerator, glass door	Restaurant	2014	2054	582.47	87.22	4.39	55.34	9%	0.66	8.29	9%	0.03	0.01	0	0	2.49			4.39	0.66
VA	4100	4106	Energy-Star Refrigerator, solid door	Restaurant	2014	2054	573.01	85.80	9.46	64.80	10%	1.42	9.70	10%	0.03	0.01	0	0	2.43			9.46	1.42
VA	4100	4110	Energy Star Ice Machines	Restaurant	2014	2054	564.41	84.51	8.60	73.40	12%	1.29	10.99	12%	0.07	0.02	0	0	0.88			0.00	0.00
VA	4100	4112	Reach-in unit occupancy sensors	Restaurant	2014	2054	564.16	84.48	0.25	73.65	12%	0.04	11.03	12%	0.29	0.02	2	0	0.22			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Restaurant	2014	2054	563.06	84.31	1.10	74.74	12%	0.16	11.19	12%	0.34	0.02	2	0	0.18			0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Restaurant	2014	2054	560.87	83.98	2.19	76.93	12%	0.33	11.52	12%	0.38	0.03	3	0	0.14			0.00	0.00
VA	5000	5000	Base Desktop PC	Restaurant	2014	2054	5.69	1.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.69	1.11	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Restaurant	2014	2054	3.14	0.86	2.55	2.55	45%	0.25	0.25	23%	0.02	0.02	0	0	2.69			2.55	0.25
VA	5000	5002	Energy Star or Better PC	Restaurant	2014	2054	2.11	0.65	1.03	3.58	63%	0.20	0.46	41%	0.04	0.03	0	0	1.36			1.03	0.20

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	5100	5100	Base Laptop PC	Restaurant	2014	2054	0.23	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.23	0.05	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Restaurant	2014	2054	0.19	0.04	0.04	0.04	19%	0.01	0.01	19%	0.01	0.01	0	0	3.80			0.04	0.01
VA	5100	5101	Laptop Network Power Management Enabling	Restaurant	2014	2054	0.19	0.04	0.00	0.05	21%	0.00	0.01	21%	1.77	0.16	9	1	0.03			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Restaurant	2014	2054	3.04	0.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.04	0.59	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Restaurant	2014	2054	1.33	0.26	1.71	1.71	56%	0.33	0.33	56%	0.00	0.00	0	0	30.23			1.71	0.33
VA	5200	5202	Monitor Power Management Enabling - CRT	Restaurant	2014	2054	1.01	0.23	0.33	2.03	67%	0.03	0.37	62%	0.03	0.01	0	0	1.97			0.33	0.03
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Restaurant	2014	2054	0.93	0.21	0.08	2.11	69%	0.02	0.38	64%	0.30	0.02	2	0	0.19			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Restaurant	2014	2054	1.27	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.27	0.25	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Restaurant	2014	2054	1.02	0.20	0.25	0.25	20%	0.05	0.05	20%	0.01	0.01	0	0	4.32			0.25	0.05
VA	5300	5302	Monitor Power Management Enabling - LCD	Restaurant	2014	2054	0.93	0.19	0.09	0.34	27%	0.01	0.06	24%	0.13	0.04	1	0	0.39			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Restaurant	2014	2054	0.86	0.19	0.07	0.41	32%	0.00	0.06	25%	0.36	0.10	7	1	0.13			0.00	0.00
VA	5400	5400	Base Copier	Restaurant	2014	2054	2.37	0.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.37	0.46	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Restaurant	2014	2054	2.02	0.39	0.35	0.35	15%	0.07	0.07	15%	0.00	0.00	0	0	22.54			0.35	0.07
VA	5400	5402	Copier Power Management Enabling	Restaurant	2014	2054	1.83	0.38	0.19	0.54	23%	0.02	0.09	19%	0.15	0.05	1	0	0.36			0.00	0.00
VA	5500	5500	Base Multifunction	Restaurant	2014	2054	0.90	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.90	0.18	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Restaurant	2014	2054	0.68	0.13	0.23	0.23	25%	0.04	0.04	25%	0.01	0.01	0	0	6.45			0.23	0.04
VA	5500	5501	Multifunction Power Management Enabling	Restaurant	2014	2054	0.43	0.11	0.24	0.47	52%	0.02	0.07	39%	0.56	0.29	6	2	0.09			0.00	0.00
VA	5600	5600	Base Printer	Restaurant	2014	2054	1.03	0.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.03	0.20	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Restaurant	2014	2054	0.67	0.13	0.36	0.36	35%	0.07	0.07	35%	0.00	0.00	0	0	29.66			0.36	0.07
VA	5600	5601	Printer Power Management Enabling	Restaurant	2014	2054	0.43	0.11	0.24	0.60	58%	0.02	0.09	47%	0.12	0.05	1	0	0.43			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Restaurant	2014	2054	5.67	1.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.67	1.11	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Restaurant	2014	2054	5.10	0.99	0.57	0.57	10%	0.11	0.11	10%	0.00	0.00	0	0	106.53			0.57	0.11
VA	5700	5702	Data Center Best Practices	Restaurant	2014	2054	4.45	0.87	0.65	1.22	21%	0.13	0.24	21%	0.00	0.00	0	0	43.37			0.65	0.13
VA	5700	5703	Data Center State of the Art practices	Restaurant	2014	2054	4.20	0.82	0.25	1.46	26%	0.05	0.29	26%	0.00	0.00	0	0	22.49			0.25	0.05
VA	6000	6000	Base Water Heating	Restaurant	2014	2054	61.77	10.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	61.77	10.42	0.00	0.00
VA	6000	6007	Heat Trap	Restaurant	2014	2054	58.57	9.88	3.20	3.20	5%	0.54	0.54	5%	0.01	0.01	0	0	10.74			3.20	0.54
VA	6000	6002	High Efficiency Water Heater (electric)	Restaurant	2014	2054	57.40	9.69	1.17	4.37	7%	0.20	0.74	7%	0.01	0.01	0	0	5.79			1.17	0.20
VA	6000	6006	Heat Recovery Unit	Restaurant	2014	2054	27.55	4.65	29.85	34.22	55%	5.04	5.77	55%	0.01	0.01	0	0	5.64			29.85	5.04
VA	6000	6004	Tankless Water Heater	Restaurant	2014	2054	25.48	4.30	2.07	36.28	59%	0.35	6.12	59%	0.04	0.01	0	0	1.98			2.07	0.35
VA	6000	6008	Solar Water Heater	Restaurant	2014	2054	21.92	3.70	3.57	39.85	65%	0.60	6.72	65%	0.05	0.02	0	0	1.70			3.57	0.60
VA	6000	6003	Hot Water Pipe Insulation	Restaurant	2014	2054	21.58	3.64	0.33	40.18	65%	0.06	6.78	65%	0.06	0.02	0	0	1.32			0.33	0.06
VA	6000	6001	Demand controlled circulating systems	Restaurant	2014	2054	20.77	3.51	0.81	40.99	66%	0.14	6.92	66%	0.18	0.02	1	0	0.42			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Restaurant	2014	2054	4.13	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.13	0.81	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Restaurant	2014	2054	3.46	0.74	0.66	0.66	16%	0.07	0.07	8%	0.03	0.03	0	0	2.02			0.66	0.07
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Restaurant	2014	2054	3.10	0.71	0.36	1.03	25%	0.04	0.10	12%	0.05	0.03	0	0	1.11			0.36	0.04
VA	7100	7100	Base Non-Refrigerated Vending Machines	Restaurant	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Restaurant	2014	2054	0.03	0.01	0.03	0.03	46%	0.00	0.00	23%	0.43	0.43	4	4	0.12			0.00	0.00
VA	7200	7200	Base Oven	Restaurant	2014	2054	28.48	5.84	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	28.48	5.84	0.00	0.00
VA	7200	7201	Convection Oven	Restaurant	2014	2054	21.93	4.50	6.55	6.55	23%	1.34	1.34	23%	0.13	0.13	1	1	0.54			0.00	0.00
VA	7300	7300	Base Fryer	Restaurant	2014	2054	35.82	7.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	35.82	7.34	0.00	0.00
VA	7300	7301	Efficient Fryer	Restaurant	2014	2054	33.52	6.87	2.29	2.29	6%	0.47	0.47	6%	0.43	0.43	2	2	0.17			0.00	0.00
VA	7400	7400	Base Steamer	Restaurant	2014	2054	45.52	9.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	45.52	9.33	0.00	0.00
VA	7400	7401	Efficient Steamer	Restaurant	2014	2054	13.91	2.85	31.61	31.61	69%	6.48	6.48	69%	0.06	0.06	0	0	1.18			31.61	6.48
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Restaurant	2014	2054	1.84	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.84	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	2014	2054	1.74	0.00	0.10	0.10	6%	0.00	0.00	0%	0.05	0.05	N/A	N/A	1.21			0.10	0.00
VA	8100	8100	Base Heating, Other Electric	Restaurant	2014	2054	5.09	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.09	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Restaurant	2014	2054	263.18	51.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	263.18	51.65	0.00	0.00
VA	9500	9501	Xmisc	Restaurant	2014	2054	263.18	51.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Retail	2020	2054	894.58	161.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	894.58	161.88	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Retail	2020	2054	892.49	161.69	2.09	2.09	0%	0.18	0.18	0%	0.01	0.01	0	0	4.53			2.09	0.18
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Retail	2020	2054	824.86	152.00	67.63	69.72	8%	9.69	9.87	6%	0.02	0.02	0	0	4.08			67.63	9.69
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Retail	2020	2054	739.07	136.48	85.79	155.51	17%	15.52	25.40	16%	0.03	0.02	0	0	2.41			85.79	15.52
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Retail	2020	2054	645.04	119.46	94.03	249.54	28%	17.02	42.41	26%	0.05	0.03	0	0	1.15			94.03	17.02
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Retail	2020	2054	636.01	119.07	9.03	258.58	29%	0.39	42.81	26%	0.10	0.04	2	0	0.57			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Retail	2020	2054	533.53	100.53	102.48	361.05	40%	18.54	61.35	38%	0.31	0.11	2	1	0.23			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Retail	2020	2054	487.98	92.28	45.55	406.60	45%	8.24	69.59	43%	0.26	0.13	1	1	0.28			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Retail	2020	2054	178.68	32.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	178.68	32.33	0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Retail	2020	2054	178.26	32.30	0.42	0.42	0%	0.04	0.04	0%	0.02	0.02	0	0	2.65			0.42	0.04
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Retail	2020	2054	164.75	30.36	13.51	13.93	8%	1.94	1.97	6%	0.03	0.03	0	0	2.39			13.51	1.94
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Retail	2020	2054	147.62	27.26	17.13	31.06	17%	3.10	5.07	16%	0.03	0.03	0	0	1.90			17.13	3.10
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Retail	2020	2054	128.84	23.86	18.78	49.84	28%	3.40	8.47	26%	0.07	0.04	0	0	0.91			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Retail	2020	2054	122.61	22.73	6.23	56.07	31%	1.13	9.60	30%	0.25	0.07	1	0	0.29			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Retail	2020	2054	112.14	20.84	10.47	66.54	37%	1.89	11.49	36%	0.31	0.11	2	1	0.23			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Retail	2020	2054	110.57	20.77	1.57	68.11	38%	0.07	11.56	36%	0.20	0.11	5	1	0.28			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Retail	2014	2054	1.40	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.40	0.25	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Retail	2014	2054	1.38	0.25	0.02	0.02	1%	0.00	0.00	1%	0.01	0.01	0	0	8.19			0.02	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Retail	2014	2054	1.27	0.24	0.10	0.12	9%	0.01	0.02	7%	0.06	0.05	0	0	1.22			0.10	0.01
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Retail	2014	2054	1.14	0.21	0.13	0.26	18%	0.02	0.04	16%	0.10	0.08	1	0	0.59			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Retail	2014	2054	1.10	0.21	0.04	0.30	21%	0.00	0.04	17%	0.11	0.08	3	1	0.48			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Retail	2014	2054	0.96	0.18	0.14	0.44	31%	0.03	0.07	27%	0.22	0.13	1	1	0.27			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Retail	2020	2054	338.74	61.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	338.74	61.29	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Retail	2020	2054	59.32	10.73	279.42	279.42	82%	50.56	50.56	82%	0.01	0.01	0	0	9.44			279.42	50.56
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Retail	2020	2054	121.95	22.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	121.95	22.07	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Retail	2020	2054	23.23	4.20	98.72	98.72	81%	17.86	17.86	81%	0.01	0.01	0	0	7.97			98.72	17.86

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Retail	2020	2054	89.77	16.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	89.77	16.24	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Retail	2020	2054	23.51	4.25	66.26	66.26	74%	11.99	11.99	74%	0.01	0.01	0	0	5.92			66.26	11.99
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Retail	2020	2054	99.18	17.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	99.18	17.95	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Retail	2020	2054	71.71	12.98	27.47	27.47	28%	4.97	4.97	28%	0.06	0.06	0	0	0.94			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Retail	2020	2054	126.73	22.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	126.73	22.93	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Retail	2020	2054	93.78	16.97	32.95	32.95	26%	5.96	5.96	26%	0.05	0.05	0	0	1.25			32.95	5.96
VA	1800	1800	BaseMetal Halide, 465W	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1850	1850	Base CFL Exit Sign	Retail	2014	2054	11.37	2.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.37	2.06	0.00	0.00
VA	1850	1851	LED Exit Sign	Retail	2014	2054	4.99	0.90	6.37	6.37	56%	1.15	1.15	56%	0.04	0.04	0	0	1.45			6.37	1.15
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Retail	2014	2054	182.10	11.91	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	182.10	11.91	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Retail	2014	2054	164.09	8.46	18.02	18.02	10%	3.45	3.45	29%	0.05	0.05	0	0	1.82			18.02	3.45
VA	1900	1902	LED Outdoor Area Lighting	Retail	2014	2054	78.96	2.89	85.13	103.14	57%	5.57	9.02	76%	0.11	0.10	2	1	0.61			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Retail	2014	2054	55.87	1.52	23.09	126.23	69%	1.37	10.39	87%	0.74	0.22	12	3	0.09			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Retail	2014	2054	24.24	20.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.24	20.03	0.00	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	Retail	2014	2054	24.03	19.86	0.21	0.21	1%	0.17	0.17	1%	0.03	0.03	0	0	4.91			0.21	0.17
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Retail	2014	2054	21.98	18.16	2.05	2.26	9%	1.70	1.87	9%	0.04	0.04	0	0	3.01			2.05	1.70
VA	2000	2005	Chiller Tune Up/Diagnostics	Retail	2014	2054	21.83	18.10	0.15	2.41	10%	0.06	1.93	10%	0.03	0.04	0	0	2.31			0.15	0.06
VA	2000	2003	EMS - Chiller	Retail	2014	2054	20.01	17.71	1.82	4.23	17%	0.39	2.32	12%	0.08	0.06	0	0	0.93			0.00	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	Retail	2014	2054	16.21	14.57	3.80	8.03	33%	3.14	5.46	27%	0.23	0.14	0	0	0.56			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Retail	2014	2054	854.18	705.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	854.18	705.93	0.00	0.00
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Retail	2014	2054	657.71	543.56	196.46	196.46	23%	162.36	162.36	23%	0.04	0.04	0	0	3.17			196.46	162.36
VA	2100	2111	Economizer Repair - DX	Retail	2014	2054	611.76	489.86	45.95	242.41	28%	53.70	216.06	31%	0.08	0.05	0	0	1.13			45.95	53.70
VA	2100	2107	Cool Roof - DX	Retail	2014	2054	584.59	467.41	27.18	269.59	32%	22.46	238.52	34%	0.12	0.05	0	0	0.87			0.00	0.00
VA	2100	2108	Optimize Controls - DX	Retail	2014	2054	574.97	465.35	9.61	279.20	33%	2.06	240.58	34%	0.10	0.06	0	0	0.56			0.00	0.00
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Retail	2014	2054	572.65	464.36	2.33	281.53	33%	0.99	241.57	34%	0.15	0.06	0	0	0.52			0.00	0.00
VA	2100	2109	Economizer - DX	Retail	2014	2054	523.89	453.91	48.76	330.29	39%	10.45	252.01	36%	0.13	0.07	1	0	0.50			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Retail	2014	2054	492.03	427.59	31.85	362.14	42%	26.32	278.34	39%	0.31	0.09	0	0	0.41			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Retail	2014	2054	478.43	424.67	13.60	375.74	44%	2.91	281.25	40%	0.18	0.09	1	0	0.35			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	Retail	2014	2054	476.68	423.23	1.75	377.50	44%	1.45	282.70	40%	0.38	0.09	0	0	0.27			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Retail	2014	2054	476.48	423.18	0.20	377.70	44%	0.04	282.74	40%	0.29	0.09	1	0	0.23			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Retail	2014	2054	472.98	420.29	3.50	381.20	45%	2.89	285.64	40%	3.45	0.12	4	0	0.03			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Retail	2014	2054	317.23	262.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	317.23	262.17	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	2014	2054	278.00	229.75	39.23	39.23	12%	32.42	32.42	12%	0.03	0.03	0	0	4.44			39.23	32.42
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Retail	2014	2054	55.95	46.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	55.95	46.24	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Retail	2014	2054	578.78	162.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	578.78	162.16	0.00	0.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Retail	2014	2054	569.62	159.59	9.16	9.16	2%	2.57	2.57	2%	0.02	0.02	0	0	3.79			9.16	2.57
VA	3000	3002	Variable Speed Drive Control, 5 HP	Retail	2014	2054	403.89	147.97	165.73	174.89	30%	11.62	14.18	9%	0.02	0.02	0	0	3.64			165.73	11.62
VA	3000	3003	Demand Controlled Ventilation	Retail	2014	2054	361.48	125.40	42.41	217.30	38%	22.57	36.76	23%	1.14	0.24	2	1	0.09			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Retail	2014	2054	20.17	5.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	20.17	5.65	0.00	0.00
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Retail	2014	2054	17.26	4.92	2.91	2.91	14%	0.73	0.73	13%	0.03	0.03	0	0	2.72			2.91	0.73
VA	3100	3103	Air Handler Optimization, 15 HP	Retail	2014	2054	15.54	4.80	1.73	4.63	23%	0.12	0.85	15%	0.03	0.03	0	0	2.08			1.73	0.12
VA	3100	3102	Variable Speed Drive Control, 15 HP	Retail	2014	2054	11.02	4.48	4.52	9.15	45%	0.32	1.17	21%	0.07	0.05	1	0	0.98			0.00	0.00
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Retail	2014	2054	10.99	4.47	0.03	9.18	46%	0.01	1.18	21%	0.20	0.05	1	0	0.44			0.00	0.00
VA	3100	3105	Energy Recovery Ventilation (ERV)	Retail	2014	2054	10.23	4.07	0.75	9.94	49%	0.40	1.58	28%	0.45	0.08	1	0	0.25			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	Retail	2014	2054	9.16	3.50	1.07	11.01	55%	0.57	2.15	38%	1.57	0.22	3	1	0.07			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Retail	2014	2054	20.17	5.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	20.17	5.65	0.00	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	Retail	2014	2054	18.15	5.51	2.02	2.02	10%	0.14	0.14	3%	0.02	0.02	0	0	2.44			2.02	0.14
VA	3200	3202	Variable Speed Drive Control, 40 HP	Retail	2014	2054	12.87	5.14	5.28	7.30	36%	0.37	0.51	9%	0.06	0.05	1	1	1.18			5.28	0.37
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Retail	2014	2054	12.85	5.13	0.03	7.32	36%	0.01	0.52	9%	0.27	0.05	1	1	0.33			0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	Retail	2014	2054	11.50	4.41	1.35	8.67	43%	0.72	1.24	22%	1.25	0.23	2	2	0.08			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Retail	2014	2054	466.01	70.84	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	466.01	70.84	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Retail	2014	2054	457.33	69.52	8.69	8.69	2%	1.32	1.32	2%	0.01	0.01	0	0	5.85			8.69	1.32
VA	4100	4109	Energy-Star Freezer, glass door	Retail	2014	2054	455.44	69.23	1.88	10.57	2%	0.29	1.61	2%	0.04	0.01	0	0	1.73			1.88	0.29
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Retail	2014	2054	445.67	67.75	9.77	20.34	4%	1.49	3.09	4%	0.04	0.02	0	0	1.50			9.77	1.49
VA	4100	4107	Energy-Star Freezer, solid door	Retail	2014	2054	444.90	67.63	0.77	21.11	5%	0.12	3.21	5%	0.09	0.03	1	0	0.69			0.00	0.00
VA	4100	4108	Energy-Star Refrigerator, glass door	Retail	2014	2054	437.40	66.49	7.50	28.61	6%	1.14	4.35	6%	0.11	0.05	1	0	0.59			0.00	0.00
VA	4100	4106	Energy-Star Refrigerator, solid door	Retail	2014	2054	436.20	66.30	1.21	29.82	6%	0.18	4.53	6%	0.12	0.05	1	0	0.54			0.00	0.00
VA	4100	4112	Reach-in unit occupancy sensors	Retail	2014	2054	435.01	66.12	1.19	31.00	7%	0.18	4.71	7%	0.28	0.06	2	0	0.23			0.00	0.00
VA	4100	4110	Energy Star Ice Machines	Retail	2014	2054	434.20	66.00	0.81	31.81	7%	0.12	4.84	7%	0.32	0.07	2	0	0.20			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Retail	2014	2054	432.07	65.68	2.14	33.94	7%	0.32	5.16	7%	0.31	0.08	2	1	0.19			0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Retail	2014	2054	431.63	65.61	0.44	34.38	7%	0.07	5.23	7%	1.93	0.11	13	1	0.03			0.00	0.00
VA	5000	5000	Base Desktop PC	Retail	2014	2054	21.51	3.84	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	21.51	3.84	0.00	0.00
VA	5000	5002	Energy Star or Better PC	Retail	2014	2054	18.25	3.26	3.26	3.26	15%	0.58	0.58	15%	0.01	0.01	0	0	3.72			3.26	0.58
VA	5000	5001	PC Network Power Management Enabling	Retail	2014	2054	10.03	2.51	8.22	11.48	53%	0.75	1.33	35%	0.02	0.02	0	0	2.93			8.22	0.75
VA	5100	5100	Base Laptop PC	Retail	2014	2054	0.89	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.89	0.16	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Retail	2014	2054	0.72	0.13	0.17	0.17	19%	0.03	0.03	19%	0.01	0.01	0	0	4.83			0.17	0.03
VA	5100	5101	Laptop Network Power Management Enabling	Retail	2014	2054	0.71	0.13	0.01	0.18	21%	0.00	0.03	21%	1.38	0.12	8	1	0.04			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Retail	2014	2054	4.90	0.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.90	0.87	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Retail	2014	2054	2.15	0.38	2.75	2.75	56%	0.49	0.49	56%	0.00	0.00	0	0	38.40			2.75	0.49
VA	5200	5202	Monitor Power Management Enabling - CRT	Retail	2014	2054	1.80	0.35	0.35	3.10	63%	0.03	0.52	60%	0.02	0.00	0	0	2.95			0.35	0.03
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Retail	2014	2054	1.66	0.33	0.14	3.24	66%	0.03	0.55	63%	0.21	0.01	1	0	0.26			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Retail	2014	2054	3.06	0.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.06	0.55	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Retail	2014	2054	2.64	0.47	0.42	0.42	14%	0.08	0.08	14%	0.01	0.01	0	0	5.92			0.42	0.08

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	5300	5302	Monitor Power Management Enabling - LCD	Retail	2014	2054	2.54	0.46	0.10	0.53	17%	0.01	0.09	16%	0.09	0.02	1	0	0.58			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Retail	2014	2054	2.34	0.45	0.19	0.72	24%	0.01	0.09	17%	0.25	0.08	5	1	0.19			0.00	0.00
VA	5400	5400	Base Copier	Retail	2014	2054	10.62	1.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.62	1.90	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Retail	2014	2054	9.10	1.62	1.52	1.52	14%	0.27	0.27	14%	0.00	0.00	0	0	28.81			1.52	0.27
VA	5400	5402	Copier Power Management Enabling	Retail	2014	2054	8.67	1.58	0.43	1.95	18%	0.04	0.31	16%	0.11	0.03	1	0	0.50			0.00	0.00
VA	5500	5500	Base Multifunction	Retail	2014	2054	1.62	0.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.62	0.29	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Retail	2014	2054	1.22	0.22	0.41	0.41	25%	0.07	0.07	25%	0.01	0.01	0	0	8.20			0.41	0.07
VA	5500	5501	Multifunction Power Management Enabling	Retail	2014	2054	1.05	0.20	0.17	0.58	36%	0.02	0.09	30%	0.28	0.09	3	1	0.19			0.00	0.00
VA	5600	5600	Base Printer	Retail	2014	2054	4.65	0.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.65	0.83	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Retail	2014	2054	3.03	0.54	1.62	1.62	35%	0.29	0.29	35%	0.00	0.00	0	0	37.69			1.62	0.29
VA	5600	5601	Printer Power Management Enabling	Retail	2014	2054	2.60	0.50	0.43	2.04	44%	0.04	0.33	39%	0.06	0.01	1	0	0.87			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Retail	2014	2054	16.72	2.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.72	2.98	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Retail	2014	2054	15.05	2.69	1.67	1.67	10%	0.30	0.30	10%	0.00	0.00	0	0	120.08			1.67	0.30
VA	5700	5702	Data Center Best Practices	Retail	2014	2054	13.13	2.34	1.91	3.59	21%	0.34	0.64	21%	0.00	0.00	0	0	48.89			1.91	0.34
VA	5700	5703	Data Center State of the Art practices	Retail	2014	2054	12.40	2.21	0.74	4.32	26%	0.13	0.77	26%	0.00	0.00	0	0	25.35			0.74	0.13
VA	6000	6000	Base Water Heating	Retail	2014	2054	88.87	14.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	88.87	14.28	0.00	0.00
VA	6000	6007	Heat Trap	Retail	2014	2054	84.27	13.54	4.60	4.60	5%	0.74	0.74	5%	0.02	0.02	0	0	3.20			4.60	0.74
VA	6000	6002	High Efficiency Water Heater (electric)	Retail	2014	2054	82.61	13.27	1.66	6.26	7%	0.27	1.01	7%	0.04	0.03	0	0	1.72			1.66	0.27
VA	6000	6004	Tankless Water Heater	Retail	2014	2054	76.41	12.28	6.20	12.46	14%	1.00	2.00	14%	0.07	0.05	0	0	1.23			6.20	1.00
VA	6000	6008	Solar Water Heater	Retail	2014	2054	74.27	11.93	2.14	14.60	16%	0.34	2.35	16%	0.08	0.05	0	0	1.05			2.14	0.34
VA	6000	6003	Hot Water Pipe Insulation	Retail	2014	2054	73.05	11.74	1.22	15.82	18%	0.20	2.54	18%	0.08	0.05	0	0	0.92			0.00	0.00
VA	6000	6006	Heat Recovery Unit	Retail	2014	2054	70.68	11.35	2.37	18.19	20%	0.38	2.92	20%	0.09	0.06	1	0	0.72			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	Retail	2014	2054	69.59	11.18	1.09	19.28	22%	0.17	3.10	22%	0.13	0.06	1	0	0.57			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Retail	2014	2054	22.16	3.96	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	22.16	3.96	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Retail	2014	2054	19.04	3.68	3.13	3.13	14%	0.28	0.28	7%	0.02	0.02	0	0	2.19			3.13	0.28
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Retail	2014	2054	17.35	3.53	1.69	4.82	22%	0.15	0.43	11%	0.04	0.03	0	0	1.19			1.69	0.15
VA	7100	7100	Base Non-Refrigerated Vending Machines	Retail	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Retail	2014	2054	0.06	0.02	0.04	0.04	40%	0.00	0.00	20%	0.40	0.40	4	4	0.13			0.00	0.00
VA	7200	7200	Base Oven	Retail	2014	2054	14.10	2.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.10	2.55	0.00	0.00
VA	7200	7201	Convection Oven	Retail	2014	2054	10.86	1.96	3.24	3.24	23%	0.59	0.59	23%	0.13	0.13	1	1	0.53			0.00	0.00
VA	7300	7300	Base Fryer	Retail	2014	2054	2.58	0.47	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.58	0.47	0.00	0.00
VA	7300	7301	Efficient Fryer	Retail	2014	2054	2.41	0.44	0.16	0.16	6%	0.03	0.03	6%	0.43	0.43	2	2	0.16			0.00	0.00
VA	7400	7400	Base Steamer	Retail	2014	2054	10.12	1.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.12	1.83	0.00	0.00
VA	7400	7401	Efficient Steamer	Retail	2014	2054	3.61	0.65	6.51	6.51	64%	1.18	1.18	64%	0.05	0.05	0	0	1.35			6.51	1.18
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Retail	2014	2054	13.99	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.99	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	2014	2054	13.20	0.00	0.79	0.79	6%	0.00	0.00	0%	0.04	0.04	N/A	N/A	1.47			0.79	0.00
VA	8100	8100	Base Heating, Other Electric	Retail	2014	2054	51.10	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	51.10	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Retail	2014	2054	1,389.43	248.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,389.43	248.50	0.00	0.00
VA	9500	9501	Xmisc	Retail	2014	2054	1,389.43	248.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Grocery	2020	2054	144.92	22.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	144.92	22.11	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Grocery	2020	2054	144.77	22.10	0.15	0.15	0%	0.01	0.01	0%	0.01	0.01	0	0	5.90			0.15	0.01
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Grocery	2020	2054	133.68	20.77	11.09	11.24	8%	1.33	1.34	6%	0.01	0.01	0	0	5.17			11.09	1.33
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Grocery	2020	2054	119.99	18.69	13.69	24.93	17%	2.09	3.42	15%	0.03	0.02	0	0	1.66			13.69	2.09
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Grocery	2020	2054	104.72	16.36	15.27	40.20	28%	2.33	5.75	26%	0.07	0.04	0	0	0.79			0.00	0.00
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Grocery	2020	2054	103.17	16.30	1.56	41.76	29%	0.06	5.81	26%	0.10	0.04	3	0	0.58			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Grocery	2020	2054	86.54	13.77	16.62	58.38	40%	2.54	8.34	38%	0.42	0.15	3	1	0.15			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Grocery	2020	2054	79.16	12.64	7.39	65.77	45%	1.13	9.47	43%	0.35	0.17	2	1	0.18			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Grocery	2020	2054	0.51	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.51	0.08	0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Grocery	2020	2054	0.51	0.08	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	4.93			0.00	0.00
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Grocery	2020	2054	0.47	0.07	0.04	0.04	8%	0.00	0.00	6%	0.02	0.02	0	0	4.32			0.04	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Grocery	2020	2054	0.42	0.07	0.05	0.09	17%	0.01	0.01	15%	0.04	0.03	0	0	1.31			0.05	0.01
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Grocery	2020	2054	0.37	0.06	0.05	0.14	27%	0.01	0.02	26%	0.09	0.05	1	0	0.63			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Grocery	2020	2054	0.36	0.06	0.01	0.15	29%	0.00	0.02	26%	0.17	0.06	5	0	0.33			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Grocery	2020	2054	0.35	0.05	0.02	0.16	32%	0.00	0.02	29%	0.34	0.09	2	1	0.18			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Grocery	2020	2054	0.32	0.05	0.03	0.19	38%	0.00	0.03	35%	0.43	0.14	3	1	0.14			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Grocery	2020	2054	44.35	6.77	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	44.35	6.77	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Grocery	2020	2054	16.64	2.54	27.71	27.71	62%	4.23	4.23	62%	0.00	0.00	0	0	12.47			27.71	4.23
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Grocery	2020	2054	15.97	2.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.97	2.44	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Grocery	2020	2054	6.38	0.97	9.59	9.59	60%	1.46	1.46	60%	0.01	0.01	0	0	10.31			9.59	1.46
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Grocery	2020	2054	11.75	1.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.75	1.79	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Grocery	2020	2054	5.89	0.90	5.87	5.87	50%	0.90	0.90	50%	0.01	0.01	0	0	6.99			5.87	0.90
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Grocery	2020	2054	3.18	0.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.18	0.48	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Grocery	2020	2054	2.30	0.35	0.88	0.88	28%	0.13	0.13	28%	0.10	0.10	1	1	0.58			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Grocery	2020	2054	4.06	0.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.06	0.62	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Grocery	2020	2054	3.01	0.46	1.06	1.06	26%	0.16	0.16	26%	0.07	0.07	0	0	0.77			0.00	0.00
VA	1800	1800	BaseMetal Halide, 465W	Grocery	2014	2054	7.60	1.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.60	1.16	0.00	0.00
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Grocery	2014	2054	7.02	1.09	0.58	0.58	8%	0.07	0.07	6%	0.01	0.01	0	0	11.91			0.58	0.07
VA	1800	1801	T5 (240W) (base metal halide)	Grocery	2014	2054	4.64	0.73	2.37	2.95	39%	0.36	0.43	37%	0.01	0.01	0	0	5.89			2.37	0.36
VA	1800	1806	Occupancy Sensor, High Bay T5	Grocery	2014	2054	4.49	0.72	0.16	3.11	41%	0.01	0.44	38%	0.03	0.01	1	0	1.67			0.16	0.01
VA	1850	1850	Base CFL Exit Sign	Grocery	2014	2054	0.30	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.30	0.05	0.00	0.00
VA	1850	1851	LED Exit Sign	Grocery	2014	2054	0.29	0.04	0.01	0.01	2%	0.00	0.00	2%	0.03	0.03	0	0	2.10			0.01	0.00
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Grocery	2014	2054	2.31	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.31	0.06	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Grocery	2014	2054	2.05	0.04	0.26	0.26	11%	0.02	0.02	36%	0.08	0.08	1	1	0.93			0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1900	1902	LED Outdoor Area Lighting	Grocery	2014	2054	0.99	0.01	1.07	1.33	57%	0.03	0.05	82%	0.17	0.15	7	4	0.38			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Grocery	2014	2054	0.70	0.00	0.29	1.62	70%	0.01	0.05	94%	1.12	0.33	52	10	0.06			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Grocery	2014	2054	4.02	2.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.02	2.62	0.00	0.00
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Grocery	2014	2054	3.67	2.40	0.34	0.34	9%	0.22	0.22	9%	0.04	0.04	0	0	3.31			0.34	0.22
VA	2000	2005	Chiller Tune Up/Diagnostics	Grocery	2014	2054	3.67	2.40	0.01	0.35	9%	0.00	0.23	9%	0.03	0.04	0	0	2.77			0.01	0.00
VA	2000	2013	High Efficiency Chiller Motors	Grocery	2014	2054	3.55	2.32	0.12	0.47	12%	0.08	0.30	12%	0.06	0.04	0	0	2.11			0.12	0.08
VA	2000	2006	VSD for Chiller Pumps and Towers	Grocery	2014	2054	3.19	2.20	0.36	0.83	21%	0.12	0.42	16%	0.05	0.04	0	0	1.84			0.36	0.12
VA	2000	2002	Window Film (Standard) - Chiller	Grocery	2014	2054	2.97	2.06	0.22	1.05	26%	0.14	0.56	21%	0.08	0.05	0	0	1.13			0.22	0.14
VA	2000	2003	EMS - Chiller	Grocery	2014	2054	2.67	2.01	0.29	1.34	33%	0.05	0.61	23%	0.08	0.06	0	0	0.93			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	Grocery	2014	2054	2.47	1.88	0.21	1.55	39%	0.13	0.74	28%	0.12	0.07	0	0	0.75			0.00	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	Grocery	2014	2054	2.00	1.57	0.47	2.02	50%	0.31	1.05	40%	0.25	0.11	0	0	0.45			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Grocery	2014	2054	1.97	1.55	0.03	2.05	51%	0.02	1.07	41%	3.91	0.16	6	0	0.02			0.00	0.00
VA	2000	2008	New Economizer - Chiller	Grocery	2014	2054	1.97	1.55	0.00	2.05	51%	0.00	1.07	41%	41971.95	0.17	263,846	0	0.00			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Grocery	2014	2054	124.62	81.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	124.62	81.40	0.00	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	Grocery	2014	2054	124.46	81.29	0.16	0.16	0%	0.11	0.11	0%	0.03	0.03	0	0	4.01			0.16	0.11
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Grocery	2014	2054	95.83	62.59	28.63	28.79	23%	18.70	18.80	23%	0.03	0.03	0	0	3.46			28.63	18.70
VA	2100	2115	Window Film (Standard) - DX	Grocery	2014	2054	89.16	58.24	6.67	35.45	28%	4.36	23.16	28%	0.08	0.04	0	0	1.09			6.67	4.36
VA	2100	2107	Cool Roof - DX	Grocery	2014	2054	82.27	53.74	6.89	42.34	34%	4.50	27.66	34%	0.11	0.05	0	0	0.80			0.00	0.00
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Grocery	2014	2054	82.18	53.71	0.09	42.44	34%	0.03	27.69	34%	0.12	0.05	0	0	0.60			0.00	0.00
VA	2100	2108	Optimize Controls - DX	Grocery	2014	2054	80.74	53.48	1.44	43.88	35%	0.23	27.92	34%	0.10	0.05	1	0	0.55			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Grocery	2014	2054	79.54	53.29	1.20	45.08	36%	0.19	28.11	35%	0.12	0.06	1	0	0.50			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Grocery	2014	2054	74.70	50.13	4.84	49.92	40%	3.16	31.27	38%	0.24	0.07	0	0	0.47			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Grocery	2014	2054	74.68	50.12	0.02	49.94	40%	0.00	31.27	38%	0.70	0.07	4	0	0.09			0.00	0.00
VA	2100	2111	Economizer Repair - DX	Grocery	2014	2054	73.87	49.35	0.81	50.75	41%	0.77	32.04	39%	1.36	0.10	1	0	0.06			0.00	0.00
VA	2100	2109	Economizer - DX	Grocery	2014	2054	73.86	49.35	0.01	50.76	41%	0.00	32.04	39%	1.70	0.10	11	0	0.04			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Grocery	2014	2054	72.75	48.63	1.11	51.87	42%	0.72	32.77	40%	3.28	0.16	5	0	0.03			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Grocery	2014	2054	11.12	7.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.12	7.26	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	2014	2054	9.75	6.37	1.38	1.38	12%	0.90	0.90	12%	0.03	0.03	0	0	3.98			1.38	0.90
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Grocery	2014	2054	5.16	3.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.16	3.37	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Grocery	2014	2054	121.17	25.96	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	121.17	25.96	0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	Grocery	2014	2054	83.66	24.01	37.51	37.51	31%	1.95	1.95	7%	0.03	0.03	1	1	2.21			37.51	1.95
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Grocery	2014	2054	82.22	23.70	1.44	38.95	32%	0.31	2.25	9%	0.06	0.03	0	1	1.47			1.44	0.31
VA	3000	3003	Demand Controlled Ventilation	Grocery	2014	2054	70.52	18.68	11.70	50.65	42%	5.02	7.27	28%	1.14	0.29	3	2	0.08			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Grocery	2014	2054	119.80	25.66	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	119.80	25.66	0.00	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	Grocery	2014	2054	107.44	25.02	12.37	12.37	10%	0.64	0.64	3%	0.02	0.02	0	0	2.67			12.37	0.64
VA	3200	3204	Demand Controlled Ventilation	Grocery	2014	2054	92.15	18.46	15.28	27.65	23%	6.56	7.20	28%	0.86	0.49	2	2	0.11			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Grocery	2014	2054	504.16	81.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	504.16	81.17	0.00	0.00
VA	4000	4007	Efficient compressor motor	Grocery	2014	2054	503.18	81.01	0.98	0.98	0%	0.16	0.16	0%	0.02	0.02	0	0	3.94			0.98	0.16
VA	4000	4011	Demand Hot Gas Defrost	Grocery	2014	2054	490.60	78.98	12.58	13.56	3%	2.03	2.18	3%	0.02	0.02	0	0	3.64			12.58	2.03
VA	4000	4006	Electronically commutated evaporator fan motor	Grocery	2014	2054	455.70	73.36	34.90	48.46	10%	5.62	7.80	10%	0.02	0.02	0	0	3.33			34.90	5.62
VA	4000	4009	Floating head pressure controls	Grocery	2014	2054	454.58	73.27	1.12	49.58	10%	0.09	7.89	10%	0.02	0.02	0	0	3.11			1.12	0.09
VA	4000	4002	Strip curtains for walk-ins (built-up)	Grocery	2014	2054	450.63	72.64	3.94	53.52	11%	0.63	8.53	11%	0.04	0.02	0	0	1.44			3.94	0.63
VA	4000	4013	Anti-sweat (humidistat) controls	Grocery	2014	2054	444.35	72.13	6.29	59.81	12%	0.51	9.03	11%	0.04	0.02	1	0	1.47			6.29	0.51
VA	4000	4014	Freezer-Cooler Replacement Gaskets	Grocery	2014	2054	429.18	69.69	15.16	74.98	15%	2.44	11.47	14%	0.05	0.03	0	0	0.99			0.00	0.00
VA	4000	4018	Oversized Air Cooled Condenser	Grocery	2014	2054	411.11	66.78	18.07	93.05	18%	2.91	14.38	18%	0.08	0.04	0	0	0.96			0.00	0.00
VA	4000	4004	Night covers for display cases	Grocery	2014	2054	389.44	65.04	21.67	114.72	23%	1.74	16.13	20%	0.07	0.04	1	0	0.78			0.00	0.00
VA	4000	4001	High-efficiency fan motors	Grocery	2014	2054	375.71	62.83	13.73	128.45	25%	2.21	18.34	23%	0.11	0.05	1	0	0.72			0.00	0.00
VA	4000	4008	Compressor VSD retrofit	Grocery	2014	2054	352.42	60.95	23.29	151.74	30%	1.88	20.21	25%	0.10	0.06	1	0	0.63			0.00	0.00
VA	4000	4010	Refrigeration Commissioning	Grocery	2014	2054	350.61	60.66	1.81	153.55	30%	0.29	20.50	25%	0.18	0.06	1	0	0.30			0.00	0.00
VA	4000	4005	Evaporator fan controller for MT walk-ins	Grocery	2014	2054	350.36	60.64	0.25	153.80	31%	0.02	20.52	25%	0.24	0.06	3	0	0.28			0.00	0.00
VA	4000	4017	Multiplex Compressor System	Grocery	2014	2054	344.19	59.65	6.17	159.97	32%	0.99	21.52	27%	0.26	0.07	2	1	0.27			0.00	0.00
VA	4000	4016	LED Display Lighting	Grocery	2014	2054	317.93	55.42	26.26	186.23	37%	4.23	25.74	32%	0.43	0.12	3	1	0.14			0.00	0.00
VA	4000	4015	High R-Value Glass Doors	Grocery	2014	2054	313.01	54.63	4.92	191.15	38%	0.79	26.54	33%	1.94	0.17	12	1	0.03			0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Grocery	2014	2054	57.45	9.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	57.45	9.25	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Grocery	2014	2054	56.06	9.03	1.39	1.39	2%	0.22	0.22	2%	0.00	0.00	0	0	174.99			1.39	0.22
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Grocery	2014	2054	55.32	8.91	0.74	2.13	4%	0.12	0.34	4%	0.01	0.00	0	0	3.99			0.74	0.12
VA	4100	4109	Energy-Star Freezer, glass door	Grocery	2014	2054	52.33	8.43	2.99	5.12	9%	0.48	0.82	9%	0.03	0.02	0	0	2.43			2.99	0.48
VA	4100	4107	Energy-Star Freezer, solid door	Grocery	2014	2054	51.16	8.24	1.18	6.29	11%	0.19	1.01	11%	0.07	0.03	0	0	0.93			0.00	0.00
VA	4100	4108	Energy-Star Refrigerator, glass door	Grocery	2014	2054	51.09	8.23	0.06	6.36	11%	0.01	1.02	11%	0.09	0.03	1	0	0.72			0.00	0.00
VA	4100	4106	Energy-Star Refrigerator, solid door	Grocery	2014	2054	51.07	8.22	0.03	6.38	11%	0.00	1.03	11%	0.09	0.03	1	0	0.69			0.00	0.00
VA	4100	4110	Energy Star Ice Machines	Grocery	2014	2054	51.05	8.22	0.02	6.40	11%	0.00	1.03	11%	0.24	0.03	1	0	0.27			0.00	0.00
VA	4100	4112	Reach-in unit occupancy sensors	Grocery	2014	2054	51.04	8.22	0.01	6.41	11%	0.00	1.03	11%	0.29	0.03	2	0	0.22			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Grocery	2014	2054	50.70	8.16	0.35	6.75	12%	0.06	1.09	12%	0.33	0.04	2	0	0.18			0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Grocery	2014	2054	50.52	8.13	0.17	6.93	12%	0.03	1.12	12%	0.64	0.06	4	0	0.08			0.00	0.00
VA	5000	5000	Base Desktop PC	Grocery	2014	2054	2.29	0.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.29	0.41	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Grocery	2014	2054	1.25	0.32	1.03	1.03	45%	0.09	0.09	23%	0.02	0.02	0	0	2.31			1.03	0.09
VA	5000	5002	Energy Star or Better PC	Grocery	2014	2054	0.85	0.24	0.41	1.44	63%	0.07	0.17	41%	0.05	0.03	0	0	1.15			0.41	0.07
VA	5100	5100	Base Laptop PC	Grocery	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Grocery	2014	2054	0.06	0.01	0.01	0.01	19%	0.00	0.00	19%	0.02	0.02	0	0	3.22			0.01	0.00
VA	5100	5101	Laptop Network Power Management Enabling	Grocery	2014	2054	0.06	0.01	0.00	0.01	21%	0.00	0.00	21%	2.07	0.18	12	1	0.03			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Grocery	2014	2054	0.43	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.43	0.08	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Grocery	2014	2054	0.19	0.03	0.24	0.24	56%	0.04	0.04	56%	0.00	0.00	0	0	25.59			0.24	0.04
VA	5200	5202	Monitor Power Management Enabling - CRT	Grocery	2014	2054	0.12	0.03	0.07	0.32	73%	0.01	0.05	65%	0.04	0.01	0	0	1.20			0.07	0.01

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Grocery	2014	2054	0.11	0.03	0.01	0.33	76%	0.00	0.05	67%	0.44	0.02	2	0	0.13			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Grocery	2014	2054	0.68	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.68	0.12	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Grocery	2014	2054	0.54	0.10	0.14	0.14	20%	0.02	0.02	20%	0.02	0.02	0	0	3.65			0.14	0.02
VA	5300	5302	Monitor Power Management Enabling - LCD	Grocery	2014	2054	0.47	0.09	0.07	0.21	31%	0.01	0.03	26%	0.16	0.07	2	0	0.31			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Grocery	2014	2054	0.43	0.09	0.04	0.25	36%	0.00	0.03	27%	0.45	0.12	10	1	0.11			0.00	0.00
VA	5400	5400	Base Copier	Grocery	2014	2054	0.55	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.55	0.10	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Grocery	2014	2054	0.44	0.08	0.11	0.11	20%	0.02	0.02	20%	0.00	0.00	0	0	17.84			0.11	0.02
VA	5400	5402	Copier Power Management Enabling	Grocery	2014	2054	0.38	0.07	0.06	0.17	31%	0.01	0.03	26%	0.20	0.07	2	0	0.27			0.00	0.00
VA	5500	5500	Base Multifunction	Grocery	2014	2054	0.22	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.22	0.04	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Grocery	2014	2054	0.16	0.03	0.05	0.05	25%	0.01	0.01	25%	0.01	0.01	0	0	5.46			0.05	0.01
VA	5500	5501	Multifunction Power Management Enabling	Grocery	2014	2054	0.12	0.03	0.05	0.10	46%	0.00	0.01	36%	0.53	0.25	6	2	0.10			0.00	0.00
VA	5600	5600	Base Printer	Grocery	2014	2054	0.18	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.03	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Grocery	2014	2054	0.12	0.02	0.06	0.06	35%	0.01	0.01	35%	0.00	0.00	0	0	25.12			0.06	0.01
VA	5600	5601	Printer Power Management Enabling	Grocery	2014	2054	0.09	0.02	0.03	0.10	53%	0.00	0.01	44%	0.12	0.04	1	0	0.45			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Grocery	2014	2054	0.45	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.08	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Grocery	2014	2054	0.40	0.07	0.04	0.04	10%	0.01	0.01	10%	0.00	0.00	0	0	120.04			0.04	0.01
VA	5700	5702	Data Center Best Practices	Grocery	2014	2054	0.35	0.06	0.05	0.10	21%	0.01	0.02	21%	0.00	0.00	0	0	48.87			0.05	0.01
VA	5700	5703	Data Center State of the Art practices	Grocery	2014	2054	0.33	0.06	0.02	0.12	26%	0.00	0.02	26%	0.00	0.00	0	0	25.35			0.02	0.00
VA	6000	6000	Base Water Heating	Grocery	2014	2054	13.04	2.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.04	2.10	0.00	0.00
VA	6000	6007	Heat Trap	Grocery	2014	2054	12.36	1.99	0.68	0.68	5%	0.11	0.11	5%	0.02	0.02	0	0	2.67			0.68	0.11
VA	6000	6002	High Efficiency Water Heater (electric)	Grocery	2014	2054	12.11	1.95	0.25	0.92	7%	0.04	0.15	7%	0.05	0.03	0	0	1.44			0.25	0.04
VA	6000	6006	Heat Recovery Unit	Grocery	2014	2054	5.82	0.94	6.30	7.22	55%	1.01	1.16	55%	0.06	0.06	0	0	1.10			6.30	1.01
VA	6000	6004	Tankless Water Heater	Grocery	2014	2054	5.38	0.87	0.44	7.66	59%	0.07	1.23	59%	0.16	0.06	1	0	0.49			0.00	0.00
VA	6000	6008	Solar Water Heater	Grocery	2014	2054	4.63	0.74	0.75	8.41	65%	0.12	1.35	65%	0.19	0.07	1	0	0.42			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	Grocery	2014	2054	4.46	0.72	0.17	8.58	66%	0.03	1.38	66%	0.22	0.08	1	0	0.33			0.00	0.00
VA	6000	6003	Hot Water Pipe Insulation	Grocery	2014	2054	4.37	0.70	0.09	8.67	66%	0.01	1.39	66%	0.23	0.08	1	0	0.32			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Grocery	2014	2054	11.46	1.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.46	1.82	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Grocery	2014	2054	9.75	1.69	1.71	1.71	15%	0.13	0.13	7%	0.02	0.02	0	0	2.15			1.71	0.13
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Grocery	2014	2054	8.82	1.61	0.92	2.63	23%	0.07	0.21	11%	0.04	0.03	1	0	1.16			0.92	0.07
VA	7100	7100	Base Non-Refrigerated Vending Machines	Grocery	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Grocery	2014	2054	0.01	0.00	0.01	0.01	43%	0.00	0.00	21%	0.40	0.40	5	5	0.13			0.00	0.00
VA	7200	7200	Base Oven	Grocery	2014	2054	12.90	1.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.90	1.79	0.00	0.00
VA	7300	7300	Base Fryer	Grocery	2014	2054	16.78	2.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.78	2.33	0.00	0.00
VA	7400	7400	Base Steamer	Grocery	2014	2054	23.43	3.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	23.43	3.26	0.00	0.00
VA	7400	7401	Efficient Steamer	Grocery	2014	2054	7.16	1.00	16.27	16.27	69%	2.26	2.26	69%	0.06	0.06	0	0	1.11			16.27	2.26
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Grocery	2014	2054	0.56	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.56	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	2014	2054	0.53	0.00	0.03	0.03	6%	0.00	0.00	0%	0.04	0.04	N/A	N/A	1.65			0.03	0.00
VA	8100	8100	Base Heating, Other Electric	Grocery	2014	2054	13.76	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.76	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Grocery	2014	2054	131.26	20.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	131.26	20.87	0.00	0.00
VA	9500	9501	Xmisc	Grocery	2014	2054	131.26	20.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Warehouse	2020	2054	448.71	79.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	448.71	79.75	0.00	0.00
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Warehouse	2020	2054	411.35	73.11	37.36	37.36	8%	6.64	6.64	8%	0.02	0.02	0	0	2.91			37.36	6.64
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Warehouse	2020	2054	404.59	72.51	6.77	44.12	10%	0.60	7.24	9%	0.03	0.02	0	0	1.70			6.77	0.60
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	2020	2054	353.11	63.36	51.48	95.60	21%	9.15	16.38	21%	0.04	0.03	0	0	1.37			51.48	9.15
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Warehouse	2020	2054	326.55	59.60	26.56	122.16	27%	3.77	20.15	25%	0.05	0.04	0	0	1.33			26.56	3.77
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Warehouse	2020	2054	319.89	59.30	6.66	128.82	29%	0.29	20.44	26%	0.09	0.04	2	0	0.65			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Warehouse	2020	2054	268.34	50.14	51.54	180.36	40%	9.16	29.60	37%	0.28	0.11	2	1	0.25			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Warehouse	2020	2054	245.44	46.07	22.91	203.27	45%	4.07	33.67	42%	0.24	0.12	1	1	0.30			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Warehouse	2020	2054	3.06	0.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.06	0.54	0.00	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Warehouse	2020	2054	2.74	0.49	0.32	0.32	10%	0.06	0.06	10%	0.03	0.03	0	0	2.25			0.32	0.06
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Warehouse	2020	2054	2.70	0.48	0.05	0.36	12%	0.00	0.06	11%	0.03	0.03	0	0	1.60			0.05	0.00
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Warehouse	2020	2054	2.49	0.45	0.20	0.56	18%	0.03	0.09	16%	0.05	0.04	0	0	1.44			0.20	0.03
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	2020	2054	2.18	0.40	0.32	0.88	29%	0.06	0.15	27%	0.06	0.05	0	0	0.98			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Warehouse	2020	2054	2.07	0.38	0.11	0.99	32%	0.02	0.16	30%	0.23	0.07	1	0	0.31			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Warehouse	2020	2054	1.90	0.35	0.18	1.16	38%	0.03	0.20	36%	0.29	0.10	2	1	0.24			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Warehouse	2020	2054	1.86	0.35	0.04	1.20	39%	0.00	0.20	36%	0.18	0.10	4	1	0.31			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Warehouse	2014	2054	0.46	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.46	0.08	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Warehouse	2014	2054	0.42	0.08	0.05	0.05	10%	0.00	0.00	5%	0.00	0.00	0	0	16.81			0.05	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Warehouse	2014	2054	0.39	0.07	0.03	0.08	17%	0.00	0.01	10%	0.03	0.01	0	0	2.30			0.03	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Warehouse	2014	2054	0.36	0.07	0.02	0.10	22%	0.00	0.01	12%	0.09	0.03	2	0	0.62			0.00	0.00
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Warehouse	2014	2054	0.33	0.07	0.04	0.14	30%	0.01	0.02	20%	0.11	0.05	1	0	0.55			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Warehouse	2014	2054	0.28	0.06	0.04	0.18	39%	0.01	0.02	29%	0.23	0.09	1	1	0.26			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Warehouse	2020	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Warehouse	2020	2054	13.47	2.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.47	2.39	0.00	0.00
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Warehouse	2020	2054	9.92	1.76	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.92	1.76	0.00	0.00
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Warehouse	2020	2054	18.72	3.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.72	3.33	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Warehouse	2020	2054	13.54	2.41	5.19	5.19	28%	0.92	0.92	28%	0.06	0.06	0	0	0.98			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Warehouse	2020	2054	23.92	4.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	23.92	4.25	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Warehouse	2020	2054	17.70	3.15	6.22	6.22	26%	1.11	1.11	26%	0.05	0.05	0	0	1.31			6.22	1.11
VA	1800	1800	BaseMetal Halide, 465W	Warehouse	2014	2054	270.51	48.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	270.51	48.08	0.00	0.00
VA	1800	1801	T5 (240W) (base metal halide)	Warehouse	2014	2054	179.05	31.82	91.46	91.46	34%	16.25	16.25	34%	0.01	0.01	0	0	7.34			91.46	16.25
VA	1800	1806	Occupancy Sensor, High Bay T5	Warehouse	2014	2054	173.36	31.57	5.70	97.16	36%	0.25	16.50	34%	0.03	0.01	1	0	1.90			5.70	0.25
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Warehouse	2014	2054	160.31	29.72	13.04	110.20	41%	1.85	18.35	38%	0.05	0.02	0	0	1.49			13.04	1.85
VA	1850	1850	Base CFL Exit Sign	Warehouse	2014	2054	1.60	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.60	0.28	0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	1850	1851	LED Exit Sign	Warehouse	2014	2054	0.50	0.09	1.10	1.10	69%	0.20	0.20	69%	0.05	0.05	0	0	1.15			1.10	0.20
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Warehouse	2014	2054	100.54	1.36	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	100.54	1.36	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Warehouse	2014	2054	96.70	1.19	3.84	3.84	4%	0.17	0.17	13%	0.05	0.05	1	1	1.58			3.84	0.17
VA	1900	1902	LED Outdoor Area Lighting	Warehouse	2014	2054	46.53	0.51	50.17	54.01	54%	0.68	0.85	63%	0.10	0.09	7	6	0.68			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Warehouse	2014	2054	32.84	0.34	13.69	67.70	67%	0.17	1.02	75%	0.62	0.20	51	13	0.10			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Warehouse	2014	2054	227.17	216.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	227.17	216.04	0.00	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	Warehouse	2014	2054	216.72	206.10	10.45	10.45	5%	9.94	9.94	5%	0.05	0.05	0	0	2.69			10.45	9.94
VA	2100	2107	Cool Roof - DX	Warehouse	2014	2054	200.59	190.77	16.12	26.58	12%	15.33	25.28	12%	0.12	0.09	0	0	0.92			0.00	0.00
VA	2100	2108	Optimize Controls - DX	Warehouse	2014	2054	197.61	189.96	2.98	29.56	13%	0.81	26.09	12%	0.15	0.10	1	0	0.39			0.00	0.00
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Warehouse	2014	2054	152.16	146.73	45.45	75.01	33%	43.22	69.31	32%	0.48	0.33	0	0	0.27			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Warehouse	2014	2054	143.11	138.12	9.05	84.06	37%	8.61	77.92	36%	3.07	0.62	3	1	0.05			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	Warehouse	2014	2054	136.95	132.27	6.16	90.22	40%	5.86	83.78	39%	2.74	0.77	3	1	0.04			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Warehouse	2014	2054	132.85	131.15	4.10	94.33	42%	1.12	84.89	39%	2.02	0.82	7	1	0.03			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Warehouse	2014	2054	132.58	130.90	0.26	94.59	42%	0.25	85.14	39%	5.62	0.83	6	1	0.02			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Warehouse	2014	2054	132.51	130.88	0.07	94.66	42%	0.02	85.16	39%	3.71	0.84	14	1	0.02			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Warehouse	2014	2054	122.99	116.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	122.99	116.97	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Warehouse	2014	2054	107.78	102.50	15.21	15.21	12%	14.47	14.47	12%	0.05	0.05	0	0	2.78			15.21	14.47
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Warehouse	2014	2054	5.83	5.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.83	5.54	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Warehouse	2014	2054	128.07	39.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	128.07	39.55	0.00	0.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Warehouse	2014	2054	125.86	38.87	2.21	2.21	2%	0.68	0.68	2%	0.05	0.05	0	0	2.03			2.21	0.68
VA	3000	3002	Variable Speed Drive Control, 5 HP	Warehouse	2014	2054	88.87	35.95	36.99	39.20	31%	2.92	3.60	9%	0.04	0.04	0	0	1.85			36.99	2.92
VA	3000	3003	Demand Controlled Ventilation	Warehouse	2014	2054	87.73	35.31	1.14	40.34	31%	0.65	4.25	11%	1.85	0.09	3	1	0.06			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Warehouse	2014	2054	42.48	13.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	42.48	13.12	0.00	0.00
VA	3200	3202	Variable Speed Drive Control, 40 HP	Warehouse	2014	2054	29.99	12.13	12.48	12.48	29%	0.98	0.98	8%	0.02	0.02	0	0	3.63			12.48	0.98
VA	3200	3203	Air Handler Optimization, 40 HP	Warehouse	2014	2054	27.06	11.90	2.94	15.42	36%	0.23	1.22	9%	0.06	0.03	1	0	0.88			0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	Warehouse	2014	2054	26.71	11.71	0.35	15.77	37%	0.20	1.41	11%	2.02	0.07	4	1	0.05			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Warehouse	2014	2054	306.50	58.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	306.50	58.07	0.00	0.00
VA	4000	4018	Oversized Air Cooled Condenser	Warehouse	2014	2054	293.60	55.62	12.90	12.90	4%	2.44	2.44	4%	0.03	0.03	0	0	2.42			12.90	2.44
VA	4000	4010	Refrigeration Commissioning	Warehouse	2014	2054	292.09	55.34	1.51	14.41	5%	0.29	2.73	5%	0.06	0.03	0	0	0.87			0.00	0.00
VA	4000	4006	Electronically commutated evaporator fan motor	Warehouse	2014	2054	274.39	51.98	17.70	32.11	10%	3.35	6.08	10%	0.11	0.07	1	0	0.71			0.00	0.00
VA	4000	4005	Evaporator fan controller for MT walk-ins	Warehouse	2014	2054	274.34	51.98	0.05	32.16	10%	0.01	6.09	10%	0.19	0.07	2	0	0.36			0.00	0.00
VA	4000	4002	Strip curtains for walk-ins (built-up)	Warehouse	2014	2054	273.17	51.76	1.17	33.33	11%	0.22	6.31	11%	0.18	0.08	1	0	0.31			0.00	0.00
VA	4000	4001	High-efficiency fan motors	Warehouse	2014	2054	264.80	50.17	8.37	41.70	14%	1.59	7.90	14%	0.45	0.15	2	1	0.18			0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Warehouse	2014	2054	81.91	15.52	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	81.91	15.52	0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Warehouse	2014	2054	81.78	15.49	0.13	0.13	0%	0.03	0.03	0%	0.15	0.15	1	1	0.36			0.00	0.00
VA	5000	5000	Base Desktop PC	Warehouse	2014	2054	19.15	3.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.15	3.19	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Warehouse	2014	2054	10.66	2.46	8.49	8.49	44%	0.73	0.73	23%	0.01	0.01	0	0	3.79			8.49	0.73
VA	5000	5002	Energy Star or Better PC	Warehouse	2014	2054	7.16	1.88	3.49	11.98	63%	0.58	1.31	41%	0.03	0.02	0	0	1.94			3.49	0.58
VA	5100	5100	Base Laptop PC	Warehouse	2014	2054	1.36	0.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.36	0.23	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Warehouse	2014	2054	1.10	0.18	0.26	0.26	19%	0.04	0.04	19%	0.01	0.01	0	0	5.37			0.26	0.04
VA	5100	5101	Laptop Network Power Management Enabling	Warehouse	2014	2054	1.08	0.18	0.02	0.28	21%	0.00	0.05	21%	1.24	0.11	7	1	0.04			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Warehouse	2014	2054	3.95	0.66	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.95	0.66	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Warehouse	2014	2054	1.73	0.29	2.22	2.22	56%	0.37	0.37	56%	0.00	0.00	0	0	42.66			2.22	0.37
VA	5200	5202	Monitor Power Management Enabling - CRT	Warehouse	2014	2054	1.18	0.24	0.55	2.77	70%	0.05	0.42	63%	0.02	0.01	0	0	2.33			0.55	0.05
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Warehouse	2014	2054	1.08	0.23	0.09	2.86	73%	0.02	0.43	66%	0.23	0.01	1	0	0.24			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Warehouse	2014	2054	3.15	0.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.15	0.53	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Warehouse	2014	2054	2.51	0.42	0.64	0.64	20%	0.11	0.11	20%	0.01	0.01	0	0	6.08			0.64	0.11
VA	5300	5302	Monitor Power Management Enabling - LCD	Warehouse	2014	2054	2.48	0.42	0.03	0.67	21%	0.00	0.11	21%	0.08	0.01	1	0	0.61			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Warehouse	2014	2054	2.30	0.41	0.18	0.85	27%	0.01	0.12	22%	0.24	0.06	5	0	0.20			0.00	0.00
VA	5400	5400	Base Copier	Warehouse	2014	2054	4.86	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.86	0.81	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Warehouse	2014	2054	4.28	0.71	0.58	0.58	12%	0.10	0.10	12%	0.00	0.00	0	0	32.89			0.58	0.10
VA	5400	5402	Copier Power Management Enabling	Warehouse	2014	2054	4.13	0.70	0.15	0.73	15%	0.01	0.11	14%	0.09	0.02	1	0	0.58			0.00	0.00
VA	5500	5500	Base Multifunction	Warehouse	2014	2054	1.09	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.09	0.18	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Warehouse	2014	2054	0.82	0.14	0.27	0.27	25%	0.05	0.05	25%	0.01	0.01	0	0	9.11			0.27	0.05
VA	5500	5501	Multifunction Power Management Enabling	Warehouse	2014	2054	0.74	0.13	0.08	0.35	32%	0.01	0.05	29%	0.24	0.06	3	0	0.22			0.00	0.00
VA	5600	5600	Base Printer	Warehouse	2014	2054	4.88	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.88	0.81	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Warehouse	2014	2054	3.18	0.53	1.70	1.70	35%	0.28	0.28	35%	0.00	0.00	0	0	41.89			1.70	0.28
VA	5600	5601	Printer Power Management Enabling	Warehouse	2014	2054	2.87	0.50	0.31	2.01	41%	0.03	0.31	38%	0.05	0.01	1	0	1.01			0.31	0.03
VA	5700	5700	Base Data Center/Server Room	Warehouse	2014	2054	57.03	9.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	57.03	9.51	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Warehouse	2014	2054	51.32	8.56	5.70	5.70	10%	0.95	0.95	10%	0.00	0.00	0	0	119.82			5.70	0.95
VA	5700	5702	Data Center Best Practices	Warehouse	2014	2054	44.79	7.47	6.53	12.23	21%	1.09	2.04	21%	0.00	0.00	0	0	48.78			6.53	1.09
VA	5700	5703	Data Center State of the Art practices	Warehouse	2014	2054	42.29	7.05	2.51	14.74	26%	0.42	2.46	26%	0.00	0.00	0	0	25.30			2.51	0.42
VA	6000	6000	Base Water Heating	Warehouse	2014	2054	21.67	3.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	21.67	3.40	0.00	0.00
VA	6000	6006	Heat Recovery Unit	Warehouse	2014	2054	20.26	3.18	1.41	1.41	7%	0.22	0.22	7%	0.25	0.25	2	2	0.26			0.00	0.00
VA	6000	6007	Heat Trap	Warehouse	2014	2054	19.21	3.01	1.05	2.46	11%	0.16	0.39	11%	0.45	0.33	3	2	0.15			0.00	0.00
VA	6000	6002	High Efficiency Water Heater (electric)	Warehouse	2014	2054	18.83	2.95	0.38	2.84	13%	0.06	0.45	13%	0.93	0.42	6	3	0.08			0.00	0.00
VA	6000	6004	Tankless Water Heater	Warehouse	2014	2054	17.42	2.73	1.41	4.25	20%	0.22	0.67	20%	1.42	0.75	9	5	0.06			0.00	0.00
VA	6000	6008	Solar Water Heater	Warehouse	2014	2054	11.44	1.80	5.97	10.23	47%	0.94	1.60	47%	1.66	1.28	11	8	0.05			0.00	0.00
VA	6000	6003	Hot Water Pipe Insulation	Warehouse	2014	2054	11.40	1.79	0.05	10.27	47%	0.01	1.61	47%	2.54	1.28	16	8	0.03			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	Warehouse	2014	2054	11.18	1.75	0.22	10.50	48%	0.03	1.65	48%	2.84	1.32	18	8	0.03			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Warehouse	2014	2054	14.96	2.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.96	2.82	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Warehouse	2014	2054	13.29	2.66	1.67	1.67	11%	0.16	0.16	6%	0.02	0.02	0	0	2.48			1.67	0.16

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Warehouse	2014	2054	12.40	2.57	0.89	2.57	17%	0.09	0.25	9%	0.04	0.03	0	0	1.33			0.89	0.09
VA	7100	7100	Base Non-Refrigerated Vending Machines	Warehouse	2014	2054	0.62	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.62	0.12	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Warehouse	2014	2054	0.43	0.10	0.20	0.20	32%	0.02	0.02	16%	0.36	0.36	4	4	0.15			0.00	0.00
VA	7200	7200	Base Oven	Warehouse	2014	2054	4.94	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.94	0.81	0.00	0.00
VA	7300	7300	Base Fryer	Warehouse	2014	2054	10.26	1.69	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.26	1.69	0.00	0.00
VA	7400	7400	Base Steamer	Warehouse	2014	2054	4.31	0.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.31	0.71	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Warehouse	2014	2054	2.14	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.14	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Warehouse	2014	2054	2.02	0.00	0.12	0.12	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	1.90			0.12	0.00
VA	8100	8100	Base Heating, Other Electric	Warehouse	2014	2054	16.88	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.88	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Warehouse	2014	2054	349.99	65.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	349.99	65.97	0.00	0.00
VA	9500	9501	Xmisc	Warehouse	2014	2054	349.99	65.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	School	2020	2054	286.28	38.69	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	286.28	38.69	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	School	2020	2054	283.96	38.53	2.33	2.33	1%	0.16	0.16	0%	0.02	0.02	0	0	2.90			2.33	0.16
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	School	2020	2054	254.79	34.59	29.17	31.50	11%	3.94	4.10	11%	0.02	0.02	0	0	2.84			29.17	3.94
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	School	2020	2054	235.71	32.52	19.08	50.57	18%	2.07	6.17	16%	0.03	0.03	0	0	2.31			19.08	2.07
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	School	2020	2054	205.72	28.47	29.99	80.56	28%	4.05	10.22	26%	0.05	0.04	0	0	1.26			29.99	4.05
VA	1030	1034	ROB 4L4' LED Tube, 2020	School	2020	2054	172.57	23.99	33.15	113.71	40%	4.48	14.70	38%	0.35	0.13	3	1	0.23			0.00	0.00
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	School	2020	2054	162.46	23.65	10.12	123.83	43%	0.34	15.04	39%	0.18	0.13	5	1	0.31			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	School	2020	2054	148.59	21.77	13.87	137.70	48%	1.87	16.92	44%	0.31	0.15	2	1	0.26			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	School	2020	2054	17.97	2.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.97	2.43	0.00	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	School	2020	2054	16.14	2.18	1.84	1.84	10%	0.25	0.25	10%	0.03	0.03	0	0	2.27			1.84	0.25
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	School	2020	2054	15.98	2.17	0.15	1.99	11%	0.01	0.26	11%	0.03	0.03	0	0	1.76			0.15	0.01
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	School	2020	2054	14.79	2.04	1.20	3.19	18%	0.13	0.39	16%	0.04	0.04	0	0	1.57			1.20	0.13
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	School	2020	2054	12.91	1.79	1.88	5.07	28%	0.25	0.64	26%	0.07	0.05	1	0	1.00			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	School	2020	2054	12.28	1.70	0.62	5.69	32%	0.08	0.73	30%	0.28	0.07	2	1	0.28			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	School	2020	2054	11.23	1.56	1.05	6.74	37%	0.14	0.87	36%	0.36	0.12	3	1	0.22			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	School	2020	2054	10.58	1.54	0.66	7.40	41%	0.02	0.89	37%	0.30	0.13	9	1	0.18			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	School	2014	2054	1.39	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.39	0.19	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	School	2014	2054	1.33	0.18	0.06	0.06	5%	0.00	0.00	2%	0.02	0.02	0	0	2.39			0.06	0.00
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	School	2014	2054	1.21	0.17	0.11	0.18	13%	0.02	0.02	10%	0.10	0.07	1	1	0.69			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	School	2014	2054	1.06	0.15	0.15	0.33	24%	0.02	0.04	22%	0.21	0.14	2	1	0.33			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	School	2014	2054	0.89	0.14	0.17	0.50	36%	0.01	0.05	25%	0.18	0.15	5	2	0.31			0.00	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	School	2014	2054	0.82	0.13	0.07	0.57	41%	0.01	0.05	29%	0.33	0.17	3	2	0.21			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	School	2020	2054	1.04	0.14	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.04	0.14	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	School	2020	2054	0.21	0.03	0.84	0.84	80%	0.11	0.11	80%	0.01	0.01	0	0	10.94			0.84	0.11
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	School	2020	2054	0.38	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.38	0.05	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	School	2020	2054	0.08	0.01	0.29	0.29	78%	0.04	0.04	78%	0.01	0.01	0	0	9.21			0.29	0.04
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	School	2020	2054	0.28	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.04	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	School	2020	2054	0.08	0.01	0.20	0.20	71%	0.03	0.03	71%	0.01	0.01	0	0	6.77			0.20	0.03
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	School	2020	2054	20.83	2.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	20.83	2.82	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	School	2020	2054	15.06	2.04	5.77	5.77	28%	0.78	0.78	28%	0.07	0.07	1	1	0.96			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	School	2020	2054	26.62	3.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	26.62	3.60	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	School	2020	2054	19.70	2.66	6.92	6.92	26%	0.94	0.94	26%	0.05	0.05	0	0	1.27			6.92	0.94
VA	1800	1800	BaseMetal Halide, 465W	School	2014	2054	41.12	5.56	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	41.12	5.56	0.00	0.00
VA	1800	1801	T5 (240W) (base metal halide)	School	2014	2054	27.22	3.68	13.90	13.90	34%	1.88	1.88	34%	0.02	0.02	0	0	4.33			13.90	1.88
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	School	2014	2054	25.18	3.46	2.04	15.94	39%	0.22	2.10	38%	0.03	0.02	0	0	2.75			2.04	0.22
VA	1800	1806	Occupancy Sensor, High Bay T5	School	2014	2054	24.39	3.43	0.79	16.73	41%	0.03	2.13	38%	0.05	0.02	2	0	1.05			0.79	0.03
VA	1850	1850	Base CFL Exit Sign	School	2014	2054	2.22	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.22	0.30	0.00	0.00
VA	1850	1851	LED Exit Sign	School	2014	2054	1.00	0.14	1.22	1.22	55%	0.17	0.17	55%	0.04	0.04	0	0	1.62			1.22	0.17
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	School	2014	2054	67.16	2.68	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	67.16	2.68	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	School	2014	2054	60.40	1.82	6.75	6.75	10%	0.86	0.86	32%	0.05	0.05	0	0	1.70			6.75	0.86
VA	1900	1902	LED Outdoor Area Lighting	School	2014	2054	29.07	0.57	31.34	38.09	57%	1.25	2.10	79%	0.10	0.09	3	2	0.65			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	School	2014	2054	20.53	0.27	8.53	46.62	69%	0.31	2.41	90%	0.66	0.20	18	4	0.10			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	School	2014	2054	93.36	47.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	93.36	47.93	0.00	0.00
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	School	2014	2054	85.39	43.84	7.97	7.97	9%	4.09	4.09	9%	0.07	0.07	0	0	1.63			7.97	4.09
VA	2000	2005	Chiller Tune Up/Diagnostics	School	2014	2054	85.17	43.78	0.22	8.19	9%	0.06	4.15	9%	0.05	0.07	0	0	1.32			0.22	0.06
VA	2000	2013	High Efficiency Chiller Motors	School	2014	2054	85.09	43.74	0.09	8.27	9%	0.04	4.20	9%	0.10	0.07	0	0	1.05			0.09	0.04
VA	2000	2006	VSD for Chiller Pumps and Towers	School	2014	2054	84.94	43.70	0.15	8.42	9%	0.04	4.24	9%	0.08	0.07	0	0	0.99			0.00	0.00
VA	2000	2003	EMS - Chiller	School	2014	2054	80.35	43.04	4.59	13.01	14%	0.66	4.89	10%	0.13	0.09	1	0	0.55			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	School	2014	2054	78.80	42.25	1.55	14.56	16%	0.79	5.69	12%	0.21	0.10	0	0	0.42			0.00	0.00
VA	2000	2002	Window Film (Standard) - Chiller	School	2014	2054	78.40	42.04	0.40	14.96	16%	0.20	5.89	12%	0.24	0.10	0	0	0.36			0.00	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	School	2014	2054	65.41	35.37	12.99	27.95	30%	6.67	12.56	26%	0.34	0.21	1	0	0.31			0.00	0.00
VA	2000	2008	New Economizer - Chiller	School	2014	2054	58.45	34.38	6.96	34.91	37%	0.99	13.56	28%	0.39	0.25	3	1	0.16			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	School	2014	2054	58.10	34.20	0.35	35.26	38%	0.18	13.74	29%	5.57	0.30	11	1	0.02			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	School	2014	2054	223.92	114.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	223.92	114.97	0.00	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	School	2014	2054	223.78	114.90	0.14	0.14	0%	0.07	0.07	0%	0.03	0.03	0	0	4.21			0.14	0.07
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	School	2014	2054	172.31	88.47	51.47	51.61	23%	26.43	26.50	23%	0.06	0.06	0	0	1.72			51.47	26.43
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	School	2014	2054	172.07	88.43	0.24	51.85	23%	0.03	26.53	23%	0.17	0.06	1	0	0.36			0.00	0.00
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	School	2014	2054	171.80	88.36	0.27	52.11	23%	0.07	26.60	23%	0.21	0.06	1	0	0.34			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	School	2014	2054	170.22	87.55	1.58	53.69	24%	0.81	27.41	24%	0.26	0.07	1	0	0.33			0.00	0.00
VA	2100	2108	Optimize Controls - DX	School	2014	2054	167.62	87.18	2.60	56.30	25%	0.37	27.79	24%	0.18	0.07	1	0	0.30			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	School	2014	2054	158.73	82.61	8.89	65.19	29%	4.56	32.35	28%	0.38	0.11	1	0	0.28			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	School	2014	2054	157.35	82.42	1.38	66.57	30%	0.20	32.55	28%	0.23	0.12	2	0	0.25			0.00	0.00
VA	2100	2107	Cool Roof - DX	School	2014	2054	154.57	80.99	2.78	69.35	31%	1.43	33.97	30%	0.43	0.13	1	0	0.20			0.00	0.00

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	2100	2111	Economizer Repair - DX	School	2014	2054	151.53	78.79	3.04	72.39	32%	2.20	36.18	31%	0.94	0.16	1	0	0.09			0.00	0.00
VA	2100	2109	Economizer - DX	School	2014	2054	150.79	78.68	0.74	73.13	33%	0.11	36.28	32%	1.40	0.17	10	0	0.04			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	School	2014	2054	148.99	77.76	1.80	74.93	33%	0.92	37.20	32%	5.22	0.30	10	1	0.02			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	School	2014	2054	176.18	90.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	176.18	90.46	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	2014	2054	154.39	79.27	21.79	21.79	12%	11.19	11.19	12%	0.05	0.05	0	0	2.03			21.79	11.19
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	School	2014	2054	160.46	82.38	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	160.46	82.38	0.00	0.00
VA	2300	2301	HE PTAC, EER=9.6, 1 ton	School	2014	2054	138.73	71.23	21.73	21.73	14%	11.16	11.16	14%	0.12	0.12	0	0	0.81			0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	School	2014	2054	52.81	10.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	52.81	10.30	0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	School	2014	2054	39.02	9.61	13.79	13.79	26%	0.69	0.69	7%	0.04	0.04	1	1	1.54			13.79	0.69
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	School	2014	2054	38.34	9.48	0.67	14.47	27%	0.13	0.82	8%	0.08	0.04	0	1	1.10			0.67	0.13
VA	3000	3003	Demand Controlled Ventilation	School	2014	2054	32.61	7.48	5.73	20.20	38%	2.00	2.82	27%	2.13	0.64	6	5	0.04			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	School	2014	2054	141.36	27.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	141.36	27.58	0.00	0.00
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	School	2014	2054	121.57	24.08	19.79	19.79	14%	3.51	3.51	13%	0.05	0.05	0	0	1.45			19.79	3.51
VA	3100	3102	Variable Speed Drive Control, 15 HP	School	2014	2054	89.82	22.48	31.75	51.55	36%	1.59	5.10	18%	0.06	0.06	1	1	1.09			31.75	1.59
VA	3100	3103	Air Handler Optimization, 15 HP	School	2014	2054	81.08	22.05	8.74	60.28	43%	0.44	5.54	20%	0.08	0.06	2	1	0.72			0.00	0.00
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	School	2014	2054	80.29	21.89	0.78	61.07	43%	0.15	5.69	21%	0.20	0.06	1	1	0.43			0.00	0.00
VA	3100	3105	Energy Recovery Ventilation (ERV)	School	2014	2054	76.08	20.43	4.21	65.28	46%	1.47	7.16	26%	0.71	0.10	2	1	0.14			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	School	2014	2054	64.71	16.46	11.38	76.65	54%	3.96	11.12	40%	2.88	0.51	8	4	0.03			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	School	2014	2054	58.92	11.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	58.92	11.50	0.00	0.00
VA	3200	3202	Variable Speed Drive Control, 40 HP	School	2014	2054	43.53	10.73	15.39	15.39	26%	0.77	0.77	7%	0.01	0.01	0	0	8.91			15.39	0.77
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	School	2014	2054	43.44	10.71	0.09	15.48	26%	0.02	0.79	7%	0.03	0.01	0	0	2.43			0.09	0.02
VA	3200	3203	Air Handler Optimization, 40 HP	School	2014	2054	39.21	10.50	4.23	19.71	33%	0.21	1.00	9%	0.07	0.02	1	0	0.83			0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	School	2014	2054	33.35	8.45	5.86	25.58	43%	2.04	3.04	26%	2.33	0.55	7	5	0.04			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	School	2014	2054	66.40	9.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	66.40	9.18	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	School	2014	2054	64.09	8.87	2.30	2.30	3%	0.32	0.32	3%	0.00	0.00	0	0	22.96			2.30	0.32
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	School	2014	2054	63.22	8.74	0.88	3.18	5%	0.12	0.44	5%	0.00	0.00	0	0	14.04			0.88	0.12
VA	4100	4109	Energy-Star Freezer, glass door	School	2014	2054	62.88	8.70	0.34	3.52	5%	0.05	0.49	5%	0.01	0.00	0	0	9.18			0.34	0.05
VA	4100	4106	Energy-Star Refrigerator, solid door	School	2014	2054	62.07	8.58	0.81	4.33	7%	0.11	0.60	7%	0.01	0.00	0	0	5.57			0.81	0.11
VA	4100	4107	Energy-Star Freezer, solid door	School	2014	2054	61.93	8.57	0.14	4.47	7%	0.02	0.62	7%	0.02	0.01	0	0	3.66			0.14	0.02
VA	4100	4108	Energy-Star Refrigerator, glass door	School	2014	2054	61.68	8.53	0.25	4.72	7%	0.03	0.65	7%	0.02	0.01	0	0	3.05			0.25	0.03
VA	4100	4110	Energy Star Ice Machines	School	2014	2054	60.41	8.36	1.27	5.99	9%	0.18	0.83	9%	0.03	0.01	0	0	2.02			1.27	0.18
VA	4100	4112	Reach-in unit occupancy sensors	School	2014	2054	60.40	8.35	0.01	6.00	9%	0.00	0.83	9%	0.29	0.01	2	0	0.22			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	School	2014	2054	60.34	8.35	0.05	6.06	9%	0.01	0.84	9%	0.33	0.01	2	0	0.18			0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	School	2014	2054	60.29	8.34	0.05	6.11	9%	0.01	0.84	9%	1.05	0.02	8	0	0.05			0.00	0.00
VA	5000	5000	Base Desktop PC	School	2014	2054	10.42	0.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.42	0.90	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	School	2014	2054	5.73	0.69	4.69	4.69	45%	0.21	0.21	23%	0.01	0.01	0	0	3.72			4.69	0.21
VA	5000	5002	Energy Star or Better PC	School	2014	2054	4.06	0.55	1.66	6.36	61%	0.14	0.35	39%	0.03	0.02	0	0	1.90			1.66	0.14
VA	5100	5100	Base Laptop PC	School	2014	2054	1.16	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.16	0.10	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	School	2014	2054	0.94	0.08	0.22	0.22	19%	0.02	0.02	19%	0.01	0.01	0	0	5.06			0.22	0.02
VA	5100	5101	Laptop Network Power Management Enabling	School	2014	2054	0.92	0.08	0.02	0.24	21%	0.00	0.02	21%	1.24	0.11	14	1	0.04			0.00	0.00
VA	5200	5200	Base Monitor, CRT	School	2014	2054	4.23	0.36	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.23	0.36	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	School	2014	2054	1.85	0.16	2.37	2.37	56%	0.20	0.20	56%	0.00	0.00	0	0	40.23			2.37	0.20
VA	5200	5202	Monitor Power Management Enabling - CRT	School	2014	2054	1.34	0.14	0.51	2.89	68%	0.02	0.23	62%	0.02	0.00	0	0	2.55			0.51	0.02
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	School	2014	2054	1.23	0.13	0.11	2.99	71%	0.01	0.24	65%	0.22	0.01	3	0	0.24			0.00	0.00
VA	5300	5300	Base Monitor, LCD	School	2014	2054	2.18	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.18	0.19	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	School	2014	2054	1.80	0.15	0.39	0.39	18%	0.03	0.03	18%	0.01	0.01	0	0	5.92			0.39	0.03
VA	5300	5302	Monitor Power Management Enabling - LCD	School	2014	2054	1.75	0.15	0.04	0.43	20%	0.00	0.04	19%	0.08	0.02	2	0	0.61			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	School	2014	2054	1.62	0.15	0.13	0.56	26%	0.00	0.04	20%	0.23	0.07	10	1	0.20			0.00	0.00
VA	5400	5400	Base Copier	School	2014	2054	2.78	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.78	0.24	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	School	2014	2054	2.62	0.23	0.16	0.16	6%	0.01	0.01	6%	0.00	0.00	0	0	33.32			0.16	0.01
VA	5400	5402	Copier Power Management Enabling	School	2014	2054	2.52	0.22	0.11	0.27	10%	0.00	0.02	8%	0.09	0.04	2	1	0.60			0.00	0.00
VA	5500	5500	Base Multifunction	School	2014	2054	0.34	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.34	0.03	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	School	2014	2054	0.26	0.02	0.09	0.09	25%	0.01	0.01	25%	0.01	0.01	0	0	8.62			0.09	0.01
VA	5500	5501	Multifunction Power Management Enabling	School	2014	2054	0.21	0.02	0.05	0.13	39%	0.00	0.01	32%	0.27	0.10	6	1	0.19			0.00	0.00
VA	5600	5600	Base Printer	School	2014	2054	2.91	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.91	0.25	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	School	2014	2054	1.90	0.16	1.01	1.01	35%	0.09	0.09	35%	0.00	0.00	0	0	39.62			1.01	0.09
VA	5600	5601	Printer Power Management Enabling	School	2014	2054	1.55	0.15	0.35	1.36	47%	0.02	0.10	41%	0.06	0.02	1	0	0.87			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	School	2014	2054	67.83	5.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	67.83	5.83	0.00	0.00
VA	5700	5701	Data Center Improved Operations	School	2014	2054	61.05	5.24	6.78	6.78	10%	0.58	0.58	10%	0.00	0.00	0	0	111.93			6.78	0.58
VA	5700	5702	Data Center Best Practices	School	2014	2054	53.28	4.58	7.77	14.55	21%	0.67	1.25	21%	0.00	0.00	0	0	45.57			7.77	0.67
VA	5700	5703	Data Center State of the Art practices	School	2014	2054	50.30	4.32	2.98	17.53	26%	0.26	1.51	26%	0.00	0.00	0	0	23.63			2.98	0.26
VA	6000	6000	Base Water Heating	School	2014	2054	23.82	1.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	23.82	1.85	0.00	0.00
VA	6000	6007	Heat Trap	School	2014	2054	22.58	1.76	1.23	1.23	5%	0.10	0.10	5%	0.04	0.04	1	1	1.45			1.23	0.10
VA	6000	6002	High Efficiency Water Heater (electric)	School	2014	2054	22.14	1.72	0.44	1.67	7%	0.03	0.13	7%	0.09	0.06	1	1	0.77			0.00	0.00
VA	6000	6006	Heat Recovery Unit	School	2014	2054	19.99	1.55	2.16	3.83	16%	0.17	0.30	16%	0.09	0.07	1	1	0.71			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	School	2014	2054	19.24	1.50	0.75	4.58	19%	0.06	0.36	19%	0.12	0.08	1	1	0.59			0.00	0.00
VA	6000	6004	Tankless Water Heater	School	2014	2054	17.79	1.38	1.44	6.02	25%	0.11	0.47	25%	0.16	0.10	2	1	0.47			0.00	0.00
VA	6000	6008	Solar Water Heater	School	2014	2054	16.55	1.29	1.25	7.27	31%	0.10	0.57	31%	0.18	0.11	2	1	0.41			0.00	0.00
VA	6000	6003	Hot Water Pipe Insulation	School	2014	2054	16.38	1.27	0.17	7.43	31%	0.01	0.58	31%	0.20	0.11	3	1	0.34			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	School	2014	2054	6.12	0.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.12	0.53	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	School	2014	2054	5.19	0.49	0.93	0.93	15%	0.04	0.04	8%	0.03	0.03	1	1	2.01			0.93	0.04
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	School	2014	2054	4.69	0.47	0.51	1.43	23%	0.02	0.06	12%	0.05	0.03	1	1	1.10			0.51	0.02
VA	7100	7100	Base Non-Refrigerated Vending Machines	School	2014	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.01	0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	7100	7101	Vending Misers (Non-Refrigerated)	School	2014	2054	0.05	0.01	0.04	0.04	43%	0.00	0.00	22%	0.43	0.43	10	10	0.12			0.00	0.00
VA	7200	7200	Base Oven	School	2014	2054	6.68	0.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.68	0.49	0.00	0.00
VA	7200	7201	Convection Oven	School	2014	2054	5.15	0.38	1.54	1.54	23%	0.11	0.11	23%	0.13	0.13	2	2	0.49			0.00	0.00
VA	7300	7300	Base Fryer	School	2014	2054	1.19	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.19	0.09	0.00	0.00
VA	7400	7400	Base Steamer	School	2014	2054	0.32	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.02	0.00	0.00
VA	7400	7401	Efficient Steamer	School	2014	2054	0.12	0.01	0.21	0.21	63%	0.02	0.02	63%	0.05	0.05	1	1	1.29			0.21	0.02
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	School	2014	2054	4.30	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.30	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	2014	2054	4.06	0.00	0.24	0.24	6%	0.00	0.00	0%	0.08	0.08	N/A	N/A	0.83			0.00	0.00
VA	8100	8100	Base Heating, Other Electric	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	School	2014	2054	93.87	8.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	93.87	8.18	0.00	0.00
VA	9500	9501	Xmisc	School	2014	2054	93.87	8.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Health	2020	2054	152.78	23.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	152.78	23.25	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Health	2020	2054	152.55	23.23	0.23	0.23	0%	0.02	0.02	0%	0.02	0.02	0	0	2.65			0.23	0.02
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Health	2020	2054	140.86	21.84	11.70	11.92	8%	1.39	1.41	6%	0.03	0.03	0	0	2.32			11.70	1.39
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Health	2020	2054	126.21	19.61	14.65	26.57	17%	2.23	3.64	16%	0.03	0.03	0	0	1.78			14.65	2.23
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Health	2020	2054	110.15	17.17	16.06	42.63	28%	2.44	6.08	26%	0.07	0.05	0	0	0.85			0.00	0.00
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Health	2020	2054	101.99	16.88	8.16	50.79	33%	0.29	6.37	27%	0.12	0.06	3	0	0.45			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Health	2020	2054	85.56	14.38	16.43	67.22	44%	2.50	8.87	38%	0.43	0.15	3	1	0.16			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Health	2020	2054	78.25	13.27	7.30	74.52	49%	1.11	9.98	43%	0.36	0.17	2	1	0.19			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Health	2020	2054	18.41	2.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.41	2.80	0.00	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Health	2020	2054	16.50	2.51	1.92	1.92	10%	0.29	0.29	10%	0.04	0.04	0	0	1.52			1.92	0.29
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Health	2020	2054	16.48	2.51	0.02	1.94	11%	0.00	0.29	10%	0.05	0.04	1	0	1.13			0.02	0.00
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Health	2020	2054	15.21	2.36	1.26	3.20	17%	0.15	0.44	16%	0.07	0.05	1	0	0.99			0.00	0.00
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Health	2020	2054	13.28	2.06	1.94	5.14	28%	0.29	0.74	26%	0.09	0.07	1	0	0.67			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Health	2020	2054	12.63	1.97	0.64	5.78	31%	0.10	0.84	30%	0.33	0.09	2	1	0.21			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Health	2020	2054	11.56	1.80	1.08	6.86	37%	0.16	1.00	36%	0.41	0.14	3	1	0.17			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Health	2020	2054	10.70	1.77	0.86	7.71	42%	0.03	1.03	37%	0.25	0.16	7	1	0.22			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Health	2014	2054	4.95	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.95	0.75	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Health	2014	2054	4.92	0.75	0.03	0.03	1%	0.00	0.00	0%	0.01	0.01	0	0	7.14			0.03	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Health	2014	2054	4.54	0.71	0.38	0.40	8%	0.04	0.05	6%	0.08	0.08	1	1	0.87			0.00	0.00
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Health	2014	2054	4.07	0.63	0.47	0.88	18%	0.07	0.12	16%	0.14	0.11	1	1	0.44			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Health	2014	2054	3.28	0.61	0.79	1.67	34%	0.03	0.15	19%	0.15	0.13	4	1	0.38			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Health	2014	2054	2.86	0.54	0.42	2.08	42%	0.06	0.21	28%	0.35	0.17	2	2	0.17			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Health	2020	2054	8.93	1.36	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.93	1.36	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Health	2020	2054	1.60	0.24	7.33	7.33	82%	1.12	1.12	82%	0.01	0.01	0	0	6.98			7.33	1.12
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Health	2020	2054	3.22	0.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.22	0.49	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Health	2020	2054	0.63	0.10	2.59	2.59	81%	0.39	0.39	81%	0.01	0.01	0	0	5.89			2.59	0.39
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Health	2020	2054	2.37	0.36	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.37	0.36	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Health	2020	2054	0.63	0.10	1.74	1.74	73%	0.26	0.26	73%	0.01	0.01	0	0	4.37			1.74	0.26
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Health	2020	2054	3.00	0.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.00	0.46	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Health	2020	2054	2.17	0.33	0.83	0.83	28%	0.13	0.13	28%	0.09	0.09	1	1	0.68			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Health	2020	2054	3.83	0.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.83	0.58	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Health	2020	2054	2.83	0.43	1.00	1.00	26%	0.15	0.15	26%	0.07	0.07	0	0	0.90			0.00	0.00
VA	1800	1800	BaseMetal Halide, 465W	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1850	1850	Base CFL Exit Sign	Health	2014	2054	4.72	0.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.72	0.72	0.00	0.00
VA	1850	1851	LED Exit Sign	Health	2014	2054	4.17	0.63	0.55	0.55	12%	0.08	0.08	12%	0.03	0.03	0	0	2.21			0.55	0.08
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Health	2014	2054	12.58	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.58	0.12	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Health	2014	2054	11.58	0.09	1.00	1.00	8%	0.03	0.03	27%	0.07	0.07	2	2	1.03			1.00	0.03
VA	1900	1902	LED Outdoor Area Lighting	Health	2014	2054	5.57	0.03	6.01	7.01	56%	0.06	0.09	74%	0.14	0.13	15	11	0.45			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Health	2014	2054	3.93	0.02	1.64	8.65	69%	0.01	0.10	86%	0.92	0.28	109	24	0.07			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Health	2014	2054	66.67	36.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	66.67	36.64	0.00	0.00
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Health	2014	2054	60.98	33.51	5.69	5.69	9%	3.13	3.13	9%	0.03	0.03	0	0	3.33			5.69	3.13
VA	2000	2005	Chiller Tune Up/Diagnostics	Health	2014	2054	60.88	33.49	0.10	5.79	9%	0.03	3.15	9%	0.02	0.03	0	0	2.95			0.10	0.03
VA	2000	2006	VSD for Chiller Pumps and Towers	Health	2014	2054	60.75	33.45	0.14	5.93	9%	0.04	3.19	9%	0.04	0.03	0	0	2.21			0.14	0.04
VA	2000	2013	High Efficiency Chiller Motors	Health	2014	2054	60.55	33.34	0.20	6.12	9%	0.11	3.30	9%	0.05	0.03	0	0	2.14			0.20	0.11
VA	2000	2003	EMS - Chiller	Health	2014	2054	54.79	32.60	5.75	11.88	18%	0.74	4.04	11%	0.05	0.04	0	0	1.26			5.75	0.74
VA	2000	2012	Duct Testing/Sealing - Chiller	Health	2014	2054	44.38	26.88	10.41	22.29	33%	5.72	9.76	27%	0.18	0.11	0	0	0.61			0.00	0.00
VA	2000	2008	New Economizer - Chiller	Health	2014	2054	39.35	26.24	5.03	27.32	41%	0.65	10.41	28%	0.14	0.11	1	0	0.44			0.00	0.00
VA	2000	2002	Window Film (Standard) - Chiller	Health	2014	2054	39.29	26.20	0.06	27.38	41%	0.03	10.44	28%	0.29	0.11	1	0	0.29			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	Health	2014	2054	39.18	26.14	0.11	27.49	41%	0.06	10.50	29%	0.77	0.11	1	0	0.11			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Health	2014	2054	38.74	25.90	0.44	27.93	42%	0.24	10.74	29%	2.99	0.16	5	0	0.03			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Health	2014	2054	223.12	122.63	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	223.12	122.63	0.00	0.00
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Health	2014	2054	171.80	94.42	51.32	51.32	23%	28.20	28.20	23%	0.03	0.03	0	0	3.49			51.32	28.20
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Health	2014	2054	171.64	94.38	0.16	51.48	23%	0.04	28.25	23%	0.09	0.03	0	0	0.75			0.00	0.00
VA	2100	2108	Optimize Controls - DX	Health	2014	2054	168.50	93.98	3.14	54.62	24%	0.40	28.65	23%	0.07	0.03	1	0	0.72			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Health	2014	2054	165.02	93.53	3.48	58.10	26%	0.45	29.10	24%	0.09	0.04	1	0	0.64			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Health	2014	2054	154.98	88.01	10.03	68.14	31%	5.51	34.61	28%	0.19	0.06	0	0	0.55			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	Health	2014	2054	154.15	87.56	0.83	68.97	31%	0.46	35.07	29%	0.25	0.06	0	0	0.34			0.00	0.00
VA	2100	2107	Cool Roof - DX	Health	2014	2054	153.66	87.29	0.49	69.46	31%	0.27	35.34	29%	0.65	0.07	1	0	0.13			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Health	2014	2054	151.97	86.36	1.69	71.15	32%	0.93	36.27	30%	2.55	0.12	5	0	0.03			0.00	0.00
VA	2100	2111	Economizer Repair - DX	Health	2014	2054	151.97	86.36	0.00	71.15	32%	0.00	36.27	30%	23013.76	0.13	27,755	0	0.00			0.00	0.00
VA	2100	2109	Economizer - DX	Health	2014	2054	151.97	86.36	0.00	71.15	32%	0.00	36.27	30%	26793.07	0.15	208,511	0	0.00			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Health	2014	2054	142.15	78.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	142.15	78.13	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	2014	2054	124.57	68.46	17.58	17.58	12%	9.66	9.66	12%	0.02	0.02	0	0	4.08			17.58	9.66

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Health	2014	2054	31.81	17.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	31.81	17.48	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Health	2014	2054	63.96	12.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	63.96	12.98	0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	Health	2014	2054	45.33	12.08	18.63	18.63	29%	0.90	0.90	7%	0.01	0.01	0	0	4.86			18.63	0.90
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Health	2014	2054	44.55	11.92	0.78	19.41	30%	0.16	1.06	8%	0.03	0.01	0	0	3.15			0.78	0.16
VA	3000	3003	Demand Controlled Ventilation	Health	2014	2054	40.31	10.16	4.24	23.65	37%	1.77	2.83	22%	0.84	0.16	2	1	0.11			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Health	2014	2054	222.31	45.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	222.31	45.13	0.00	0.00
VA	3100	3102	Variable Speed Drive Control, 15 HP	Health	2014	2054	157.57	41.99	64.74	64.74	29%	3.14	3.14	7%	0.00	0.00	0	0	14.06			64.74	3.14
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Health	2014	2054	157.20	41.91	0.37	65.11	29%	0.07	3.22	7%	0.01	0.00	0	0	5.58			0.37	0.07
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Health	2014	2054	134.32	37.78	22.88	87.99	40%	4.14	7.36	16%	0.02	0.01	0	0	3.02			22.88	4.14
VA	3100	3105	Energy Recovery Ventilation (ERV)	Health	2014	2054	125.61	34.15	8.71	96.70	43%	3.63	10.98	24%	0.26	0.03	1	0	0.39			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	Health	2014	2054	113.65	29.17	11.96	108.66	49%	4.98	15.96	35%	1.03	0.14	2	1	0.09			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Health	2014	2054	236.21	47.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	236.21	47.95	0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	Health	2014	2054	213.72	38.59	22.49	22.49	10%	9.36	9.36	20%	0.58	0.58	1	1	0.16			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Health	2014	2054	43.75	6.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	43.75	6.34	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Health	2014	2054	43.03	6.23	0.73	0.73	2%	0.11	0.11	2%	0.00	0.00	0	0	13.04			0.73	0.11
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Health	2014	2054	42.35	6.14	0.68	1.40	3%	0.10	0.20	3%	0.00	0.00	0	0	11.17			0.68	0.10
VA	4100	4108	Energy-Star Refrigerator, glass door	Health	2014	2054	42.01	6.09	0.34	1.74	4%	0.05	0.25	4%	0.02	0.01	0	0	3.91			0.34	0.05
VA	4100	4106	Energy-Star Refrigerator, solid door	Health	2014	2054	41.52	6.02	0.49	2.23	5%	0.07	0.32	5%	0.02	0.01	0	0	3.79			0.49	0.07
VA	4100	4110	Energy Star Ice Machines	Health	2014	2054	41.07	5.95	0.45	2.68	6%	0.07	0.39	6%	0.05	0.02	0	0	1.38			0.45	0.07
VA	4100	4112	Reach-in unit occupancy sensors	Health	2014	2054	41.06	5.95	0.01	2.70	6%	0.00	0.39	6%	0.28	0.02	2	0	0.23			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Health	2014	2054	41.01	5.94	0.05	2.74	6%	0.01	0.40	6%	0.32	0.02	2	0	0.19			0.00	0.00
VA	5000	5000	Base Desktop PC	Health	2014	2054	9.92	1.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.92	1.41	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Health	2014	2054	5.32	1.08	4.60	4.60	46%	0.33	0.33	23%	0.02	0.02	0	0	2.70			4.60	0.33
VA	5000	5002	Energy Star or Better PC	Health	2014	2054	3.64	0.84	1.69	6.29	63%	0.24	0.57	40%	0.04	0.02	0	0	1.28			1.69	0.24
VA	5100	5100	Base Laptop PC	Health	2014	2054	0.51	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.51	0.07	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Health	2014	2054	0.42	0.06	0.10	0.10	19%	0.01	0.01	19%	0.01	0.01	0	0	3.63			0.10	0.01
VA	5100	5101	Laptop Network Power Management Enabling	Health	2014	2054	0.41	0.06	0.01	0.11	21%	0.00	0.02	21%	1.77	0.16	12	1	0.03			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Health	2014	2054	2.73	0.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.73	0.39	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Health	2014	2054	1.23	0.17	1.50	1.50	55%	0.21	0.21	55%	0.00	0.00	0	0	29.60			1.50	0.21
VA	5200	5202	Monitor Power Management Enabling - CRT	Health	2014	2054	0.83	0.15	0.40	1.90	70%	0.03	0.24	62%	0.03	0.01	0	0	1.75			0.40	0.03
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Health	2014	2054	0.77	0.14	0.07	1.97	72%	0.01	0.25	65%	0.33	0.02	2	0	0.16			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Health	2014	2054	1.75	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.75	0.25	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Health	2014	2054	1.41	0.20	0.34	0.34	20%	0.05	0.05	20%	0.01	0.01	0	0	4.15			0.34	0.05
VA	5300	5302	Monitor Power Management Enabling - LCD	Health	2014	2054	1.34	0.20	0.07	0.41	24%	0.00	0.05	22%	0.12	0.03	2	0	0.42			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Health	2014	2054	1.23	0.19	0.11	0.52	30%	0.00	0.06	23%	0.33	0.09	9	1	0.14			0.00	0.00
VA	5400	5400	Base Copier	Health	2014	2054	2.77	0.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.77	0.39	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Health	2014	2054	2.30	0.33	0.47	0.47	17%	0.07	0.07	17%	0.00	0.00	0	0	21.03			0.47	0.07
VA	5400	5402	Copier Power Management Enabling	Health	2014	2054	2.15	0.32	0.15	0.61	22%	0.01	0.08	19%	0.14	0.04	2	0	0.37			0.00	0.00
VA	5500	5500	Base Multifunction	Health	2014	2054	0.45	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.06	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Health	2014	2054	0.33	0.05	0.11	0.11	25%	0.02	0.02	25%	0.01	0.01	0	0	6.17			0.11	0.02
VA	5500	5501	Multifunction Power Management Enabling	Health	2014	2054	0.29	0.04	0.05	0.16	36%	0.00	0.02	31%	0.34	0.11	5	1	0.15			0.00	0.00
VA	5600	5600	Base Printer	Health	2014	2054	2.25	0.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.25	0.32	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Health	2014	2054	1.46	0.21	0.78	0.78	35%	0.11	0.11	35%	0.00	0.00	0	0	28.35			0.78	0.11
VA	5600	5601	Printer Power Management Enabling	Health	2014	2054	1.25	0.19	0.21	0.99	44%	0.02	0.13	40%	0.07	0.02	1	0	0.69			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Health	2014	2054	39.44	5.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	39.44	5.61	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Health	2014	2054	35.50	5.04	3.94	3.94	10%	0.56	0.56	10%	0.00	0.00	0	0	115.58			3.94	0.56
VA	5700	5702	Data Center Best Practices	Health	2014	2054	30.98	4.40	4.52	8.46	21%	0.64	1.20	21%	0.00	0.00	0	0	47.05			4.52	0.64
VA	5700	5703	Data Center State of the Art practices	Health	2014	2054	29.25	4.16	1.74	10.20	26%	0.25	1.45	26%	0.00	0.00	0	0	24.40			1.74	0.25
VA	6000	6000	Base Water Heating	Health	2014	2054	16.04	2.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.04	2.07	0.00	0.00
VA	6000	6001	Demand controlled circulating systems	Health	2014	2054	15.44	1.99	0.60	0.60	4%	0.08	0.08	4%	0.04	0.04	0	0	1.87			0.60	0.08
VA	6000	6007	Heat Trap	Health	2014	2054	14.64	1.89	0.80	1.40	9%	0.10	0.18	9%	0.04	0.04	0	0	1.64			0.80	0.10
VA	6000	6002	High Efficiency Water Heater (electric)	Health	2014	2054	14.35	1.85	0.29	1.69	11%	0.04	0.22	11%	0.08	0.05	1	0	0.88			0.00	0.00
VA	6000	6006	Heat Recovery Unit	Health	2014	2054	6.89	0.89	7.46	9.15	57%	0.96	1.18	57%	0.08	0.07	1	1	0.84			0.00	0.00
VA	6000	6004	Tankless Water Heater	Health	2014	2054	6.37	0.82	0.52	9.67	60%	0.07	1.25	60%	0.26	0.08	2	1	0.30			0.00	0.00
VA	6000	6008	Solar Water Heater	Health	2014	2054	5.48	0.71	0.89	10.56	66%	0.11	1.36	66%	0.30	0.10	2	1	0.26			0.00	0.00
VA	6000	6003	Hot Water Pipe Insulation	Health	2014	2054	5.43	0.70	0.05	10.61	66%	0.01	1.37	66%	0.35	0.10	3	1	0.20			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Health	2014	2054	6.16	0.86	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.16	0.86	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Health	2014	2054	5.17	0.79	0.98	0.98	16%	0.07	0.07	8%	0.03	0.03	0	0	2.04			0.98	0.07
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Health	2014	2054	4.64	0.75	0.54	1.52	25%	0.04	0.10	12%	0.05	0.03	1	0	1.11			0.54	0.04
VA	7100	7100	Base Non-Refrigerated Vending Machines	Health	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Health	2014	2054	0.07	0.01	0.06	0.06	46%	0.00	0.00	22%	0.42	0.42	6	6	0.12			0.00	0.00
VA	7200	7200	Base Oven	Health	2014	2054	9.72	1.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.72	1.85	0.00	0.00
VA	7300	7300	Base Fryer	Health	2014	2054	9.37	1.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.37	1.79	0.00	0.00
VA	7300	7301	Efficient Fryer	Health	2014	2054	8.77	1.67	0.60	0.60	6%	0.11	0.11	6%	0.43	0.43	2	2	0.16			0.00	0.00
VA	7400	7400	Base Steamer	Health	2014	2054	8.41	1.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.41	1.61	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Health	2014	2054	17.94	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.94	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	2014	2054	16.93	0.00	1.01	1.01	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	3.44			1.01	0.00
VA	8100	8100	Base Heating, Other Electric	Health	2014	2054	25.25	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.25	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Health	2014	2054	378.95	52.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	378.95	52.75	0.00	0.00
VA	9500	9501	Xmisc	Health	2014	2054	378.95	52.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Lodging	2020	2054	9.24	1.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.24	1.31	0.00	0.00
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Lodging	2020	2054	8.28	1.17	0.96	0.96	10%	0.14	0.14	10%	0.02	0.02	0	0	2.86			0.96	0.14
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Lodging	2020	2054	7.23	1.02	1.05	2.01	22%	0.15	0.29	22%	0.05	0.04	0	0	1.37			1.05	0.15

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Lodging	2020	2054	7.19	1.02	0.03	2.05	22%	0.00	0.29	22%	0.05	0.04	1	0	1.11			0.03	0.00
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Lodging	2020	2054	6.64	0.96	0.55	2.60	28%	0.06	0.35	27%	0.07	0.05	1	0	0.96			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Lodging	2020	2054	5.57	0.81	1.07	3.67	40%	0.15	0.50	38%	0.35	0.14	3	1	0.23			0.00	0.00
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Lodging	2020	2054	5.41	0.80	0.16	3.83	41%	0.01	0.51	39%	0.18	0.14	5	1	0.31			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Lodging	2020	2054	4.95	0.74	0.46	4.29	46%	0.07	0.57	44%	0.30	0.15	2	1	0.26			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Lodging	2020	2054	37.39	5.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	37.39	5.29	0.00	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Lodging	2020	2054	33.50	4.74	3.89	3.89	10%	0.55	0.55	10%	0.03	0.03	0	0	2.26			3.89	0.55
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Lodging	2020	2054	29.24	4.14	4.26	8.15	22%	0.60	1.15	22%	0.06	0.05	0	0	1.08			4.26	0.60
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Lodging	2020	2054	29.10	4.13	0.13	8.28	22%	0.01	1.16	22%	0.07	0.05	1	0	0.79			0.00	0.00
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Lodging	2020	2054	26.87	3.88	2.23	10.52	28%	0.25	1.41	27%	0.10	0.06	1	0	0.69			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	Lodging	2020	2054	25.57	3.70	1.30	11.82	32%	0.18	1.59	30%	0.29	0.08	2	1	0.28			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Lodging	2020	2054	23.39	3.39	2.18	14.00	37%	0.31	1.90	36%	0.37	0.13	3	1	0.22			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Lodging	2020	2054	22.73	3.37	0.66	14.66	39%	0.02	1.92	36%	0.30	0.14	9	1	0.18			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Lodging	2014	2054	0.73	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.73	0.10	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Lodging	2014	2054	0.71	0.10	0.02	0.02	3%	0.00	0.00	1%	0.02	0.02	0	0	2.70			0.02	0.00
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Lodging	2014	2054	0.63	0.09	0.07	0.09	13%	0.01	0.01	11%	0.10	0.08	1	1	0.69			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Lodging	2014	2054	0.55	0.08	0.08	0.17	24%	0.01	0.02	22%	0.21	0.14	1	1	0.33			0.00	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Lodging	2014	2054	0.51	0.07	0.04	0.22	30%	0.00	0.03	27%	0.23	0.16	2	1	0.30			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Lodging	2014	2054	0.47	0.07	0.04	0.25	35%	0.00	0.03	28%	0.20	0.17	6	1	0.28			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Lodging	2020	2054	56.01	7.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	56.01	7.93	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Lodging	2020	2054	10.81	1.53	45.20	45.20	81%	6.40	6.40	81%	0.01	0.01	0	0	8.95			45.20	6.40
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Lodging	2020	2054	20.16	2.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	20.16	2.85	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Lodging	2020	2054	4.23	0.60	15.94	15.94	79%	2.26	2.26	79%	0.01	0.01	0	0	7.54			15.94	2.26
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Lodging	2020	2054	14.84	2.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.84	2.10	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Lodging	2020	2054	4.24	0.60	10.60	10.60	71%	1.50	1.50	71%	0.01	0.01	0	0	5.55			10.60	1.50
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Lodging	2020	2054	11.67	1.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.67	1.65	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Lodging	2020	2054	8.44	1.19	3.23	3.23	28%	0.46	0.46	28%	0.09	0.09	1	1	0.81			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Lodging	2020	2054	14.91	2.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.91	2.11	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Lodging	2020	2054	11.03	1.56	3.88	3.88	26%	0.55	0.55	26%	0.07	0.07	0	0	1.07			3.88	0.55
VA	1800	1800	BaseMetal Halide, 465W	Lodging	2014	2054	29.88	4.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	29.88	4.23	0.00	0.00
VA	1800	1801	T5 (240W) (base metal halide)	Lodging	2014	2054	19.78	2.80	10.10	10.10	34%	1.43	1.43	34%	0.02	0.02	0	0	4.03			10.10	1.43
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Lodging	2014	2054	18.26	2.63	1.52	11.62	39%	0.17	1.60	38%	0.05	0.02	0	0	1.42			1.52	0.17
VA	1800	1806	Occupancy Sensor, High Bay T5	Lodging	2014	2054	17.63	2.61	0.63	12.25	41%	0.02	1.62	38%	0.05	0.02	2	0	1.07			0.63	0.02
VA	1850	1850	Base CFL Exit Sign	Lodging	2014	2054	6.70	0.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.70	0.95	0.00	0.00
VA	1850	1851	LED Exit Sign	Lodging	2014	2054	3.78	0.54	2.91	2.91	44%	0.41	0.41	44%	0.03	0.03	0	0	2.00			2.91	0.41
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Lodging	2014	2054	43.47	0.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	43.47	0.37	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Lodging	2014	2054	39.90	0.27	3.56	3.56	8%	0.10	0.10	28%	0.05	0.05	2	2	1.46			3.56	0.10
VA	1900	1902	LED Outdoor Area Lighting	Lodging	2014	2054	19.20	0.09	20.70	24.27	56%	0.18	0.28	75%	0.10	0.09	12	8	0.64			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Lodging	2014	2054	13.55	0.05	5.65	29.92	69%	0.04	0.33	87%	0.65	0.20	83	18	0.10			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Lodging	2014	2054	150.18	90.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	150.18	90.43	0.00	0.00
VA	2000	2002	Window Film (Standard) - Chiller	Lodging	2014	2054	144.75	87.16	5.43	5.43	4%	3.27	3.27	4%	0.03	0.03	0	0	2.93			5.43	3.27
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Lodging	2014	2054	132.40	79.72	12.36	17.78	12%	7.44	10.71	12%	0.05	0.04	0	0	2.23			12.36	7.44
VA	2000	2005	Chiller Tune Up/Diagnostics	Lodging	2014	2054	129.34	78.84	3.05	20.84	14%	0.88	11.59	13%	0.04	0.04	0	0	1.90			3.05	0.88
VA	2000	2013	High Efficiency Chiller Motors	Lodging	2014	2054	129.34	78.84	0.01	20.84	14%	0.00	11.59	13%	0.08	0.04	0	0	1.43			0.01	0.00
VA	2000	2006	VSD for Chiller Pumps and Towers	Lodging	2014	2054	128.83	78.69	0.51	21.35	14%	0.15	11.74	13%	0.06	0.04	0	0	1.30			0.51	0.15
VA	2000	2008	New Economizer - Chiller	Lodging	2014	2054	81.45	72.03	47.38	68.73	46%	6.66	18.40	20%	0.06	0.06	0	0	0.98			0.00	0.00
VA	2000	2003	EMS - Chiller	Lodging	2014	2054	74.71	71.08	6.74	75.47	50%	0.95	19.35	21%	0.13	0.06	1	0	0.52			0.00	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	Lodging	2014	2054	60.52	62.53	14.20	89.66	60%	8.55	27.90	31%	0.43	0.12	1	0	0.26			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	Lodging	2014	2054	60.40	62.46	0.12	89.78	60%	0.07	27.97	31%	1.93	0.12	3	0	0.05			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Lodging	2014	2054	60.09	62.28	0.30	90.09	60%	0.18	28.15	31%	4.61	0.14	8	0	0.02			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Lodging	2014	2054	383.60	230.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	383.60	230.99	0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	Lodging	2014	2054	363.95	219.16	19.65	19.65	5%	11.83	11.83	5%	0.03	0.03	0	0	2.87			19.65	11.83
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Lodging	2014	2054	280.25	168.75	83.71	103.36	27%	50.41	62.24	27%	0.05	0.04	0	0	2.30			83.71	50.41
VA	2100	2108	Optimize Controls - DX	Lodging	2014	2054	275.11	168.03	5.13	108.49	28%	0.72	62.96	27%	0.08	0.04	1	0	0.65			0.00	0.00
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Lodging	2014	2054	271.25	166.91	3.87	112.36	29%	1.11	64.07	28%	0.15	0.05	1	0	0.47			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Lodging	2014	2054	263.28	165.79	7.97	120.32	31%	1.12	65.19	28%	0.14	0.05	1	0	0.40			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Lodging	2014	2054	247.27	156.16	16.01	136.33	36%	9.64	74.83	32%	0.31	0.08	1	0	0.35			0.00	0.00
VA	2100	2111	Economizer Repair - DX	Lodging	2014	2054	246.00	155.00	1.27	137.60	36%	1.15	75.98	33%	0.89	0.09	1	0	0.09			0.00	0.00
VA	2100	2107	Cool Roof - DX	Lodging	2014	2054	245.52	154.71	0.48	138.08	36%	0.29	76.27	33%	1.21	0.10	2	0	0.07			0.00	0.00
VA	2100	2109	Economizer - DX	Lodging	2014	2054	241.48	154.15	4.03	142.12	37%	0.57	76.84	33%	1.05	0.12	7	0	0.06			0.00	0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Lodging	2014	2054	241.48	154.14	0.01	142.13	37%	0.00	76.84	33%	1.77	0.12	13	0	0.03			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Lodging	2014	2054	238.85	152.57	2.62	144.75	38%	1.58	78.42	34%	2.97	0.17	5	0	0.03			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Lodging	2014	2054	297.25	178.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	297.25	178.99	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	2014	2054	260.49	156.85	36.76	36.76	12%	22.14	22.14	12%	0.03	0.03	0	0	3.96			36.76	22.14
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Lodging	2014	2054	62.42	37.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	62.42	37.58	0.00	0.00
VA	2300	2301	HE PTAC, EER=9.6, 1 ton	Lodging	2014	2054	53.96	32.49	8.45	8.45	14%	5.09	5.09	14%	0.08	0.08	0	0	1.35			8.45	5.09
VA	2300	2302	Occupancy Sensor (hotels)	Lodging	2014	2054	48.11	27.74	5.85	14.31	23%	4.75	9.84	26%	0.26	0.15	0	0	0.39			0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Lodging	2014	2054	250.99	53.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	250.99	53.08	0.00	0.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Lodging	2014	2054	246.66	52.17	4.33	4.33	2%	0.92	0.92	2%	0.03	0.03	0	0	2.66			4.33	0.92
VA	3000	3003	Demand Controlled Ventilation	Lodging	2014	2054	212.47	37.30	34.19	38.52	15%	14.87	15.78	30%	0.97	0.86	2	2	0.10			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Lodging	2014	2054	43.39	9.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	43.39	9.18	0.00	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	Lodging	2014	2054	38.86	8.95	4.53	4.53	10%	0.23	0.23	3%	0.02	0.02	0	0	2.25			4.53	0.23
VA	3200	3204	Demand Controlled Ventilation	Lodging	2014	2054	33.47	6.61	5.39	9.92	23%	2.34	2.57	28%	1.06	0.59	2	2	0.09			0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	4000	4000	Base Built-Up Refrigeration System	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Lodging	2014	2054	141.67	20.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	141.67	20.71	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Lodging	2014	2054	135.53	19.81	6.14	6.14	4%	0.90	0.90	4%	0.00	0.00	0	0	75.75			6.14	0.90
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Lodging	2014	2054	133.81	19.56	1.72	7.85	6%	0.25	1.15	6%	0.00	0.00	0	0	28.54			1.72	0.25
VA	4100	4109	Energy-Star Freezer, glass door	Lodging	2014	2054	131.77	19.27	2.04	9.89	7%	0.30	1.45	7%	0.00	0.00	0	0	22.28			2.04	0.30
VA	4100	4107	Energy-Star Freezer, solid door	Lodging	2014	2054	130.94	19.14	0.84	10.73	8%	0.12	1.57	8%	0.01	0.00	0	0	8.88			0.84	0.12
VA	4100	4106	Energy-Star Refrigerator, solid door	Lodging	2014	2054	130.36	19.06	0.57	11.30	8%	0.08	1.65	8%	0.01	0.00	0	0	7.07			0.57	0.08
VA	4100	4110	Energy Star Ice Machines	Lodging	2014	2054	129.30	18.90	1.06	12.37	9%	0.16	1.81	9%	0.02	0.00	0	0	2.62			1.06	0.16
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Lodging	2014	2054	129.26	18.90	0.04	12.40	9%	0.01	1.81	9%	0.33	0.00	2	0	0.18			0.00	0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Lodging	2014	2054	128.70	18.82	0.56	12.97	9%	0.08	1.90	9%	0.35	0.02	2	0	0.15			0.00	0.00
VA	5000	5000	Base Desktop PC	Lodging	2014	2054	9.10	1.35	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.10	1.35	0.00	0.00
VA	5000	5002	Energy Star or Better PC	Lodging	2014	2054	7.19	1.07	1.91	1.91	21%	0.28	0.28	21%	0.01	0.01	0	0	3.97			1.91	0.28
VA	5000	5001	PC Network Power Management Enabling	Lodging	2014	2054	3.86	0.82	3.33	5.24	58%	0.25	0.53	39%	0.02	0.02	0	0	3.06			3.33	0.25
VA	5100	5100	Base Laptop PC	Lodging	2014	2054	0.44	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.06	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Lodging	2014	2054	0.35	0.05	0.08	0.08	19%	0.01	0.01	19%	0.01	0.01	0	0	5.20			0.08	0.01
VA	5100	5101	Laptop Network Power Management Enabling	Lodging	2014	2054	0.35	0.05	0.01	0.09	21%	0.00	0.01	21%	1.24	0.11	8	1	0.04			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Lodging	2014	2054	4.29	0.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.29	0.64	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Lodging	2014	2054	1.88	0.28	2.41	2.41	56%	0.36	0.36	56%	0.00	0.00	0	0	41.36			2.41	0.36
VA	5200	5202	Monitor Power Management Enabling - CRT	Lodging	2014	2054	1.43	0.25	0.45	2.86	67%	0.03	0.39	61%	0.02	0.00	0	0	2.92			0.45	0.03
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Lodging	2014	2054	1.31	0.23	0.11	2.97	69%	0.02	0.41	64%	0.21	0.01	1	0	0.26			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Lodging	2014	2054	1.90	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.90	0.28	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Lodging	2014	2054	1.71	0.25	0.19	0.19	10%	0.03	0.03	10%	0.01	0.01	0	0	6.66			0.19	0.03
VA	5300	5302	Monitor Power Management Enabling - LCD	Lodging	2014	2054	1.51	0.24	0.19	0.38	20%	0.01	0.04	15%	0.08	0.05	1	0	0.61			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Lodging	2014	2054	1.39	0.23	0.12	0.50	27%	0.00	0.05	17%	0.22	0.09	6	1	0.21			0.00	0.00
VA	5400	5400	Base Copier	Lodging	2014	2054	2.65	0.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.65	0.39	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Lodging	2014	2054	2.39	0.35	0.26	0.26	10%	0.04	0.04	10%	0.00	0.00	0	0	32.75			0.26	0.04
VA	5400	5402	Copier Power Management Enabling	Lodging	2014	2054	2.29	0.35	0.10	0.35	13%	0.01	0.05	12%	0.09	0.03	1	0	0.60			0.00	0.00
VA	5500	5500	Base Multifunction	Lodging	2014	2054	0.41	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.41	0.06	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Lodging	2014	2054	0.31	0.05	0.10	0.10	25%	0.02	0.02	25%	0.01	0.01	0	0	8.85			0.10	0.02
VA	5500	5501	Multifunction Power Management Enabling	Lodging	2014	2054	0.25	0.04	0.06	0.16	39%	0.00	0.02	32%	0.26	0.09	3	1	0.20			0.00	0.00
VA	5600	5600	Base Printer	Lodging	2014	2054	1.15	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.15	0.17	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Lodging	2014	2054	0.75	0.11	0.40	0.40	35%	0.06	0.06	35%	0.00	0.00	0	0	40.66			0.40	0.06
VA	5600	5601	Printer Power Management Enabling	Lodging	2014	2054	0.61	0.10	0.14	0.54	47%	0.01	0.07	41%	0.06	0.02	1	0	0.92			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Lodging	2014	2054	40.24	5.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	40.24	5.98	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Lodging	2014	2054	36.21	5.38	4.02	4.02	10%	0.60	0.60	10%	0.00	0.00	0	0	116.16			4.02	0.60
VA	5700	5702	Data Center Best Practices	Lodging	2014	2054	31.61	4.70	4.61	8.63	21%	0.68	1.28	21%	0.00	0.00	0	0	47.29			4.61	0.68
VA	5700	5703	Data Center State of the Art practices	Lodging	2014	2054	29.84	4.43	1.77	10.40	26%	0.26	1.55	26%	0.00	0.00	0	0	24.53			1.77	0.26
VA	6000	6000	Base Water Heating	Lodging	2014	2054	62.44	8.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	62.44	8.42	0.00	0.00
VA	6000	6007	Heat Trap	Lodging	2014	2054	59.20	7.98	3.23	3.23	5%	0.44	0.44	5%	0.01	0.01	0	0	4.77			3.23	0.44
VA	6000	6006	Heat Recovery Unit	Lodging	2014	2054	51.51	6.95	7.70	10.93	18%	1.04	1.47	18%	0.02	0.02	0	0	3.57			7.70	1.04
VA	6000	6001	Demand controlled circulating systems	Lodging	2014	2054	49.58	6.69	1.93	12.86	21%	0.26	1.73	21%	0.03	0.02	0	0	2.46			1.93	0.26
VA	6000	6002	High Efficiency Water Heater (electric)	Lodging	2014	2054	48.58	6.55	0.99	13.85	22%	0.13	1.87	22%	0.03	0.02	0	0	2.14			0.99	0.13
VA	6000	6004	Tankless Water Heater	Lodging	2014	2054	44.94	6.06	3.64	17.50	28%	0.49	2.36	28%	0.05	0.03	0	0	1.53			3.64	0.49
VA	6000	6008	Solar Water Heater	Lodging	2014	2054	38.65	5.21	6.29	23.79	38%	0.85	3.21	38%	0.06	0.03	0	0	1.31			6.29	0.85
VA	6000	6003	Hot Water Pipe Insulation	Lodging	2014	2054	37.99	5.12	0.66	24.45	39%	0.09	3.30	39%	0.07	0.04	1	0	1.02			0.66	0.09
VA	7000	7000	Base Refrigerated Vending Machines	Lodging	2014	2054	15.02	2.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.02	2.44	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Lodging	2014	2054	12.67	2.26	2.35	2.35	16%	0.19	0.19	8%	0.02	0.02	0	0	2.09			2.35	0.19
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Lodging	2014	2054	11.40	2.15	1.27	3.62	24%	0.10	0.29	12%	0.05	0.03	1	0	1.14			1.27	0.10
VA	7100	7100	Base Non-Refrigerated Vending Machines	Lodging	2014	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.01	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Lodging	2014	2054	0.05	0.01	0.04	0.04	45%	0.00	0.00	22%	0.41	0.41	5	5	0.12			0.00	0.00
VA	7200	7200	Base Oven	Lodging	2014	2054	2.97	0.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.97	0.61	0.00	0.00
VA	7300	7300	Base Fryer	Lodging	2014	2054	7.48	1.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.48	1.53	0.00	0.00
VA	7400	7400	Base Steamer	Lodging	2014	2054	1.24	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.24	0.25	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Lodging	2014	2054	24.82	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.82	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	2014	2054	23.42	0.00	1.40	1.40	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	2.43			1.40	0.00
VA	8100	8100	Base Heating, Other Electric	Lodging	2014	2054	19.91	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.91	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Lodging	2014	2054	279.75	45.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	279.75	45.55	0.00	0.00
VA	9500	9501	Xmisc	Lodging	2014	2054	279.75	45.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Data Centers	2020	2054	17.07	2.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.07	2.97	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Data Centers	2020	2054	17.02	2.97	0.05	0.05	0%	0.00	0.00	0%	0.01	0.01	0	0	5.21			0.05	0.00
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Data Centers	2020	2054	15.76	2.79	1.26	1.31	8%	0.18	0.18	6%	0.01	0.01	0	0	4.86			1.26	0.18
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Data Centers	2020	2054	14.16	2.51	1.61	2.91	17%	0.28	0.46	16%	0.02	0.02	0	0	2.75			1.61	0.28
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	2020	2054	12.35	2.19	1.80	4.72	28%	0.31	0.77	26%	0.05	0.03	0	0	1.32			1.80	0.31
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Data Centers	2020	2054	11.42	2.15	0.93	5.65	33%	0.04	0.82	28%	0.07	0.04	2	0	0.79			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Data Centers	2020	2054	9.58	1.83	1.84	7.49	44%	0.32	1.14	38%	0.30	0.10	2	1	0.25			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Data Centers	2020	2054	8.76	1.69	0.82	8.31	49%	0.14	1.28	43%	0.25	0.12	1	1	0.30			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Data Centers	2020	2054	0.29	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.29	0.05	0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Data Centers	2020	2054	0.29	0.05	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	3.03			0.00	0.00
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Data Centers	2020	2054	0.27	0.05	0.02	0.02	8%	0.00	0.00	6%	0.03	0.03	0	0	2.82			0.02	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Data Centers	2020	2054	0.24	0.04	0.03	0.05	17%	0.00	0.01	16%	0.03	0.03	0	0	2.17			0.03	0.00
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	2020	2054	0.21	0.04	0.03	0.08	28%	0.01	0.01	26%	0.06	0.04	0	0	1.04			0.03	0.01
VA	1130	1134	ROB 2L4' LED Tube, 2020	Data Centers	2020	2054	0.20	0.04	0.01	0.09	31%	0.00	0.01	30%	0.23	0.06	1	0	0.33			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Data Centers	2020	2054	0.18	0.03	0.01	0.11	36%	0.00	0.02	31%	0.13	0.07	3	0	0.42			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Data Centers	2020	2054	0.17	0.03	0.02	0.12	42%	0.00	0.02	37%	0.31	0.10	2	1	0.24			0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1200	1200	Base Other Fluorescent Fixture	Data Centers	2014	2054	0.63	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.63	0.11	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Data Centers	2014	2054	0.61	0.11	0.01	0.01	2%	0.00	0.00	1%	0.00	0.00	0	0	14.66			0.01	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Data Centers	2014	2054	0.57	0.10	0.05	0.06	9%	0.01	0.01	7%	0.03	0.03	0	0	2.24			0.05	0.01
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Data Centers	2014	2054	0.51	0.09	0.06	0.12	19%	0.01	0.02	16%	0.10	0.06	1	0	0.67			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Data Centers	2014	2054	0.44	0.09	0.07	0.18	29%	0.00	0.02	19%	0.13	0.09	3	1	0.44			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Data Centers	2014	2054	0.39	0.08	0.06	0.24	38%	0.01	0.03	28%	0.23	0.12	1	1	0.28			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Data Centers	2020	2054	5.27	0.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.27	0.92	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Data Centers	2020	2054	1.04	0.18	4.24	4.24	80%	0.74	0.74	80%	0.01	0.01	0	0	11.05			4.24	0.74
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Data Centers	2020	2054	1.90	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.90	0.33	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Data Centers	2020	2054	0.40	0.07	1.49	1.49	79%	0.26	0.26	79%	0.01	0.01	0	0	9.30			1.49	0.26
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Data Centers	2020	2054	1.40	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.40	0.24	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Data Centers	2020	2054	0.41	0.07	0.99	0.99	71%	0.17	0.17	71%	0.01	0.01	0	0	6.84			0.99	0.17
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Data Centers	2020	2054	1.07	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.07	0.19	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Data Centers	2020	2054	0.77	0.13	0.30	0.30	28%	0.05	0.05	28%	0.06	0.06	0	0	0.98			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Data Centers	2020	2054	1.36	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.36	0.24	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Data Centers	2020	2054	1.01	0.18	0.35	0.35	26%	0.06	0.06	26%	0.05	0.05	0	0	1.30			0.35	0.06
VA	1800	1800	BaseMetal Halide, 465W	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	1850	1850	Base CFL Exit Sign	Data Centers	2014	2054	0.27	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.27	0.05	0.00	0.00
VA	1850	1851	LED Exit Sign	Data Centers	2014	2054	0.15	0.03	0.12	0.12	44%	0.02	0.02	44%	0.03	0.03	0	0	2.09			0.12	0.02
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Data Centers	2014	2054	4.01	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.01	0.04	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Data Centers	2014	2054	3.65	0.04	0.36	0.36	9%	0.01	0.01	18%	0.02	0.02	1	1	3.10			0.36	0.01
VA	1900	1902	LED Outdoor Area Lighting	Data Centers	2014	2054	1.76	0.02	1.89	2.25	56%	0.02	0.03	65%	0.10	0.09	9	7	0.68			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Data Centers	2014	2054	1.25	0.01	0.50	2.75	69%	0.01	0.03	77%	0.67	0.19	65	16	0.10			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Data Centers	2014	2054	44.99	11.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	44.99	11.07	0.00	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	Data Centers	2014	2054	44.79	11.02	0.20	0.20	0%	0.05	0.05	0%	0.00	0.00	0	0	34.39			0.20	0.05
VA	2000	2005	Chiller Tune Up/Diagnostics	Data Centers	2014	2054	44.77	11.02	0.02	0.22	0%	0.00	0.05	0%	0.01	0.00	0	0	8.86			0.02	0.00
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Data Centers	2014	2054	40.94	10.08	3.82	4.05	9%	0.94	0.99	9%	0.01	0.01	0	0	7.82			3.82	0.94
VA	2000	2006	VSD for Chiller Pumps and Towers	Data Centers	2014	2054	40.66	10.05	0.29	4.33	10%	0.03	1.03	9%	0.01	0.01	0	0	5.78			0.29	0.03
VA	2000	2013	High Efficiency Chiller Motors	Data Centers	2014	2054	40.58	10.03	0.07	4.41	10%	0.02	1.04	9%	0.02	0.01	0	0	5.08			0.07	0.02
VA	2000	2003	EMS - Chiller	Data Centers	2014	2054	39.54	9.97	1.04	5.45	12%	0.06	1.10	10%	0.02	0.01	0	0	3.89			1.04	0.06
VA	2000	2008	New Economizer - Chiller	Data Centers	2014	2054	36.69	9.81	2.85	8.30	18%	0.16	1.26	11%	0.02	0.01	0	0	3.04			2.85	0.16
VA	2000	2002	Window Film (Standard) - Chiller	Data Centers	2014	2054	36.67	9.81	0.01	8.32	18%	0.00	1.27	11%	0.04	0.01	0	0	2.02			0.01	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	Data Centers	2014	2054	29.71	8.09	6.97	15.28	34%	1.72	2.98	27%	0.06	0.04	0	0	1.43			6.97	1.72
VA	2000	2004	Cool Roof - Chiller	Data Centers	2014	2054	29.61	8.07	0.09	15.38	34%	0.02	3.00	27%	0.09	0.04	0	0	0.81			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Data Centers	2014	2054	29.52	8.05	0.09	15.47	34%	0.02	3.03	27%	0.74	0.04	3	0	0.10			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Data Centers	2014	2054	25.66	6.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.66	6.32	0.00	0.00
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Data Centers	2014	2054	19.76	4.86	5.90	5.90	23%	1.45	1.45	23%	0.01	0.01	0	0	8.34			5.90	1.45
VA	2100	2111	Economizer Repair - DX	Data Centers	2014	2054	19.33	4.68	0.43	6.33	25%	0.19	1.64	26%	0.03	0.01	0	0	2.56			0.43	0.19
VA	2100	2108	Optimize Controls - DX	Data Centers	2014	2054	18.97	4.66	0.36	6.69	26%	0.02	1.66	26%	0.02	0.01	0	0	2.50			0.36	0.02
VA	2100	2109	Economizer - DX	Data Centers	2014	2054	16.67	4.53	2.29	8.98	35%	0.13	1.79	28%	0.03	0.02	0	0	2.20			2.29	0.13
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Data Centers	2014	2054	16.67	4.53	0.01	8.99	35%	0.00	1.79	28%	0.04	0.02	0	0	1.75			0.01	0.00
VA	2100	2115	Window Film (Standard) - DX	Data Centers	2014	2054	16.32	4.44	0.34	9.33	36%	0.08	1.87	30%	0.05	0.02	0	0	1.56			0.34	0.08
VA	2100	2106	Prog. Thermostat - DX	Data Centers	2014	2054	15.52	4.40	0.80	10.14	40%	0.05	1.92	30%	0.04	0.02	1	0	1.53			0.80	0.05
VA	2100	2112	Duct Testing/Sealing - DX	Data Centers	2014	2054	14.58	4.16	0.94	11.08	43%	0.23	2.15	34%	0.08	0.02	0	0	1.06			0.94	0.23
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Data Centers	2014	2054	14.58	4.16	0.00	11.08	43%	0.00	2.15	34%	0.08	0.02	1	0	0.77			0.00	0.00
VA	2100	2107	Cool Roof - DX	Data Centers	2014	2054	14.45	4.13	0.12	11.21	44%	0.03	2.18	35%	0.10	0.02	0	0	0.69			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Data Centers	2014	2054	14.36	4.11	0.09	11.30	44%	0.02	2.21	35%	0.87	0.03	4	0	0.08			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Data Centers	2014	2054	3.29	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.29	0.81	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Data Centers	2014	2054	2.88	0.71	0.41	0.41	12%	0.10	0.10	12%	0.01	0.01	0	0	11.68			0.41	0.10
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Data Centers	2014	2054	6.59	1.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.59	1.62	0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	Data Centers	2014	2054	5.97	1.58	0.61	0.61	9%	0.04	0.04	2%	0.01	0.01	0	0	9.50			0.61	0.04
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Data Centers	2014	2054	5.88	1.56	0.10	0.71	11%	0.02	0.06	4%	0.01	0.01	0	0	6.97			0.10	0.02
VA	3000	3003	Demand Controlled Ventilation	Data Centers	2014	2054	5.54	1.41	0.34	1.05	16%	0.15	0.21	13%	0.30	0.10	1	0	0.33			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Data Centers	2014	2054	22.89	5.63	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	22.89	5.63	0.00	0.00
VA	3100	3102	Variable Speed Drive Control, 15 HP	Data Centers	2014	2054	20.77	5.50	2.12	2.12	9%	0.13	0.13	2%	0.00	0.00	0	0	34.39			2.12	0.13
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Data Centers	2014	2054	20.64	5.47	0.12	2.25	10%	0.03	0.16	3%	0.01	0.00	0	0	15.37			0.12	0.03
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Data Centers	2014	2054	19.29	5.17	1.35	3.60	16%	0.30	0.47	8%	0.01	0.01	0	0	6.77			1.35	0.30
VA	3100	3103	Air Handler Optimization, 15 HP	Data Centers	2014	2054	17.47	5.06	1.82	5.42	24%	0.11	0.58	10%	0.01	0.01	0	0	5.37			1.82	0.11
VA	3100	3105	Energy Recovery Ventilation (ERV)	Data Centers	2014	2054	17.04	4.86	0.43	5.85	26%	0.19	0.77	14%	0.11	0.02	0	0	0.93			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	Data Centers	2014	2054	16.06	4.43	0.98	6.83	30%	0.44	1.21	21%	0.36	0.06	1	0	0.28			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Data Centers	2014	2054	24.32	5.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.32	5.99	0.00	0.00
VA	3200	3202	Variable Speed Drive Control, 40 HP	Data Centers	2014	2054	22.06	5.85	2.26	2.26	9%	0.14	0.14	2%	0.01	0.01	0	0	6.83			2.26	0.14
VA	3200	3203	Air Handler Optimization, 40 HP	Data Centers	2014	2054	19.98	5.72	2.08	4.34	18%	0.13	0.27	5%	0.01	0.01	0	0	5.78			2.08	0.13
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Data Centers	2014	2054	19.89	5.69	0.09	4.43	18%	0.02	0.29	5%	0.05	0.01	0	0	1.73			0.09	0.02
VA	3200	3204	Demand Controlled Ventilation	Data Centers	2014	2054	18.75	5.19	1.15	5.57	23%	0.51	0.80	13%	0.32	0.08	1	1	0.30			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Data Centers	2014	2054	3.64	0.68	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.64	0.68	0.00	0.00
VA	4100	4109	Energy-Star Freezer, glass door	Data Centers	2014	2054	3.64	0.68	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0	0	30.26			0.00	0.00
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Data Centers	2014	2054	3.57	0.67	0.07	0.07	2%	0.01	0.01	2%	0.00	0.00	0	0	27.78			0.07	0.01
VA	4100	4107	Energy-Star Freezer, solid door	Data Centers	2014	2054	3.57	0.67	0.00	0.07	2%	0.00	0.01	2%	0.01	0.00	0	0	12.12			0.00	0.00
VA	4100	4108	Energy-Star Refrigerator, glass door	Data Centers	2014	2054	3.57	0.67	0.00	0.07	2%	0.00	0.01	2%	0.01	0.00	0	0	10.25			0.00	0.00
VA	4100	4106	Energy-Star Refrigerator, solid door	Data Centers	2014	2054	3.57	0.67	0.00	0.07	2%	0.00	0.01	2%	0.01	0.00	0	0	9.82			0.00	0.00
VA	4100	4110	Energy Star Ice Machines	Data Centers	2014	2054	3.57	0.67	0.00	0.08	2%	0.00	0.01	2%	0.02	0.00	0	0	3.64			0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	4100	4112	Reach-in unit occupancy sensors	Data Centers	2014	2054	3.56	0.67	0.00	0.08	2%	0.00	0.01	2%	0.27	0.00	1	0	0.26			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Data Centers	2014	2054	3.56	0.67	0.00	0.08	2%	0.00	0.01	2%	0.30	0.00	2	0	0.21			0.00	0.00
VA	5000	5000	Base Desktop PC	Data Centers	2014	2054	0.48	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.48	0.08	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Data Centers	2014	2054	0.27	0.06	0.21	0.21	44%	0.02	0.02	23%	0.01	0.01	0	0	3.79			0.21	0.02
VA	5000	5002	Energy Star or Better PC	Data Centers	2014	2054	0.21	0.05	0.06	0.27	56%	0.01	0.03	35%	0.03	0.02	0	0	2.09			0.06	0.01
VA	5100	5100	Base Laptop PC	Data Centers	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Data Centers	2014	2054	0.03	0.00	0.01	0.01	19%	0.00	0.00	19%	0.01	0.01	0	0	5.46			0.01	0.00
VA	5100	5101	Laptop Network Power Management Enabling	Data Centers	2014	2054	0.03	0.00	0.00	0.01	21%	0.00	0.00	21%	1.24	0.11	7	1	0.05			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Data Centers	2014	2054	0.26	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.26	0.05	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Data Centers	2014	2054	0.15	0.03	0.11	0.11	43%	0.02	0.02	43%	0.00	0.00	0	0	56.87			0.11	0.02
VA	5200	5202	Monitor Power Management Enabling - CRT	Data Centers	2014	2054	0.13	0.02	0.02	0.13	50%	0.00	0.02	46%	0.01	0.00	0	0	4.41			0.02	0.00
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Data Centers	2014	2054	0.12	0.02	0.01	0.14	54%	0.00	0.02	50%	0.14	0.01	1	0	0.41			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Data Centers	2014	2054	0.13	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.02	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Data Centers	2014	2054	0.11	0.02	0.02	0.02	13%	0.00	0.00	13%	0.01	0.01	0	0	6.75			0.02	0.00
VA	5300	5302	Monitor Power Management Enabling - LCD	Data Centers	2014	2054	0.10	0.02	0.01	0.02	19%	0.00	0.00	16%	0.08	0.03	1	0	0.62			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Data Centers	2014	2054	0.09	0.02	0.01	0.03	25%	0.00	0.00	18%	0.24	0.08	5	1	0.20			0.00	0.00
VA	5400	5400	Base Copier	Data Centers	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Data Centers	2014	2054	0.10	0.02	0.01	0.01	10%	0.00	0.00	10%	0.00	0.00	0	0	34.21			0.01	0.00
VA	5400	5402	Copier Power Management Enabling	Data Centers	2014	2054	0.09	0.02	0.00	0.01	14%	0.00	0.00	12%	0.09	0.03	1	0	0.58			0.00	0.00
VA	5500	5500	Base Multifunction	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Data Centers	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	9.27			0.00	0.00
VA	5500	5501	Multifunction Power Management Enabling	Data Centers	2014	2054	0.01	0.00	0.00	0.01	38%	0.00	0.00	32%	0.28	0.10	3	1	0.19			0.00	0.00
VA	5600	5600	Base Printer	Data Centers	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Data Centers	2014	2054	0.03	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00	0.00	0	0	42.62			0.01	0.00
VA	5600	5601	Printer Power Management Enabling	Data Centers	2014	2054	0.02	0.00	0.00	0.02	46%	0.00	0.00	41%	0.06	0.02	1	0	0.89			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	Data Centers	2014	2054	762.71	132.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	762.71	132.70	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Data Centers	2014	2054	686.44	119.43	76.27	76.27	10%	13.27	13.27	10%	0.00	0.00	0	0	121.88			76.27	13.27
VA	5700	5702	Data Center Best Practices	Data Centers	2014	2054	599.11	104.24	87.33	163.60	21%	15.19	28.46	21%	0.00	0.00	0	0	49.62			87.33	15.19
VA	5700	5703	Data Center State of the Art practices	Data Centers	2014	2054	565.56	98.40	33.55	197.15	26%	5.84	34.30	26%	0.00	0.00	0	0	25.73			33.55	5.84
VA	6000	6000	Base Water Heating	Data Centers	2014	2054	0.38	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.38	0.07	0.00	0.00
VA	6000	6007	Heat Trap	Data Centers	2014	2054	0.36	0.06	0.02	0.02	5%	0.00	0.00	5%	0.08	0.08	0	0	0.88			0.00	0.00
VA	6000	6002	High Efficiency Water Heater (electric)	Data Centers	2014	2054	0.36	0.06	0.01	0.03	7%	0.00	0.00	7%	0.16	0.10	1	1	0.48			0.00	0.00
VA	6000	6004	Tankless Water Heater	Data Centers	2014	2054	0.33	0.06	0.03	0.05	14%	0.00	0.01	14%	0.24	0.17	1	1	0.34			0.00	0.00
VA	6000	6008	Solar Water Heater	Data Centers	2014	2054	0.15	0.03	0.18	0.23	60%	0.03	0.04	60%	0.28	0.26	2	1	0.29			0.00	0.00
VA	6000	6006	Heat Recovery Unit	Data Centers	2014	2054	0.14	0.03	0.01	0.24	62%	0.00	0.04	62%	0.62	0.27	4	2	0.11			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	Data Centers	2014	2054	0.14	0.02	0.00	0.24	64%	0.00	0.04	64%	1.87	0.30	11	2	0.04			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Data Centers	2014	2054	0.25	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.25	0.04	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Data Centers	2014	2054	0.21	0.04	0.04	0.04	16%	0.00	0.00	8%	0.01	0.01	0	0	5.94			0.04	0.00
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Data Centers	2014	2054	0.19	0.04	0.02	0.06	24%	0.00	0.01	12%	0.02	0.01	0	0	3.27			0.02	0.00
VA	7100	7100	Base Non-Refrigerated Vending Machines	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Data Centers	2014	2054	0.01	0.00	0.00	0.00	44%	0.00	0.00	23%	0.12	0.12	1	1	0.45			0.00	0.00
VA	7200	7200	Base Oven	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	7300	7300	Base Fryer	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	7400	7400	Base Steamer	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	8100	8100	Base Heating, Other Electric	Data Centers	2014	2054	0.42	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.42	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Data Centers	2014	2054	3.84	0.67	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.84	0.67	0.00	0.00
VA	9500	9501	Xmisc	Data Centers	2014	2054	3.84	0.67	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	eligious Worsh	2020	2054	69.16	11.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	69.16	11.74	0.00	0.00
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	eligious Worsh	2020	2054	62.00	10.52	7.17	7.17	10%	1.22	1.22	10%	0.04	0.04	0	0	1.66			7.17	1.22
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	eligious Worsh	2020	2054	61.68	10.50	0.32	7.49	11%	0.03	1.24	11%	0.05	0.04	1	0	1.17			0.32	0.03
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	eligious Worsh	2020	2054	57.00	9.87	4.67	12.16	18%	0.63	1.87	16%	0.07	0.05	1	0	1.05			4.67	0.63
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	eligious Worsh	2020	2054	49.75	8.64	7.25	19.41	28%	1.23	3.10	26%	0.09	0.07	1	0	0.73			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	eligious Worsh	2020	2054	41.74	7.28	8.02	27.43	40%	1.36	4.46	38%	0.58	0.22	3	1	0.14			0.00	0.00
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	eligious Worsh	2020	2054	40.62	7.23	1.11	28.54	41%	0.05	4.51	38%	0.28	0.22	7	1	0.20			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	eligious Worsh	2020	2054	37.16	6.64	3.47	32.01	46%	0.59	5.10	43%	0.49	0.25	3	2	0.16			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	eligious Worsh	2020	2054	52.96	8.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	52.96	8.99	0.00	0.00
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	eligious Worsh	2020	2054	47.96	8.14	5.00	5.00	9%	0.85	0.85	9%	0.05	0.05	0	0	1.32			5.00	0.85
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	eligious Worsh	2020	2054	47.71	8.12	0.25	5.25	10%	0.02	0.87	10%	0.05	0.05	1	0	0.96			0.00	0.00
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	eligious Worsh	2020	2054	44.09	7.63	3.61	8.87	17%	0.49	1.36	15%	0.08	0.06	1	0	0.86			0.00	0.00
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	eligious Worsh	2020	2054	38.48	6.68	5.61	14.48	27%	0.95	2.31	26%	0.12	0.08	1	1	0.58			0.00	0.00
VA	1130	1134	ROB 2L4' LED Tube, 2020	eligious Worsh	2020	2054	36.62	6.36	1.86	16.34	31%	0.32	2.62	29%	0.47	0.13	3	1	0.17			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	eligious Worsh	2020	2054	33.50	5.83	3.13	19.46	37%	0.53	3.15	35%	0.59	0.20	3	1	0.13			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	eligious Worsh	2020	2054	32.60	5.80	0.89	20.36	38%	0.04	3.19	35%	0.47	0.21	12	1	0.12			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	eligious Worsh	2014	2054	0.72	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.72	0.12	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	eligious Worsh	2014	2054	0.70	0.12	0.02	0.02	3%	0.00	0.00	2%	0.03	0.03	0	0	1.68			0.02	0.00
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	eligious Worsh	2014	2054	0.65	0.11	0.05	0.08	10%	0.01	0.01	9%	0.17	0.13	1	1	0.41			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	eligious Worsh	2014	2054	0.57	0.10	0.08	0.16	22%	0.01	0.02	20%	0.35	0.24	2	2	0.20			0.00	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	eligious Worsh	2014	2054	0.52	0.09	0.04	0.20	28%	0.01	0.03	25%	0.36	0.27	3	2	0.20			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	eligious Worsh	2014	2054	0.48	0.09	0.04	0.24	33%	0.00	0.03	26%	0.31	0.27	8	2	0.18			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	eligious Worsh	2020	2054	27.77	4.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	27.77	4.71	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	eligious Worsh	2020	2054	4.96	0.84	22.81	22.81	82%	3.87	3.87	82%	0.01	0.01	0	0	5.72			22.81	3.87
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	eligious Worsh	2020	2054	10.00	1.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.00	1.70	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	eligious Worsh	2020	2054	1.94	0.33	8.06	8.06	81%	1.37	1.37	81%	0.01	0.01	0	0	4.83			8.06	1.37

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	eligious Worsh	2020	2054	7.36	1.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.36	1.25	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	eligious Worsh	2020	2054	1.96	0.33	5.40	5.40	73%	0.92	0.92	73%	0.02	0.02	0	0	3.58			5.40	0.92
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	eligious Worsh	2020	2054	4.14	0.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.14	0.70	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	eligious Worsh	2020	2054	2.99	0.51	1.15	1.15	28%	0.19	0.19	28%	0.13	0.13	1	1	0.56			0.00	0.00
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	eligious Worsh	2020	2054	5.29	0.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.29	0.90	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	eligious Worsh	2020	2054	3.92	0.66	1.38	1.38	26%	0.23	0.23	26%	0.09	0.09	1	1	0.74			0.00	0.00
VA	1800	1800	BaseMetal Halide, 465W	eligious Worsh	2014	2054	3.51	0.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.51	0.60	0.00	0.00
VA	1800	1801	T5 (240W) (base metal halide)	eligious Worsh	2014	2054	2.33	0.39	1.19	1.19	34%	0.20	0.20	34%	0.03	0.03	0	0	2.73			1.19	0.20
VA	1800	1806	Occupancy Sensor, High Bay T5	eligious Worsh	2014	2054	2.25	0.39	0.08	1.26	36%	0.00	0.20	34%	0.08	0.03	2	0	0.73			0.00	0.00
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	eligious Worsh	2014	2054	2.08	0.37	0.17	1.43	41%	0.02	0.23	38%	0.14	0.04	1	0	0.50			0.00	0.00
VA	1850	1850	Base CFL Exit Sign	eligious Worsh	2014	2054	2.02	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.02	0.34	0.00	0.00
VA	1850	1851	LED Exit Sign	eligious Worsh	2014	2054	1.09	0.18	0.93	0.93	46%	0.16	0.16	46%	0.05	0.05	0	0	1.12			0.93	0.16
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	eligious Worsh	2014	2054	25.23	1.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.23	1.95	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	eligious Worsh	2014	2054	24.75	1.85	0.48	0.48	2%	0.11	0.11	5%	0.07	0.07	0	0	1.33			0.48	0.11
VA	1900	1902	LED Outdoor Area Lighting	eligious Worsh	2014	2054	11.91	0.85	12.84	13.32	53%	0.99	1.10	56%	0.16	0.16	2	2	0.43			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	eligious Worsh	2014	2054	8.43	0.61	3.48	16.80	67%	0.24	1.34	69%	1.07	0.35	15	4	0.06			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	eligious Worsh	2014	2054	30.08	23.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	30.08	23.26	0.00	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	eligious Worsh	2014	2054	29.71	22.97	0.38	0.38	1%	0.29	0.29	1%	0.04	0.04	0	0	3.23			0.38	0.29
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	eligious Worsh	2014	2054	27.17	21.01	2.54	2.91	10%	1.96	2.25	10%	0.08	0.07	0	0	1.66			2.54	1.96
VA	2000	2005	Chiller Tune Up/Diagnostics	eligious Worsh	2014	2054	27.15	21.00	0.02	2.93	10%	0.01	2.26	10%	0.06	0.07	0	0	1.30			0.02	0.01
VA	2000	2013	High Efficiency Chiller Motors	eligious Worsh	2014	2054	27.13	20.99	0.02	2.95	10%	0.02	2.28	10%	0.12	0.07	0	0	1.07			0.02	0.02
VA	2000	2006	VSD for Chiller Pumps and Towers	eligious Worsh	2014	2054	26.07	20.57	1.05	4.01	13%	0.42	2.69	12%	0.09	0.08	0	0	0.94			0.00	0.00
VA	2000	2003	EMS - Chiller	eligious Worsh	2014	2054	24.82	20.32	1.25	5.26	17%	0.25	2.94	13%	0.14	0.09	1	0	0.53			0.00	0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	eligious Worsh	2014	2054	20.26	16.79	4.56	9.83	33%	3.53	6.47	28%	0.40	0.24	1	0	0.31			0.00	0.00
VA	2000	2002	Window Film (Standard) - Chiller	eligious Worsh	2014	2054	20.13	16.69	0.13	9.95	33%	0.10	6.57	28%	1.45	0.25	2	0	0.07			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	eligious Worsh	2014	2054	20.09	16.66	0.04	9.99	33%	0.03	6.60	28%	6.31	0.28	8	0	0.02			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	eligious Worsh	2014	2054	19.82	16.46	0.27	10.26	34%	0.21	6.81	29%	7.61	0.47	10	1	0.01			0.00	0.00
VA	2000	2008	New Economizer - Chiller	eligious Worsh	2014	2054	19.82	16.46	0.00	10.26	34%	0.00	6.81	29%	70236.15	0.59	354,039	1	0.00			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	eligious Worsh	2014	2054	96.90	74.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	96.90	74.94	0.00	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	eligious Worsh	2014	2054	96.90	74.94	0.00	0.00	0%	0.00	0.00	0%	0.04	0.04	0	0	3.32			0.00	0.00
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	eligious Worsh	2014	2054	74.61	57.70	22.29	22.29	23%	17.24	17.24	23%	0.07	0.07	0	0	1.76			22.29	17.24
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	eligious Worsh	2014	2054	74.58	57.69	0.03	22.32	23%	0.01	17.25	23%	0.23	0.07	1	0	0.34			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	eligious Worsh	2014	2054	70.19	54.30	4.39	26.71	28%	3.39	20.64	28%	0.43	0.13	1	0	0.29			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	eligious Worsh	2014	2054	68.60	53.98	1.59	28.30	29%	0.32	20.96	28%	0.24	0.13	1	0	0.25			0.00	0.00
VA	2100	2108	Optimize Controls - DX	eligious Worsh	2014	2054	67.46	53.75	1.14	29.44	30%	0.23	21.18	28%	0.25	0.14	1	0	0.22			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	eligious Worsh	2014	2054	67.20	53.55	0.26	29.70	31%	0.20	21.39	29%	1.19	0.15	2	0	0.08			0.00	0.00
VA	2100	2107	Cool Roof - DX	eligious Worsh	2014	2054	67.07	53.45	0.13	29.83	31%	0.10	21.49	29%	6.09	0.17	8	0	0.02			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	eligious Worsh	2014	2054	66.64	53.12	0.43	30.26	31%	0.33	21.82	29%	7.28	0.27	9	0	0.01			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	eligious Worsh	2014	2054	78.85	60.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	78.85	60.98	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	eligious Worsh	2014	2054	69.10	53.44	9.75	9.75	12%	7.54	7.54	12%	0.07	0.07	0	0	1.64			9.75	7.54
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	eligious Worsh	2014	2054	78.27	60.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	78.27	60.53	0.00	0.00
VA	2300	2301	HE PTAC, EER=9.6, 1 ton	eligious Worsh	2014	2054	67.67	52.33	10.60	10.60	14%	8.20	8.20	14%	0.16	0.16	0	0	0.71			0.00	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	eligious Worsh	2014	2054	72.92	20.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	72.92	20.72	0.00	0.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	eligious Worsh	2014	2054	71.66	20.36	1.26	1.26	2%	0.36	0.36	2%	0.13	0.13	0	0	0.70			0.00	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	eligious Worsh	2014	2054	50.40	18.85	21.26	22.52	31%	1.51	1.86	9%	0.10	0.10	1	1	0.67			0.00	0.00
VA	3000	3003	Demand Controlled Ventilation	eligious Worsh	2014	2054	49.42	18.32	0.98	23.50	32%	0.54	2.40	12%	3.09	0.22	6	2	0.03			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	eligious Worsh	2014	2054	58.13	16.52	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	58.13	16.52	0.00	0.00
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	eligious Worsh	2014	2054	49.74	14.37	8.39	8.39	14%	2.14	2.14	13%	0.06	0.06	0	0	1.34			8.39	2.14
VA	3100	3103	Air Handler Optimization, 15 HP	eligious Worsh	2014	2054	46.33	14.13	3.41	11.80	20%	0.24	2.38	14%	0.08	0.07	1	0	0.71			0.00	0.00
VA	3100	3102	Variable Speed Drive Control, 15 HP	eligious Worsh	2014	2054	32.59	13.16	13.75	25.54	44%	0.97	3.36	20%	0.13	0.10	2	1	0.49			0.00	0.00
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	eligious Worsh	2014	2054	32.10	13.02	0.49	26.03	45%	0.14	3.49	21%	0.42	0.11	1	1	0.22			0.00	0.00
VA	3100	3105	Energy Recovery Ventilation (ERV)	eligious Worsh	2014	2054	31.69	12.80	0.41	26.44	45%	0.22	3.72	23%	0.86	0.12	2	1	0.13			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	eligious Worsh	2014	2054	31.07	12.46	0.62	27.06	47%	0.34	4.06	25%	3.92	0.21	7	1	0.03			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	eligious Worsh	2014	2054	46.13	13.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	46.13	13.11	0.00	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	eligious Worsh	2014	2054	42.97	12.88	3.16	3.16	7%	0.22	0.22	2%	0.07	0.07	1	1	0.83			0.00	0.00
VA	3200	3202	Variable Speed Drive Control, 40 HP	eligious Worsh	2014	2054	30.22	11.98	12.75	15.91	34%	0.90	1.13	9%	0.21	0.18	3	3	0.32			0.00	0.00
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	eligious Worsh	2014	2054	30.10	11.94	0.12	16.03	35%	0.03	1.16	9%	1.02	0.19	4	3	0.09			0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	eligious Worsh	2014	2054	29.51	11.62	0.59	16.62	36%	0.32	1.48	11%	3.28	0.29	6	3	0.03			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	eligious Worsh	2014	2054	98.51	14.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	98.51	14.83	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	eligious Worsh	2014	2054	97.55	14.69	0.95	0.95	1%	0.14	0.14	1%	0.00	0.00	0	0	19.78			0.95	0.14
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	eligious Worsh	2014	2054	96.17	14.48	1.39	2.34	2%	0.21	0.35	2%	0.00	0.00	0	0	18.82			1.39	0.21
VA	4100	4108	Energy-Star Refrigerator, glass door	eligious Worsh	2014	2054	95.55	14.38	0.62	2.96	3%	0.09	0.45	3%	0.01	0.00	0	0	6.37			0.62	0.09
VA	4100	4106	Energy-Star Refrigerator, solid door	eligious Worsh	2014	2054	93.94	14.14	1.60	4.56	5%	0.24	0.69	5%	0.01	0.01	0	0	6.24			1.60	0.24
VA	4100	4110	Energy Star Ice Machines	eligious Worsh	2014	2054	91.85	13.83	2.09	6.65	7%	0.31	1.00	7%	0.03	0.01	0	0	2.27			2.09	0.31
VA	4100	4112	Reach-in unit occupancy sensors	eligious Worsh	2014	2054	91.84	13.83	0.01	6.67	7%	0.00	1.00	7%	0.28	0.01	2	0	0.23			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	eligious Worsh	2014	2054	91.76	13.81	0.08	6.75	7%	0.01	1.02	7%	0.32	0.02	2	0	0.19			0.00	0.00
VA	5000	5000	Base Desktop PC	eligious Worsh	2014	2054	9.54	1.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.54	1.44	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	eligious Worsh	2014	2054	5.24	1.11	4.30	4.30	45%	0.33	0.33	23%	0.02	0.02	0	0	2.09			4.30	0.33
VA	5000	5002	Energy Star or Better PC	eligious Worsh	2014	2054	3.61	0.87	1.63	5.93	62%	0.25	0.58	40%	0.05	0.03	0	0	1.06			1.63	0.25
VA	5100	5100	Base Laptop PC	eligious Worsh	2014	2054	0.66	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.66	0.10	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	eligious Worsh	2014	2054	0.53	0.08	0.12	0.12	19%	0.02	0.02	19%	0.02	0.02	0	0	2.90			0.12	0.02
VA	5100	5101	Laptop Network Power Management Enabling	eligious Worsh	2014	2054	0.52	0.08	0.01	0.13	21%	0.00	0.02	21%	2.25	0.20	15	1	0.02			0.00	0.00
VA	5200	5200	Base Monitor, CRT	eligious Worsh	2014	2054	1.67	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.67	0.25	0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
VA	5200	5201	Energy Star or Better Monitor - CRT	eligious Worsh	2014	2054	0.73	0.11	0.94	0.94	56%	0.14	0.14	56%	0.00	0.00	0	0	23.08			0.94	0.14
VA	5200	5202	Monitor Power Management Enabling - CRT	eligious Worsh	2014	2054	0.55	0.10	0.19	1.12	67%	0.01	0.16	62%	0.03	0.01	0	0	1.51			0.19	0.01
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	eligious Worsh	2014	2054	0.51	0.09	0.04	1.17	70%	0.01	0.16	64%	0.39	0.02	3	0	0.14			0.00	0.00
VA	5300	5300	Base Monitor, LCD	eligious Worsh	2014	2054	1.99	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.99	0.30	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	eligious Worsh	2014	2054	1.63	0.25	0.36	0.36	18%	0.05	0.05	18%	0.02	0.02	0	0	3.38			0.36	0.05
VA	5300	5302	Monitor Power Management Enabling - LCD	eligious Worsh	2014	2054	1.57	0.24	0.06	0.41	21%	0.00	0.06	19%	0.15	0.03	2	0	0.34			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	eligious Worsh	2014	2054	1.45	0.24	0.12	0.53	27%	0.00	0.06	21%	0.42	0.12	11	1	0.11			0.00	0.00
VA	5400	5400	Base Copier	eligious Worsh	2014	2054	3.87	0.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.87	0.59	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	eligious Worsh	2014	2054	3.35	0.51	0.52	0.52	13%	0.08	0.08	13%	0.00	0.00	0	0	17.50			0.52	0.08
VA	5400	5402	Copier Power Management Enabling	eligious Worsh	2014	2054	3.19	0.49	0.17	0.68	18%	0.01	0.09	16%	0.17	0.04	2	0	0.31			0.00	0.00
VA	5500	5500	Base Multifunction	eligious Worsh	2014	2054	0.51	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.51	0.08	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	eligious Worsh	2014	2054	0.38	0.06	0.13	0.13	25%	0.02	0.02	25%	0.01	0.01	0	0	4.93			0.13	0.02
VA	5500	5501	Multifunction Power Management Enabling	eligious Worsh	2014	2054	0.32	0.05	0.06	0.19	37%	0.00	0.02	31%	0.47	0.16	6	1	0.11			0.00	0.00
VA	5600	5600	Base Printer	eligious Worsh	2014	2054	1.56	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.56	0.24	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	eligious Worsh	2014	2054	1.02	0.15	0.54	0.54	35%	0.08	0.08	35%	0.00	0.00	0	0	22.66			0.54	0.08
VA	5600	5601	Printer Power Management Enabling	eligious Worsh	2014	2054	0.85	0.14	0.17	0.71	45%	0.01	0.10	40%	0.10	0.03	1	0	0.51			0.00	0.00
VA	5700	5700	Base Data Center/Server Room	eligious Worsh	2014	2054	8.06	1.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.06	1.22	0.00	0.00
VA	5700	5701	Data Center Improved Operations	eligious Worsh	2014	2054	7.25	1.10	0.81	0.81	10%	0.12	0.12	10%	0.00	0.00	0	0	80.86			0.81	0.12
VA	5700	5702	Data Center Best Practices	eligious Worsh	2014	2054	6.33	0.96	0.92	1.73	21%	0.14	0.26	21%	0.00	0.00	0	0	32.92			0.92	0.14
VA	5700	5703	Data Center State of the Art practices	eligious Worsh	2014	2054	5.97	0.90	0.35	2.08	26%	0.05	0.32	26%	0.00	0.00	0	0	17.07			0.35	0.05
VA	6000	6000	Base Water Heating	eligious Worsh	2014	2054	27.02	3.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	27.02	3.99	0.00	0.00
VA	6000	6007	Heat Trap	eligious Worsh	2014	2054	25.62	3.78	1.40	1.40	5%	0.21	0.21	5%	0.03	0.03	0	0	2.23			1.40	0.21
VA	6000	6002	High Efficiency Water Heater (electric)	eligious Worsh	2014	2054	25.11	3.71	0.51	1.91	7%	0.08	0.28	7%	0.06	0.04	0	0	1.20			0.51	0.08
VA	6000	6004	Tankless Water Heater	eligious Worsh	2014	2054	23.22	3.43	1.88	3.79	14%	0.28	0.56	14%	0.09	0.06	1	0	0.86			0.00	0.00
VA	6000	6003	Hot Water Pipe Insulation	eligious Worsh	2014	2054	22.78	3.36	0.44	4.24	16%	0.07	0.63	16%	0.11	0.07	1	0	0.66			0.00	0.00
VA	6000	6006	Heat Recovery Unit	eligious Worsh	2014	2054	22.04	3.25	0.74	4.98	18%	0.11	0.73	18%	0.10	0.07	1	1	0.62			0.00	0.00
VA	6000	6001	Demand controlled circulating systems	eligious Worsh	2014	2054	21.21	3.13	0.83	5.80	21%	0.12	0.86	21%	0.31	0.11	2	1	0.24			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	eligious Worsh	2014	2054	4.50	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.50	0.75	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	eligious Worsh	2014	2054	3.78	0.69	0.72	0.72	16%	0.06	0.06	8%	0.03	0.03	0	0	1.99			0.72	0.06
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	eligious Worsh	2014	2054	3.38	0.65	0.39	1.11	25%	0.03	0.09	12%	0.05	0.03	1	0	1.09			0.39	0.03
VA	7100	7100	Base Non-Refrigerated Vending Machines	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	23%	0.44	0.44	5	5	0.12			0.00	0.00
VA	7200	7200	Base Oven	eligious Worsh	2014	2054	26.99	4.38	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	26.99	4.38	0.00	0.00
VA	7300	7300	Base Fryer	eligious Worsh	2014	2054	1.40	0.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.40	0.23	0.00	0.00
VA	7300	7301	Efficient Fryer	eligious Worsh	2014	2054	1.31	0.21	0.09	0.09	6%	0.01	0.01	6%	0.43	0.43	3	3	0.16			0.00	0.00
VA	7400	7400	Base Steamer	eligious Worsh	2014	2054	1.23	0.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.23	0.20	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	eligious Worsh	2014	2054	2.39	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.39	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	eligious Worsh	2014	2054	2.26	0.00	0.13	0.13	6%	0.00	0.00	0%	0.06	0.06	N/A	N/A	1.09			0.13	0.00
VA	8100	8100	Base Heating, Other Electric	eligious Worsh	2014	2054	19.53	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.53	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	eligious Worsh	2014	2054	333.79	55.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	333.79	55.49	0.00	0.00
VA	9500	9501	Xmisc	eligious Worsh	2014	2054	333.79	55.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Misc	2020	2054	414.67	70.38	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	414.67	70.38	0.00	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Misc	2020	2054	412.52	70.20	2.15	2.15	1%	0.18	0.18	0%	0.01	0.01	0	0	4.07			2.15	0.18
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Misc	2020	2054	381.28	66.00	31.25	33.40	8%	4.20	4.38	6%	0.02	0.02	0	0	3.64			31.25	4.20
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Misc	2020	2054	341.77	59.29	39.50	72.90	18%	6.70	11.08	16%	0.02	0.02	0	0	3.03			39.50	6.70
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Misc	2020	2054	298.29	51.91	43.48	116.38	28%	7.38	18.46	26%	0.04	0.03	0	0	1.45			43.48	7.38
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Misc	2020	2054	290.34	51.59	7.94	124.33	30%	0.33	18.79	27%	0.08	0.03	2	0	0.73			0.00	0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Misc	2020	2054	243.56	43.65	46.78	171.11	41%	7.94	26.73	38%	0.25	0.09	1	1	0.28			0.00	0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Misc	2020	2054	222.77	40.12	20.79	191.90	46%	3.53	30.26	43%	0.20	0.10	1	1	0.34			0.00	0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Misc	2020	2054	317.53	53.89	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	317.53	53.89	0.00	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Misc	2020	2054	315.87	53.75	1.66	1.66	1%	0.14	0.14	0%	0.02	0.02	0	0	3.31			1.66	0.14
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Misc	2020	2054	291.94	50.53	23.93	25.58	8%	3.22	3.35	6%	0.02	0.02	0	0	2.96			23.93	3.22
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Misc	2020	2054	264.36	45.85	27.58	53.17	17%	4.68	8.03	15%	0.02	0.02	0	0	2.42			27.58	4.68
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Misc	2020	2054	230.72	40.15	33.64	86.80	27%	5.71	13.74	26%	0.05	0.03	0	0	1.16			33.64	5.71
VA	1130	1134	ROB 2L4' LED Tube, 2020	Misc	2020	2054	219.57	38.25	11.15	97.95	31%	1.89	15.64	29%	0.19	0.05	1	0	0.36			0.00	0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Misc	2020	2054	200.83	35.07	18.74	116.70	37%	3.18	18.82	35%	0.24	0.08	1	1	0.29			0.00	0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Misc	2020	2054	195.48	34.85	5.35	122.05	38%	0.22	19.04	35%	0.15	0.09	4	1	0.36			0.00	0.00
VA	1200	1200	Base Other Fluorescent Fixture	Misc	2014	2054	4.34	0.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.34	0.74	0.00	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Misc	2014	2054	4.20	0.72	0.14	0.14	3%	0.01	0.01	2%	0.01	0.01	0	0	5.21			0.14	0.01
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Misc	2014	2054	3.88	0.67	0.32	0.45	10%	0.05	0.07	9%	0.07	0.06	0	0	0.81			0.00	0.00
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Misc	2014	2054	3.59	0.63	0.29	0.75	17%	0.04	0.10	14%	0.10	0.07	1	1	0.70			0.00	0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Misc	2014	2054	3.33	0.62	0.26	1.01	23%	0.01	0.12	16%	0.09	0.08	2	1	0.64			0.00	0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Misc	2014	2054	2.91	0.55	0.42	1.43	33%	0.07	0.19	25%	0.18	0.11	1	1	0.33			0.00	0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Misc	2020	2054	261.09	44.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	261.09	44.31	0.00	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Misc	2020	2054	57.45	9.75	203.64	203.64	78%	34.56	34.56	78%	0.00	0.00	0	0	14.50			203.64	34.56
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Misc	2020	2054	93.99	15.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	93.99	15.95	0.00	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Misc	2020	2054	22.39	3.80	71.61	71.61	76%	12.15	12.15	76%	0.00	0.00	0	0	12.18			71.61	12.15
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Misc	2020	2054	69.19	11.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	69.19	11.74	0.00	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Misc	2020	2054	22.17	3.76	47.02	47.02	68%	7.98	7.98	68%	0.01	0.01	0	0	8.86			47.02	7.98
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Misc	2020	2054	49.34	8.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	49.34	8.37	0.00	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Misc	2020	2054	35.67	6.05	13.67	13.67	28%	2.32	2.32	28%	0.05	0.05	0	0	1.15			13.67	2.32
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Misc	2020	2054	63.05	10.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	63.05	10.70	0.00	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Misc	2020	2054	46.65	7.92	16.39	16.39	26%	2.78	2.78	26%	0.04	0.04	0	0	1.53			16.39	2.78
VA	1800	1800	BaseMetal Halide, 465W	Misc	2014	2054	85.35	14.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	85.35	14.48	0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	1800	1801	T5 (240W) (base metal halide)	Misc	2014	2054	56.49	9.59	28.86	28.86	34%	4.90	4.90	34%	0.01	0.01	0	0	8.49			28.86	4.90
VA	1800	1806	Occupancy Sensor, High Bay T5	Misc	2014	2054	54.65	9.51	1.85	30.70	36%	0.08	4.97	34%	0.02	0.01	1	0	2.28			1.85	0.08
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Misc	2014	2054	50.51	8.96	4.14	34.84	41%	0.56	5.53	38%	0.05	0.01	0	0	1.56			4.14	0.56
VA	1850	1850	Base CFL Exit Sign	Misc	2014	2054	9.40	1.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.40	1.60	0.00	0.00
VA	1850	1851	LED Exit Sign	Misc	2014	2054	5.06	0.86	4.34	4.34	46%	0.74	0.74	46%	0.03	0.03	0	0	2.16			4.34	0.74
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Misc	2014	2054	89.16	6.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	89.16	6.90	0.00	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Misc	2014	2054	81.36	5.16	7.80	7.80	9%	1.74	1.74	25%	0.04	0.04	0	0	2.37			7.80	1.74
VA	1900	1902	LED Outdoor Area Lighting	Misc	2014	2054	39.15	1.89	42.21	50.01	56%	3.27	5.01	73%	0.09	0.08	1	1	0.77			0.00	0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Misc	2014	2054	27.71	1.09	11.44	61.45	69%	0.80	5.81	84%	0.59	0.18	8	2	0.12			0.00	0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Misc	2014	2054	81.13	62.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	81.13	62.75	0.00	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	Misc	2014	2054	80.12	61.96	1.01	1.01	1%	0.78	0.78	1%	0.02	0.02	0	0	6.46			1.01	0.78
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Misc	2014	2054	73.28	56.67	6.84	7.85	10%	5.29	6.07	10%	0.04	0.04	0	0	3.32			6.84	5.29
VA	2000	2005	Chiller Tune Up/Diagnostics	Misc	2014	2054	72.90	56.52	0.39	8.24	10%	0.15	6.23	10%	0.03	0.04	0	0	2.59			0.39	0.15
VA	2000	2013	High Efficiency Chiller Motors	Misc	2014	2054	72.83	56.47	0.06	8.30	10%	0.05	6.27	10%	0.06	0.04	0	0	2.13			0.06	0.05
VA	2000	2006	VSD for Chiller Pumps and Towers	Misc	2014	2054	70.00	55.36	2.83	11.13	14%	1.11	7.39	12%	0.05	0.04	0	0	1.87			2.83	1.11
VA	2000	2003	EMS - Chiller	Misc	2014	2054	63.83	54.13	6.17	17.30	21%	1.22	8.61	14%	0.07	0.05	0	0	1.01			6.17	1.22
VA	2000	2012	Duct Testing/Sealing - Chiller	Misc	2014	2054	52.10	45.06	11.73	29.04	36%	9.07	17.69	28%	0.21	0.12	0	0	0.59			0.00	0.00
VA	2000	2002	Window Film (Standard) - Chiller	Misc	2014	2054	51.76	44.80	0.33	29.37	36%	0.26	17.94	29%	0.76	0.12	1	0	0.13			0.00	0.00
VA	2000	2004	Cool Roof - Chiller	Misc	2014	2054	51.66	44.72	0.10	29.47	36%	0.08	18.02	29%	3.31	0.13	4	0	0.03			0.00	0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Misc	2014	2054	50.97	44.19	0.69	30.16	37%	0.53	18.56	30%	3.99	0.22	5	0	0.02			0.00	0.00
VA	2000	2008	New Economizer - Chiller	Misc	2014	2054	50.97	44.19	0.00	30.16	37%	0.00	18.56	30%	36828.01	0.28	185,639	0	0.00			0.00	0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Misc	2014	2054	312.72	241.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	312.72	241.85	0.00	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	Misc	2014	2054	312.71	241.84	0.01	0.01	0%	0.01	0.01	0%	0.02	0.02	0	0	6.63			0.01	0.01
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Misc	2014	2054	240.79	186.22	71.92	71.93	23%	55.62	55.63	23%	0.03	0.03	0	0	3.51			71.92	55.62
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Misc	2014	2054	240.02	185.91	0.77	72.70	23%	0.30	55.93	23%	0.11	0.03	0	0	0.67			0.00	0.00
VA	2100	2112	Duct Testing/Sealing - DX	Misc	2014	2054	225.90	174.99	14.12	86.82	28%	10.92	66.85	28%	0.22	0.06	0	0	0.58			0.00	0.00
VA	2100	2106	Prog. Thermostat - DX	Misc	2014	2054	221.59	174.14	4.31	91.13	29%	0.86	67.71	28%	0.12	0.07	1	0	0.50			0.00	0.00
VA	2100	2108	Optimize Controls - DX	Misc	2014	2054	217.91	173.41	3.68	94.82	30%	0.73	68.44	28%	0.13	0.07	1	0	0.44			0.00	0.00
VA	2100	2115	Window Film (Standard) - DX	Misc	2014	2054	217.06	172.75	0.85	95.66	31%	0.66	69.09	29%	0.60	0.07	1	0	0.16			0.00	0.00
VA	2100	2107	Cool Roof - DX	Misc	2014	2054	216.63	172.42	0.43	96.09	31%	0.33	69.42	29%	3.04	0.09	4	0	0.03			0.00	0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Misc	2014	2054	215.25	171.35	1.38	97.47	31%	1.07	70.49	29%	3.64	0.14	5	0	0.03			0.00	0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Misc	2014	2054	297.00	229.69	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	297.00	229.69	0.00	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	2014	2054	260.27	201.28	36.73	36.73	12%	28.41	28.41	12%	0.04	0.04	0	0	3.28			36.73	28.41
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Misc	2014	2054	187.11	144.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	187.11	144.70	0.00	0.00
VA	2300	2301	HE PTAC, EER=9.6, 1 ton	Misc	2014	2054	161.77	125.11	25.34	25.34	14%	19.60	19.60	14%	0.08	0.08	0	0	1.43			25.34	19.60
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Misc	2014	2054	351.21	99.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	351.21	99.79	0.00	0.00
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Misc	2014	2054	345.15	98.06	6.06	6.06	2%	1.72	1.72	2%	0.06	0.06	0	0	1.40			6.06	1.72
VA	3000	3002	Variable Speed Drive Control, 5 HP	Misc	2014	2054	246.37	91.07	98.78	104.83	30%	7.00	8.72	9%	0.05	0.05	1	1	1.36			98.78	7.00
VA	3000	3003	Demand Controlled Ventilation	Misc	2014	2054	241.56	88.44	4.81	109.65	31%	2.63	11.35	11%	1.52	0.11	3	1	0.07			0.00	0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Misc	2014	2054	279.97	79.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	279.97	79.55	0.00	0.00
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Misc	2014	2054	239.56	69.24	40.41	40.41	14%	10.31	10.31	13%	0.03	0.03	0	0	2.68			40.41	10.31
VA	3100	3103	Air Handler Optimization, 15 HP	Misc	2014	2054	223.16	68.07	16.41	56.81	20%	1.16	11.47	14%	0.04	0.03	1	0	1.41			16.41	1.16
VA	3100	3102	Variable Speed Drive Control, 15 HP	Misc	2014	2054	159.29	63.55	63.86	120.68	43%	4.52	16.00	20%	0.07	0.05	1	0	1.00			0.00	0.00
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Misc	2014	2054	156.91	62.87	2.38	123.06	44%	0.68	16.67	21%	0.20	0.05	1	0	0.44			0.00	0.00
VA	3100	3105	Energy Recovery Ventilation (ERV)	Misc	2014	2054	154.91	61.78	2.00	125.06	45%	1.09	17.77	22%	0.43	0.06	1	0	0.27			0.00	0.00
VA	3100	3107	Demand Controlled Ventilation	Misc	2014	2054	151.88	60.13	3.03	128.09	46%	1.65	19.42	24%	1.93	0.10	4	1	0.05			0.00	0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Misc	2014	2054	222.17	63.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	222.17	63.12	0.00	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	Misc	2014	2054	206.95	62.04	15.22	15.22	7%	1.08	1.08	2%	0.03	0.03	0	0	1.65			15.22	1.08
VA	3200	3202	Variable Speed Drive Control, 40 HP	Misc	2014	2054	147.72	57.85	59.23	74.44	34%	4.20	5.27	8%	0.10	0.09	1	1	0.64			0.00	0.00
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Misc	2014	2054	147.14	57.68	0.59	75.03	34%	0.17	5.44	9%	0.50	0.09	2	1	0.18			0.00	0.00
VA	3200	3204	Demand Controlled Ventilation	Misc	2014	2054	144.26	56.11	2.88	77.90	35%	1.57	7.01	11%	1.61	0.15	3	2	0.06			0.00	0.00
VA	4000	4000	Base Built-Up Refrigeration System	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Misc	2014	2054	306.76	46.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	306.76	46.18	0.00	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Misc	2014	2054	299.24	45.05	7.52	7.52	2%	1.13	1.13	2%	0.00	0.00	0	0	39.71			7.52	1.13
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Misc	2014	2054	294.99	44.41	4.25	11.77	4%	0.64	1.77	4%	0.00	0.00	0	0	37.07			4.25	0.64
VA	4100	4108	Energy-Star Refrigerator, glass door	Misc	2014	2054	293.75	44.22	1.24	13.00	4%	0.19	1.96	4%	0.01	0.00	0	0	12.55			1.24	0.19
VA	4100	4106	Energy-Star Refrigerator, solid door	Misc	2014	2054	290.56	43.74	3.19	16.19	5%	0.48	2.44	5%	0.01	0.00	0	0	12.33			3.19	0.48
VA	4100	4110	Energy Star Ice Machines	Misc	2014	2054	286.23	43.09	4.33	20.53	7%	0.65	3.09	7%	0.01	0.00	0	0	4.51			4.33	0.65
VA	4100	4112	Reach-in unit occupancy sensors	Misc	2014	2054	286.22	43.09	0.01	20.54	7%	0.00	3.09	7%	0.28	0.01	2	0	0.23			0.00	0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Misc	2014	2054	286.16	43.08	0.06	20.60	7%	0.01	3.10	7%	0.32	0.01	2	0	0.19			0.00	0.00
VA	5000	5000	Base Desktop PC	Misc	2014	2054	26.53	4.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	26.53	4.02	0.00	0.00
VA	5000	5001	PC Network Power Management Enabling	Misc	2014	2054	14.58	3.10	11.96	11.96	45%	0.92	0.92	23%	0.01	0.01	0	0	4.18			11.96	0.92
VA	5000	5002	Energy Star or Better PC	Misc	2014	2054	10.03	2.41	4.54	16.50	62%	0.69	1.61	40%	0.03	0.02	0	0	2.12			4.54	0.69
VA	5100	5100	Base Laptop PC	Misc	2014	2054	1.52	0.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.52	0.23	0.00	0.00
VA	5100	5102	Energy Star or Better Laptop	Misc	2014	2054	1.23	0.19	0.29	0.29	19%	0.04	0.04	19%	0.01	0.01	0	0	5.80			0.29	0.04
VA	5100	5101	Laptop Network Power Management Enabling	Misc	2014	2054	1.20	0.18	0.03	0.31	21%	0.00	0.05	21%	1.13	0.10	7	1	0.05			0.00	0.00
VA	5200	5200	Base Monitor, CRT	Misc	2014	2054	6.13	0.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.13	0.93	0.00	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Misc	2014	2054	2.69	0.41	3.44	3.44	56%	0.52	0.52	56%	0.00	0.00	0	0	46.17			3.44	0.52
VA	5200	5202	Monitor Power Management Enabling - CRT	Misc	2014	2054	2.01	0.35	0.68	4.12	67%	0.05	0.57	62%	0.02	0.00	0	0	3.02			0.68	0.05
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Misc	2014	2054	1.85	0.33	0.16	4.27	70%	0.02	0.60	64%	0.19	0.01	1	0	0.28			0.00	0.00
VA	5300	5300	Base Monitor, LCD	Misc	2014	2054	5.57	0.84	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.57	0.84	0.00	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Misc	2014	2054	4.57	0.69	1.00	1.00	18%	0.15	0.15	18%	0.01	0.01	0	0	6.77			1.00	0.15
VA	5300	5302	Monitor Power Management Enabling - LCD	Misc	2014	2054	4.41	0.68	0.16	1.16	21%	0.01	0.16	19%	0.07	0.02	1	0	0.68			0.00	0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Misc	2014	2054	4.07	0.67	0.33	1.49	27%	0.01	0.18	21%	0.21	0.06	5	1	0.22			0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	5400	5400	Base Copier	Misc	2014	2054	9.83	1.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.83	1.49	0.00	0.00
VA	5400	5401	Energy Star or Better Copier	Misc	2014	2054	8.51	1.29	1.32	1.32	13%	0.20	0.20	13%	0.00	0.00	0	0	35.00			1.32	0.20
VA	5400	5402	Copier Power Management Enabling	Misc	2014	2054	8.09	1.26	0.42	1.74	18%	0.03	0.23	16%	0.09	0.02	1	0	0.61			0.00	0.00
VA	5500	5500	Base Multifunction	Misc	2014	2054	1.46	0.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.46	0.22	0.00	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Misc	2014	2054	1.10	0.17	0.37	0.37	25%	0.06	0.06	25%	0.01	0.01	0	0	9.86			0.37	0.06
VA	5500	5501	Multifunction Power Management Enabling	Misc	2014	2054	0.92	0.15	0.18	0.55	37%	0.01	0.07	31%	0.23	0.08	3	1	0.22			0.00	0.00
VA	5600	5600	Base Printer	Misc	2014	2054	7.65	1.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.65	1.16	0.00	0.00
VA	5600	5602	ENERGY STAR Printer	Misc	2014	2054	4.99	0.76	2.66	2.66	35%	0.40	0.40	35%	0.00	0.00	0	0	45.31			2.66	0.40
VA	5600	5601	Printer Power Management Enabling	Misc	2014	2054	4.17	0.69	0.82	3.48	45%	0.06	0.47	40%	0.05	0.01	1	0	1.02			0.82	0.06
VA	5700	5700	Base Data Center/Server Room	Misc	2014	2054	57.89	8.77	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	57.89	8.77	0.00	0.00
VA	5700	5701	Data Center Improved Operations	Misc	2014	2054	52.10	7.89	5.79	5.79	10%	0.88	0.88	10%	0.00	0.00	0	0	117.62			5.79	0.88
VA	5700	5702	Data Center Best Practices	Misc	2014	2054	45.47	6.89	6.63	12.42	21%	1.00	1.88	21%	0.00	0.00	0	0	47.88			6.63	1.00
VA	5700	5703	Data Center State of the Art practices	Misc	2014	2054	42.93	6.50	2.55	14.96	26%	0.39	2.27	26%	0.00	0.00	0	0	24.83			2.55	0.39
VA	6000	6000	Base Water Heating	Misc	2014	2054	92.42	13.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	92.42	13.64	0.00	0.00
VA	6000	6007	Heat Trap	Misc	2014	2054	87.63	12.94	4.79	4.79	5%	0.71	0.71	5%	0.01	0.01	0	0	4.47			4.79	0.71
VA	6000	6002	High Efficiency Water Heater (electric)	Misc	2014	2054	85.88	12.68	1.75	6.54	7%	0.26	0.97	7%	0.03	0.02	0	0	2.40			1.75	0.26
VA	6000	6004	Tankless Water Heater	Misc	2014	2054	79.44	11.73	6.44	12.98	14%	0.95	1.92	14%	0.05	0.03	0	0	1.71			6.44	0.95
VA	6000	6003	Hot Water Pipe Insulation	Misc	2014	2054	78.07	11.53	1.37	14.35	16%	0.20	2.12	16%	0.05	0.03	0	0	1.33			1.37	0.20
VA	6000	6006	Heat Recovery Unit	Misc	2014	2054	75.53	11.15	2.54	16.89	18%	0.37	2.49	18%	0.05	0.04	0	0	1.24			2.54	0.37
VA	6000	6001	Demand controlled circulating systems	Misc	2014	2054	72.70	10.73	2.83	19.72	21%	0.42	2.91	21%	0.15	0.05	1	0	0.48			0.00	0.00
VA	7000	7000	Base Refrigerated Vending Machines	Misc	2014	2054	16.86	2.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.86	2.80	0.00	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Misc	2014	2054	14.16	2.58	2.70	2.70	16%	0.23	0.23	8%	0.03	0.03	0	0	1.99			2.70	0.23
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Misc	2014	2054	12.68	2.45	1.48	4.18	25%	0.12	0.35	12%	0.05	0.03	1	0	1.09			1.48	0.12
VA	7100	7100	Base Non-Refrigerated Vending Machines	Misc	2014	2054	0.18	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.03	0.00	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Misc	2014	2054	0.10	0.02	0.08	0.08	46%	0.01	0.01	23%	0.44	0.44	5	5	0.12			0.00	0.00
VA	7200	7200	Base Oven	Misc	2014	2054	5.95	0.96	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.95	0.96	0.00	0.00
VA	7300	7300	Base Fryer	Misc	2014	2054	10.69	1.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.69	1.73	0.00	0.00
VA	7300	7301	Efficient Fryer	Misc	2014	2054	10.00	1.62	0.68	0.68	6%	0.11	0.11	6%	0.43	0.43	3	3	0.16			0.00	0.00
VA	7400	7400	Base Steamer	Misc	2014	2054	2.65	0.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.65	0.43	0.00	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Misc	2014	2054	45.34	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	45.34	0.00	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	2014	2054	42.78	0.00	2.56	2.56	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	2.18			2.56	0.00
VA	8100	8100	Base Heating, Other Electric	Misc	2014	2054	42.11	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	42.11	0.00	0.00	0.00
VA	9500	9500	Base Miscellaneous	Misc	2014	2054	803.83	133.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	803.83	133.64	0.00	0.00
VA	9500	9501	Xmisc	Misc	2014	2054	803.83	133.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Office	2020	2054	56.85	10.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	56.85	10.58	0.00	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Office	2020	2054	56.82	10.58	0.03	0.03	0%	0.00	0.00	0%	0.01	0.01	0	0	6.45			0.03	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	2020	2054	52.56	9.94	4.26	4.29	8%	0.63	0.64	6%	0.01	0.01	0	0	5.92			4.26	0.63
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Office	2020	2054	47.20	8.95	5.35	9.65	17%	1.00	1.63	15%	0.02	0.02	0	0	3.30			5.35	1.00
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	2020	2054	41.20	7.83	6.01	15.65	28%	1.12	2.75	26%	0.04	0.03	0	0	1.58			6.01	1.12
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Office	2020	2054	37.77	7.67	3.43	19.08	34%	0.16	2.91	28%	0.06	0.03	1	0	0.99			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Office	2020	2054	31.68	6.54	6.08	25.17	44%	1.13	4.04	38%	0.25	0.08	1	1	0.29			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Office	2020	2054	28.98	6.03	2.70	27.87	49%	0.50	4.55	43%	0.21	0.10	1	1	0.35			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Office	2020	2054	0.96	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.96	0.18	0.00	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Office	2020	2054	0.96	0.18	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	3.75			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Office	2020	2054	0.89	0.17	0.07	0.07	8%	0.01	0.01	6%	0.02	0.02	0	0	3.44			0.07	0.01
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Office	2020	2054	0.80	0.15	0.09	0.17	17%	0.02	0.03	16%	0.02	0.02	0	0	2.60			0.09	0.02
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Office	2020	2054	0.69	0.13	0.10	0.27	28%	0.02	0.05	26%	0.05	0.03	0	0	1.25			0.10	0.02
NC	1130	1134	ROB 2L4' LED Tube, 2020	Office	2020	2054	0.66	0.13	0.03	0.30	31%	0.01	0.05	30%	0.19	0.05	1	0	0.39			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Office	2020	2054	0.61	0.12	0.06	0.35	37%	0.00	0.06	31%	0.11	0.06	2	0	0.53			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Office	2020	2054	0.55	0.11	0.05	0.41	42%	0.01	0.07	36%	0.26	0.09	1	1	0.28			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Office	2014	2054	2.09	0.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.09	0.39	0.00	0.00
NC	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Office	2014	2054	2.08	0.39	0.01	0.01	0%	0.00	0.00	0%	0.00	0.00	0	0	18.14			0.01	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Office	2014	2054	1.92	0.36	0.16	0.16	8%	0.02	0.02	6%	0.03	0.03	0	0	2.77			0.16	0.02
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Office	2014	2054	1.72	0.33	0.20	0.36	17%	0.04	0.06	16%	0.08	0.05	0	0	0.81			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	2014	2054	1.47	0.32	0.25	0.61	29%	0.01	0.07	19%	0.10	0.07	2	1	0.55			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Office	2020	2054	13.73	2.56	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.73	2.56	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Office	2020	2054	2.40	0.45	11.33	11.33	83%	2.11	2.11	83%	0.01	0.01	0	0	11.74			11.33	2.11
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Office	2020	2054	4.94	0.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.94	0.92	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Office	2020	2054	0.94	0.17	4.00	4.00	81%	0.75	0.75	81%	0.01	0.01	0	0	9.91			4.00	0.75
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Office	2020	2054	3.64	0.68	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.64	0.68	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Office	2020	2054	0.95	0.18	2.69	2.69	74%	0.50	0.50	74%	0.01	0.01	0	0	7.37			2.69	0.50
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Office	2020	2054	0.25	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.25	0.05	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Office	2020	2054	0.18	0.03	0.07	0.07	28%	0.01	0.01	28%	0.05	0.05	0	0	1.17			0.07	0.01
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Office	2020	2054	0.32	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.06	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Office	2020	2054	0.23	0.04	0.08	0.08	26%	0.02	0.02	26%	0.04	0.04	0	0	1.56			0.08	0.02
NC	1800	1800	BaseMetal Halide, 465W	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Office	2014	2054	0.52	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.52	0.10	0.00	0.00
NC	1850	1851	LED Exit Sign	Office	2014	2054	0.29	0.05	0.23	0.23	44%	0.04	0.04	44%	0.02	0.02	0	0	2.50			0.23	0.04
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Office	2014	2054	1.31	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.31	0.02	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Office	2014	2054	1.19	0.01	0.12	0.12	9%	0.01	0.01	30%	0.04	0.04	1	1	1.80			0.12	0.01
NC	1900	1902	LED Outdoor Area Lighting	Office	2014	2054	0.57	0.00	0.62	0.74	56%	0.01	0.01	77%	0.08	0.08	6	4	0.77			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Office	2014	2054	0.40	0.00	0.17	0.90	69%	0.00	0.02	89%	0.54	0.16	44	9	0.12			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Office	2014	2054	0.75	0.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.75	0.53	0.00	0.00
NC	2000	2010	Ceiling/roof Insulation - Chiller	Office	2014	2054	0.75	0.52	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	19.08			0.00	0.00

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	2014	2054	0.68	0.48	0.06	0.07	9%	0.04	0.05	9%	0.03	0.03	0	0	4.34			0.06	0.04
NC	2000	2005	Chiller Tune Up/Diagnostics	Office	2014	2054	0.68	0.48	0.00	0.07	9%	0.00	0.05	9%	0.02	0.03	0	0	3.53			0.00	0.00
NC	2000	2013	High Efficiency Chiller Motors	Office	2014	2054	0.68	0.48	0.00	0.07	9%	0.00	0.05	9%	0.04	0.03	0	0	2.83			0.00	0.00
NC	2000	2006	VSD for Chiller Pumps and Towers	Office	2014	2054	0.68	0.48	0.00	0.07	10%	0.00	0.05	9%	0.03	0.03	0	0	2.60			0.00	0.00
NC	2000	2003	EMS - Chiller	Office	2014	2054	0.63	0.47	0.05	0.12	16%	0.01	0.06	11%	0.05	0.04	0	0	1.48			0.05	0.01
NC	2000	2008	New Economizer - Chiller	Office	2014	2054	0.59	0.46	0.04	0.16	22%	0.01	0.07	12%	0.06	0.04	0	0	1.12			0.04	0.01
NC	2000	2002	Window Film (Standard) - Chiller	Office	2014	2054	0.59	0.46	0.00	0.16	22%	0.00	0.07	12%	0.09	0.04	0	0	1.02			0.00	0.00
NC	2000	2012	Duct Testing/Sealing	Office	2014	2054	0.48	0.38	0.11	0.27	36%	0.08	0.14	27%	0.16	0.09	0	0	0.76			0.00	0.00
NC	2000	2004	Cool Roof - Chiller	Office	2014	2054	0.48	0.38	0.00	0.28	37%	0.00	0.14	28%	0.23	0.09	0	0	0.41			0.00	0.00
NC	2000	2011	Duct/Pipe Insulation - Chiller	Office	2014	2054	0.47	0.38	0.00	0.28	37%	0.00	0.15	28%	1.94	0.10	3	0	0.05			0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Office	2014	2054	16.50	11.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.50	11.54	0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Office	2014	2054	12.70	8.89	3.79	3.79	23%	2.65	2.65	23%	0.02	0.02	0	0	4.57			3.79	2.65
NC	2100	2111	Economizer Repair - DX	Office	2014	2054	12.08	8.23	0.62	4.42	27%	0.65	3.31	29%	0.06	0.03	0	0	1.63			0.62	0.65
NC	2100	2108	Optimize Controls - DX	Office	2014	2054	11.87	8.20	0.21	4.62	28%	0.04	3.35	29%	0.06	0.03	0	0	0.94			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	Office	2014	2054	11.63	8.02	0.25	4.87	30%	0.17	3.52	30%	0.10	0.03	0	0	0.91			0.00	0.00
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	Office	2014	2054	11.61	8.02	0.01	4.88	30%	0.00	3.52	31%	0.09	0.03	0	0	0.83			0.00	0.00
NC	2100	2109	Economizer - DX	Office	2014	2054	10.34	7.80	1.28	6.16	37%	0.22	3.74	32%	0.08	0.04	0	0	0.82			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Office	2014	2054	9.71	7.36	0.63	6.79	41%	0.44	4.18	36%	0.20	0.06	0	0	0.61			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Office	2014	2054	9.50	7.32	0.21	6.99	42%	0.04	4.22	37%	0.11	0.06	1	0	0.57			0.00	0.00
NC	2100	2107	Cool Roof - DX	Office	2014	2054	9.42	7.26	0.08	7.07	43%	0.06	4.28	37%	0.26	0.06	0	0	0.37			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Office	2014	2054	9.42	7.26	0.00	7.08	43%	0.00	4.28	37%	0.21	0.06	1	0	0.31			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Office	2014	2054	9.36	7.22	0.06	7.14	43%	0.04	4.32	37%	2.16	0.08	3	0	0.04			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Office	2014	2054	18.61	13.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.61	13.02	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014	2054	16.31	11.41	2.30	2.30	12%	1.61	1.61	12%	0.02	0.02	0	0	6.40			2.30	1.61
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Office	2014	2054	2.08	1.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.08	1.45	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Office	2014	2054	13.42	4.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.42	4.05	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Office	2014	2054	13.21	3.99	0.22	0.22	2%	0.07	0.07	2%	0.02	0.02	0	0	4.54			0.22	0.07
NC	3000	3002	Variable Speed Drive Control, 5 HP	Office	2014	2054	9.98	3.74	3.22	3.44	26%	0.24	0.31	8%	0.02	0.02	0	0	4.28			3.22	0.24
NC	3000	3003	Demand Controlled Ventilation	Office	2014	2054	9.44	3.43	0.54	3.99	30%	0.31	0.62	15%	0.66	0.10	1	1	0.16			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Office	2014	2054	2.33	0.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.33	0.70	0.00	0.00
NC	3100	3102	Variable Speed Drive Control, 15 HP	Office	2014	2054	1.76	0.66	0.57	0.57	24%	0.04	0.04	6%	0.00	0.00	0	0	15.75			0.57	0.04
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Office	2014	2054	1.75	0.66	0.01	0.58	25%	0.00	0.05	7%	0.01	0.00	0	0	7.56			0.01	0.00
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Office	2014	2054	1.63	0.62	0.12	0.69	30%	0.03	0.08	11%	0.02	0.01	0	0	3.35			0.12	0.03
NC	3100	3103	Air Handler Optimization, 15 HP	Office	2014	2054	1.48	0.61	0.16	0.85	37%	0.01	0.09	13%	0.02	0.01	0	0	2.55			0.16	0.01
NC	3100	3105	Energy Recovery Ventilation (ERV)	Office	2014	2054	1.44	0.59	0.03	0.88	38%	0.02	0.11	16%	0.25	0.02	0	0	0.45			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	Office	2014	2054	1.36	0.55	0.08	0.96	41%	0.04	0.15	22%	0.79	0.08	1	1	0.13			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Office	2014	2054	1.47	0.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.47	0.44	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	Office	2014	2054	1.33	0.43	0.14	0.14	10%	0.01	0.01	2%	0.02	0.02	0	0	3.64			0.14	0.01
NC	3200	3202	Variable Speed Drive Control, 40 HP	Office	2014	2054	1.00	0.41	0.32	0.46	32%	0.02	0.04	8%	0.02	0.02	0	0	2.83			0.32	0.02
NC	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Office	2014	2054	1.00	0.41	0.00	0.47	32%	0.00	0.04	8%	0.11	0.02	0	0	0.85			0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	Office	2014	2054	0.94	0.38	0.05	0.52	36%	0.03	0.07	15%	0.72	0.09	1	1	0.15			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Office	2014	2054	4.90	0.69	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.90	0.69	0.00	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Office	2014	2054	4.81	0.67	0.09	0.09	2%	0.01	0.01	2%	0.00	0.00	0	0	24.82			0.09	0.01
NC	4100	4110	Energy Star Ice Machines	Office	2014	2054	4.80	0.67	0.01	0.10	2%	0.00	0.01	2%	0.02	0.00	0	0	3.26			0.01	0.00
NC	5000	5000	Base Desktop PC	Office	2014	2054	8.14	1.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.14	1.13	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Office	2014	2054	4.39	0.87	3.75	3.75	46%	0.26	0.26	23%	0.01	0.01	0	0	4.60			3.75	0.26
NC	5000	5002	Energy Star or Better PC	Office	2014	2054	3.41	0.73	0.98	4.72	58%	0.14	0.40	35%	0.02	0.01	0	0	2.28			0.98	0.14
NC	5100	5100	Base Laptop PC	Office	2014	2054	0.20	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.03	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Office	2014	2054	0.16	0.02	0.04	0.04	19%	0.01	0.01	19%	0.01	0.01	0	0	6.22			0.04	0.01
NC	5100	5101	Laptop Network Power Management Enabling	Office	2014	2054	0.16	0.02	0.00	0.04	21%	0.00	0.01	21%	1.03	0.09	7	1	0.05			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Office	2014	2054	2.91	0.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.91	0.40	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Office	2014	2054	1.67	0.23	1.24	1.24	43%	0.17	0.17	43%	0.00	0.00	0	0	64.73			1.24	0.17
NC	5200	5202	Monitor Power Management Enabling - CRT	Office	2014	2054	1.45	0.22	0.22	1.46	50%	0.02	0.19	46%	0.01	0.00	0	0	5.49			0.22	0.02
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Office	2014	2054	1.34	0.20	0.11	1.58	54%	0.02	0.20	50%	0.12	0.01	1	0	0.46			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Office	2014	2054	1.20	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.20	0.17	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Office	2014	2054	1.04	0.14	0.16	0.16	13%	0.02	0.02	13%	0.01	0.01	0	0	5.91			0.16	0.02
NC	5300	5302	Monitor Power Management Enabling - LCD	Office	2014	2054	0.97	0.14	0.08	0.23	20%	0.01	0.03	16%	0.09	0.03	1	0	0.57			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Office	2014	2054	0.89	0.14	0.08	0.31	26%	0.00	0.03	18%	0.24	0.08	7	1	0.19			0.00	0.00
NC	5400	5400	Base Copier	Office	2014	2054	3.29	0.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.29	0.46	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Office	2014	2054	2.96	0.41	0.33	0.33	10%	0.05	0.05	10%	0.00	0.00	0	0	39.05			0.33	0.05
NC	5400	5402	Copier Power Management Enabling	Office	2014	2054	2.83	0.40	0.13	0.45	14%	0.01	0.05	12%	0.07	0.02	1	0	0.71			0.00	0.00
NC	5500	5500	Base Multifunction	Office	2014	2054	0.45	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.06	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Office	2014	2054	0.34	0.05	0.11	0.11	25%	0.02	0.02	25%	0.01	0.01	0	0	10.57			0.11	0.02
NC	5500	5501	Multifunction Power Management Enabling	Office	2014	2054	0.28	0.04	0.06	0.18	39%	0.00	0.02	32%	0.21	0.08	3	1	0.24			0.00	0.00
NC	5600	5600	Base Printer	Office	2014	2054	4.28	0.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.28	0.59	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Office	2014	2054	2.79	0.39	1.49	1.49	35%	0.21	0.21	35%	0.00	0.00	0	0	48.60			1.49	0.21
NC	5600	5601	Printer Power Management Enabling	Office	2014	2054	2.28	0.35	0.51	2.00	47%	0.04	0.24	41%	0.05	0.01	1	0	1.10			0.51	0.04
NC	5700	5700	Base Data Center/Server Room	Office	2014	2054	1.34	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.34	0.19	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Office	2014	2054	1.21	0.17	0.13	0.13	10%	0.02	0.02	10%	0.00	0.00	0	0	173.26			0.13	0.02
NC	5700	5702	Data Center Best Practices	Office	2014	2054	1.05	0.15	0.15	0.29	21%	0.02	0.04	21%	0.00	0.00	0	0	70.54			0.15	0.02
NC	5700	5703	Data Center State of the Art practices	Office	2014	2054	0.99	0.14	0.06	0.35	26%	0.01	0.05	26%	0.00	0.00	0	0	36.58			0.06	0.01
NC	6000	6000	Base Water Heating	Office	2014	2054	3.14	0.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.14	0.42	0.00	0.00
NC	6000	6007	Heat Trap	Office	2014	2054	2.98	0.40	0.16	0.16	5%	0.02	0.02	5%	0.01	0.01	0	0	4.57			0.16	0.02

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	6000	6002	High Efficiency Water Heater (electric)	Office	2014	2054	2.92	0.39	0.06	0.22	7%	0.01	0.03	7%	0.03	0.02	0	0	2.45			0.06	0.01
NC	6000	6004	Tankless Water Heater	Office	2014	2054	2.70	0.36	0.22	0.44	14%	0.03	0.06	14%	0.04	0.03	0	0	1.75			0.22	0.03
NC	6000	6008	Solar Water Heater	Office	2014	2054	1.26	0.17	1.44	1.88	60%	0.19	0.25	60%	0.05	0.05	0	0	1.50			1.44	0.19
NC	6000	6003	Hot Water Pipe Insulation	Office	2014	2054	1.25	0.17	0.01	1.89	60%	0.00	0.26	60%	0.11	0.05	1	0	0.63			0.00	0.00
NC	6000	6006	Heat Recovery Unit	Office	2014	2054	1.17	0.16	0.08	1.97	63%	0.01	0.27	63%	0.12	0.05	1	0	0.55			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	Office	2014	2054	1.13	0.15	0.03	2.01	64%	0.00	0.27	64%	0.35	0.06	3	0	0.21			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Office	2014	2054	1.93	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.93	0.28	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Office	2014	2054	1.62	0.26	0.31	0.31	16%	0.02	0.02	8%	0.03	0.03	0	0	1.98			0.31	0.02
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Office	2014	2054	1.45	0.25	0.17	0.48	25%	0.01	0.03	12%	0.05	0.03	1	0	1.09			0.17	0.01
NC	7100	7100	Base Non-Refrigerated Vending Machines	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7200	7200	Base Oven	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7300	7300	Base Fryer	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7400	7400	Base Steamer	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Office	2014	2054	2.83	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.83	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014	2054	2.67	0.00	0.16	0.16	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	3.58			0.16	0.00
NC	8100	8100	Base Heating, Other Electric	Office	2014	2054	2.65	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.65	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Office	2014	2054	22.23	3.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	22.23	3.24	0.00	0.00
NC	9500	9501	Xmisc	Office	2014	2054	22.23	3.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Restaurant	2020	2054	0.79	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.79	0.16	0.00	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Restaurant	2020	2054	0.79	0.16	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	6.75			0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Restaurant	2020	2054	0.73	0.15	0.06	0.06	8%	0.01	0.01	6%	0.01	0.01	0	0	6.12			0.06	0.01
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Restaurant	2020	2054	0.65	0.13	0.08	0.14	17%	0.01	0.02	16%	0.03	0.02	0	0	1.89			0.08	0.01
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	2020	2054	0.57	0.11	0.08	0.22	28%	0.02	0.04	26%	0.07	0.04	0	0	0.91			0.00	0.00
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Restaurant	2020	2054	0.56	0.11	0.01	0.23	29%	0.00	0.04	26%	0.13	0.04	3	0	0.44			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Restaurant	2020	2054	0.47	0.10	0.09	0.32	40%	0.02	0.06	38%	0.40	0.14	2	1	0.18			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Restaurant	2020	2054	0.43	0.09	0.04	0.36	45%	0.01	0.07	43%	0.33	0.16	2	1	0.22			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Restaurant	2020	2054	4.69	0.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.69	0.93	0.00	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Restaurant	2020	2054	4.68	0.92	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	3.22			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Restaurant	2020	2054	4.33	0.87	0.35	0.36	8%	0.06	0.06	6%	0.02	0.02	0	0	2.93			0.35	0.06
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Restaurant	2020	2054	3.88	0.78	0.45	0.81	17%	0.09	0.14	16%	0.04	0.03	0	0	1.49			0.45	0.09
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	2020	2054	3.38	0.68	0.49	1.30	28%	0.10	0.24	26%	0.09	0.05	0	0	0.72			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Restaurant	2020	2054	3.22	0.65	0.16	1.47	31%	0.03	0.27	30%	0.32	0.08	2	0	0.23			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Restaurant	2020	2054	2.95	0.60	0.27	1.74	37%	0.05	0.33	36%	0.40	0.13	2	1	0.18			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Restaurant	2020	2054	2.90	0.59	0.04	1.78	38%	0.00	0.33	36%	0.26	0.14	5	1	0.22			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Restaurant	2020	2054	1.22	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.22	0.24	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Restaurant	2020	2054	0.24	0.05	0.98	0.98	80%	0.19	0.19	80%	0.01	0.01	0	0	8.08			0.98	0.19
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Restaurant	2020	2054	0.44	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.09	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Restaurant	2020	2054	0.09	0.02	0.34	0.34	79%	0.07	0.07	79%	0.01	0.01	0	0	6.80			0.34	0.07
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Restaurant	2020	2054	0.32	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.06	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Restaurant	2020	2054	0.09	0.02	0.23	0.23	71%	0.05	0.05	71%	0.01	0.01	0	0	5.00			0.23	0.05
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Restaurant	2020	2054	0.16	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.03	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Restaurant	2020	2054	0.12	0.02	0.04	0.04	28%	0.01	0.01	28%	0.08	0.08	0	0	0.71			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Restaurant	2020	2054	0.20	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.04	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Restaurant	2020	2054	0.15	0.03	0.05	0.05	26%	0.01	0.01	26%	0.06	0.06	0	0	0.95			0.00	0.00
NC	1800	1800	BaseMetal Halide, 465W	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1800	1801	T5 (240W) (base metal halide)	Restaurant	2014	2054	0.00	0.00	0.00	0.00	34%	0.00	0.00	34%	0.02	0.02	0	0	5.32			0.00	0.00
NC	1800	1806	Occupancy Sensor, High Bay T5	Restaurant	2014	2054	0.00	0.00	0.00	0.00	36%	0.00	0.00	34%	0.04	0.02	1	0	1.39			0.00	0.00
NC	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Restaurant	2014	2054	0.00	0.00	0.00	0.00	41%	0.00	0.00	38%	1.06	0.14	7	1	0.07			0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Restaurant	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	1850	1851	LED Exit Sign	Restaurant	2014	2054	0.05	0.01	0.07	0.07	58%	0.01	0.01	58%	0.06	0.06	0	0	1.08			0.07	0.01
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Restaurant	2014	2054	1.83	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.83	0.12	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Restaurant	2014	2054	1.52	0.06	0.31	0.31	17%	0.06	0.06	50%	0.07	0.07	0	0	1.27			0.31	0.06
NC	1900	1902	LED Outdoor Area Lighting	Restaurant	2014	2054	0.73	0.01	0.79	1.10	60%	0.05	0.11	93%	0.16	0.13	2	1	0.44			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Restaurant	2014	2054	0.52	0.00	0.21	1.31	72%	0.01	0.13	104%	1.02	0.28	17	3	0.07			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Restaurant	2014	2054	0.42	0.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.42	0.26	0.00	0.00
NC	2000	2010	Ceiling/roof Insulation - Chiller	Restaurant	2014	2054	0.39	0.24	0.03	0.03	7%	0.02	0.02	7%	0.02	0.02	0	0	7.73			0.03	0.02
NC	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Restaurant	2014	2054	0.35	0.22	0.03	0.06	15%	0.02	0.04	15%	0.02	0.02	0	0	5.22			0.03	0.02
NC	2000	2005	Chiller Tune Up/Diagnostics	Restaurant	2014	2054	0.35	0.22	0.00	0.06	15%	0.00	0.04	15%	0.02	0.02	0	0	4.40			0.00	0.00
NC	2000	2003	EMS - Chiller	Restaurant	2014	2054	0.32	0.22	0.03	0.09	22%	0.00	0.04	17%	0.04	0.03	0	0	1.86			0.03	0.00
NC	2000	2012	Duct Testing/Sealing	Restaurant	2014	2054	0.27	0.18	0.06	0.15	36%	0.04	0.08	31%	0.11	0.06	0	0	0.99			0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Restaurant	2014	2054	6.90	4.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.90	4.32	0.00	0.00
NC	2100	2113	Ceiling/roof Insulation - DX	Restaurant	2014	2054	6.90	4.32	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	8.33			0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Restaurant	2014	2054	5.31	3.32	1.59	1.59	23%	0.99	0.99	23%	0.02	0.02	0	0	5.90			1.59	0.99
NC	2100	2115	Window Film (Standard) - DX	Restaurant	2014	2054	4.93	3.08	0.39	1.97	29%	0.24	1.24	29%	0.02	0.02	0	0	4.09			0.39	0.24
NC	2100	2108	Optimize Controls - DX	Restaurant	2014	2054	4.84	3.07	0.09	2.06	30%	0.01	1.25	29%	0.04	0.02	0	0	1.25			0.09	0.01
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	Restaurant	2014	2054	4.84	3.07	0.00	2.06	30%	0.00	1.25	29%	0.07	0.02	0	0	1.10			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Restaurant	2014	2054	4.73	3.05	0.11	2.17	31%	0.02	1.27	29%	0.06	0.02	0	0	0.92			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Restaurant	2014	2054	4.46	2.89	0.27	2.44	35%	0.17	1.43	33%	0.13	0.03	0	0	0.87			0.00	0.00
NC	2100	2111	Economizer Repair - DX	Restaurant	2014	2054	4.32	2.75	0.14	2.58	37%	0.13	1.57	36%	0.12	0.04	0	0	0.72			0.00	0.00
NC	2100	2107	Cool Roof - DX	Restaurant	2014	2054	4.18	2.67	0.14	2.72	39%	0.09	1.65	38%	0.14	0.04	0	0	0.66			0.00	0.00
NC	2100	2109	Economizer - DX	Restaurant	2014	2054	4.10	2.65	0.09	2.80	41%	0.01	1.66	39%	0.15	0.05	1	0	0.42			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Restaurant	2014	2054	4.10	2.65	0.00	2.80	41%	0.00	1.67	39%	0.15	0.05	1	0	0.41			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Restaurant	2014	2054	4.05	2.62	0.05	2.85	41%	0.03	1.70	39%	1.55	0.07	2	0	0.06			0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Restaurant	2014	2054	3.42	2.14	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.42	2.14	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	2014	2054	3.00	1.88	0.42	0.42	12%	0.27	0.27	12%	0.01	0.01	0	0	8.27			0.42	0.27
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Restaurant	2014	2054	1.27	0.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.27	0.80	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Restaurant	2014	2054	3.98	1.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.98	1.03	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Restaurant	2014	2054	3.91	1.01	0.07	0.07	2%	0.02	0.02	2%	0.11	0.11	0	0	0.78			0.00	0.00
NC	3000	3002	Variable Speed Drive Control, 5 HP	Restaurant	2014	2054	2.72	0.93	1.19	1.26	32%	0.08	0.09	9%	0.09	0.09	1	1	0.76			0.00	0.00
NC	3000	3003	Demand Controlled Ventilation	Restaurant	2014	2054	2.36	0.75	0.37	1.62	41%	0.18	0.28	27%	0.86	0.26	2	2	0.12			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Restaurant	2014	2054	17.13	2.56	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.13	2.56	0.00	0.00
NC	4100	4103	Night covers for display cases (self-contained)	Restaurant	2014	2054	16.71	2.50	0.42	0.42	2%	0.06	0.06	2%	0.00	0.00	0	0	13.90			0.42	0.06
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Restaurant	2014	2054	16.47	2.47	0.24	0.66	4%	0.04	0.10	4%	0.01	0.00	0	0	8.75			0.24	0.04
NC	4100	4109	Energy-Star Freezer, glass door	Restaurant	2014	2054	16.21	2.43	0.25	0.92	5%	0.04	0.14	5%	0.01	0.01	0	0	7.74			0.25	0.04
NC	4100	4107	Energy-Star Freezer, solid door	Restaurant	2014	2054	16.11	2.41	0.11	1.02	6%	0.02	0.15	6%	0.02	0.01	0	0	3.11			0.11	0.02
NC	4100	4108	Energy-Star Refrigerator, glass door	Restaurant	2014	2054	15.99	2.39	0.12	1.14	7%	0.02	0.17	7%	0.03	0.01	0	0	2.55			0.12	0.02
NC	4100	4106	Energy-Star Refrigerator, solid door	Restaurant	2014	2054	15.74	2.36	0.25	1.39	8%	0.04	0.21	8%	0.03	0.01	0	0	2.48			0.25	0.04
NC	4100	4110	Energy Star Ice Machines	Restaurant	2014	2054	15.49	2.32	0.24	1.64	10%	0.04	0.24	10%	0.07	0.02	0	0	0.90			0.00	0.00
NC	4100	4112	Reach-in unit occupancy sensors	Restaurant	2014	2054	15.49	2.32	0.01	1.64	10%	0.00	0.25	10%	0.29	0.02	2	0	0.22			0.00	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Restaurant	2014	2054	15.45	2.31	0.04	1.68	10%	0.01	0.25	10%	0.33	0.03	2	0	0.18			0.00	0.00
NC	4100	4101	Strip curtains for walk-ins (self-contained)	Restaurant	2014	2054	15.42	2.31	0.03	1.71	10%	0.00	0.26	10%	0.37	0.03	2	0	0.14			0.00	0.00
NC	5000	5000	Base Desktop PC	Restaurant	2014	2054	0.24	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.24	0.05	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Restaurant	2014	2054	0.13	0.04	0.11	0.11	45%	0.01	0.01	23%	0.02	0.02	0	0	2.69			0.11	0.01
NC	5000	5002	Energy Star or Better PC	Restaurant	2014	2054	0.09	0.03	0.04	0.15	63%	0.01	0.02	41%	0.04	0.03	0	0	1.36			0.04	0.01
NC	5100	5100	Base Laptop PC	Restaurant	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Restaurant	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	3.80			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Restaurant	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.77	0.16	9	1	0.03			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Restaurant	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Restaurant	2014	2054	0.02	0.00	0.03	0.03	56%	0.01	0.01	56%	0.00	0.00	0	0	30.23			0.03	0.01
NC	5200	5202	Monitor Power Management Enabling - CRT	Restaurant	2014	2054	0.02	0.00	0.01	0.04	67%	0.00	0.01	62%	0.03	0.01	0	0	1.97			0.01	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Restaurant	2014	2054	0.02	0.00	0.00	0.04	69%	0.00	0.01	64%	0.30	0.02	2	0	0.19			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Restaurant	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Restaurant	2014	2054	0.05	0.01	0.01	0.01	20%	0.00	0.00	20%	0.02	0.02	0	0	3.33			0.01	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Restaurant	2014	2054	0.05	0.01	0.00	0.02	27%	0.00	0.00	24%	0.17	0.06	2	0	0.30			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Restaurant	2014	2054	0.04	0.01	0.00	0.02	32%	0.00	0.00	25%	0.47	0.13	9	1	0.10			0.00	0.00
NC	5400	5400	Base Copier	Restaurant	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Restaurant	2014	2054	0.11	0.02	0.02	0.02	15%	0.00	0.00	15%	0.00	0.00	0	0	22.54			0.02	0.00
NC	5400	5402	Copier Power Management Enabling	Restaurant	2014	2054	0.10	0.02	0.01	0.03	23%	0.00	0.00	19%	0.15	0.05	1	0	0.36			0.00	0.00
NC	5500	5500	Base Multifunction	Restaurant	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Restaurant	2014	2054	0.03	0.01	0.01	0.01	25%	0.00	0.00	25%	0.01	0.01	0	0	6.45			0.01	0.00
NC	5500	5501	Multifunction Power Management Enabling	Restaurant	2014	2054	0.02	0.01	0.01	0.02	52%	0.00	0.00	39%	0.56	0.29	6	2	0.09			0.00	0.00
NC	5600	5600	Base Printer	Restaurant	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Restaurant	2014	2054	0.02	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00	0.00	0	0	29.66			0.01	0.00
NC	5600	5601	Printer Power Management Enabling	Restaurant	2014	2054	0.02	0.00	0.01	0.02	58%	0.00	0.00	47%	0.12	0.05	1	0	0.43			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Restaurant	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Restaurant	2014	2054	0.05	0.01	0.01	0.01	10%	0.00	0.00	10%	0.00	0.00	0	0	106.53			0.01	0.00
NC	5700	5702	Data Center Best Practices	Restaurant	2014	2054	0.04	0.01	0.01	0.01	21%	0.00	0.00	21%	0.00	0.00	0	0	43.37			0.01	0.00
NC	5700	5703	Data Center State of the Art practices	Restaurant	2014	2054	0.04	0.01	0.00	0.01	26%	0.00	0.00	26%	0.00	0.00	0	0	22.49			0.00	0.00
NC	6000	6000	Base Water Heating	Restaurant	2014	2054	2.97	0.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.97	0.50	0.00	0.00
NC	6000	6007	Heat Trap	Restaurant	2014	2054	2.81	0.47	0.15	0.15	5%	0.03	0.03	5%	0.01	0.01	0	0	10.74			0.15	0.03
NC	6000	6002	High Efficiency Water Heater (electric)	Restaurant	2014	2054	2.76	0.47	0.06	0.21	7%	0.01	0.04	7%	0.01	0.01	0	0	5.79			0.06	0.01
NC	6000	6006	Heat Recovery Unit	Restaurant	2014	2054	1.32	0.22	1.43	1.64	55%	0.24	0.28	55%	0.01	0.01	0	0	5.64			1.43	0.24
NC	6000	6004	Tankless Water Heater	Restaurant	2014	2054	1.22	0.21	0.10	1.74	59%	0.02	0.29	59%	0.04	0.01	0	0	1.98			0.10	0.02
NC	6000	6008	Solar Water Heater	Restaurant	2014	2054	1.05	0.18	0.17	1.91	65%	0.03	0.32	65%	0.05	0.02	0	0	1.70			0.17	0.03
NC	6000	6003	Hot Water Pipe Insulation	Restaurant	2014	2054	1.03	0.17	0.02	1.93	65%	0.00	0.33	65%	0.06	0.02	0	0	1.32			0.02	0.00
NC	6000	6001	Demand controlled circulating systems	Restaurant	2014	2054	0.99	0.17	0.04	1.97	67%	0.01	0.33	67%	0.18	0.02	1	0	0.42			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Restaurant	2014	2054	0.20	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.04	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Restaurant	2014	2054	0.16	0.04	0.03	0.03	16%	0.00	0.00	8%	0.03	0.03	0	0	2.02			0.03	0.00
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Restaurant	2014	2054	0.15	0.03	0.02	0.05	25%	0.00	0.00	12%	0.05	0.03	0	0	1.10			0.02	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Restaurant	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7200	7200	Base Oven	Restaurant	2014	2054	1.06	0.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.06	0.22	0.00	0.00
NC	7200	7201	Convection Oven	Restaurant	2014	2054	0.81	0.17	0.24	0.24	23%	0.05	0.05	23%	0.10	0.10	0	0	0.73			0.00	0.00
NC	7300	7300	Base Fryer	Restaurant	2014	2054	0.82	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.82	0.17	0.00	0.00
NC	7300	7301	Efficient Fryer	Restaurant	2014	2054	0.77	0.16	0.05	0.05	6%	0.01	0.01	6%	0.32	0.32	2	2	0.22			0.00	0.00
NC	7400	7400	Base Steamer	Restaurant	2014	2054	0.75	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.75	0.15	0.00	0.00
NC	7400	7401	Efficient Steamer	Restaurant	2014	2054	0.23	0.05	0.52	0.52	69%	0.11	0.11	69%	0.05	0.05	0	0	1.59			0.52	0.11
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Restaurant	2014	2054	0.10	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	2014	2054	0.09	0.00	0.01	0.01	6%	0.00	0.00	0%	0.05	0.05	N/A	N/A	1.21			0.01	0.00
NC	8100	8100	Base Heating, Other Electric	Restaurant	2014	2054	0.26	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.26	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Restaurant	2014	2054	6.97	1.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.97	1.37	0.00	0.00
NC	9500	9501	Xmisc	Restaurant	2014	2054	6.97	1.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Retail	2020	2054	41.00	7.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	41.00	7.42	0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Retail	2020	2054	37.89	6.97	3.11	3.11	8%	0.45	0.45	6%	0.02	0.02	0	0	4.09			3.11	0.45
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Retail	2020	2054	33.95	6.26	3.94	7.05	17%	0.71	1.16	16%	0.03	0.02	0	0	2.41			3.94	0.71

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Retail	2020	2054	29.63	5.48	4.32	11.37	28%	0.78	1.94	26%	0.05	0.03	0	0	1.16			4.32	0.78
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Retail	2020	2054	29.20	5.46	0.43	11.80	29%	0.02	1.96	26%	0.10	0.04	2	0	0.57			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Retail	2020	2054	24.50	4.61	4.70	16.50	40%	0.85	2.81	38%	0.31	0.11	2	1	0.23			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Retail	2020	2054	22.40	4.23	2.09	18.59	45%	0.38	3.19	43%	0.26	0.13	1	1	0.28			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Retail	2020	2054	8.19	1.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.19	1.48	0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Retail	2020	2054	7.57	1.39	0.62	0.62	8%	0.09	0.09	6%	0.03	0.03	0	0	2.40			0.62	0.09
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Retail	2020	2054	6.78	1.25	0.79	1.41	17%	0.14	0.23	16%	0.03	0.03	0	0	1.91			0.79	0.14
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Retail	2020	2054	5.92	1.09	0.86	2.27	28%	0.16	0.39	26%	0.07	0.04	0	0	0.91			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Retail	2020	2054	5.63	1.04	0.29	2.56	31%	0.05	0.44	30%	0.25	0.07	1	0	0.29			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Retail	2020	2054	5.15	0.96	0.48	3.04	37%	0.09	0.53	36%	0.31	0.11	2	1	0.23			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Retail	2020	2054	5.08	0.95	0.07	3.11	38%	0.00	0.53	36%	0.20	0.11	5	1	0.28			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Retail	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Retail	2014	2054	0.06	0.01	0.00	0.00	8%	0.00	0.00	6%	0.06	0.06	0	0	1.23			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Retail	2014	2054	0.05	0.01	0.01	0.01	17%	0.00	0.00	16%	0.10	0.08	1	1	0.60			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Retail	2014	2054	0.05	0.01	0.00	0.01	20%	0.00	0.00	16%	0.12	0.09	3	1	0.48			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Retail	2020	2054	2.53	0.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.53	0.46	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Retail	2020	2054	0.43	0.08	2.10	2.10	83%	0.38	0.38	83%	0.01	0.01	0	0	9.17			2.10	0.38
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Retail	2020	2054	0.91	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.91	0.16	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Retail	2020	2054	0.17	0.03	0.74	0.74	82%	0.13	0.13	82%	0.01	0.01	0	0	7.74			0.74	0.13
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Retail	2020	2054	0.67	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.67	0.12	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Retail	2020	2054	0.17	0.03	0.50	0.50	75%	0.09	0.09	75%	0.01	0.01	0	0	5.77			0.50	0.09
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Retail	2020	2054	1.31	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.31	0.24	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Retail	2020	2054	0.95	0.17	0.36	0.36	28%	0.07	0.07	28%	0.06	0.06	0	0	0.94			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Retail	2020	2054	1.67	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.67	0.30	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Retail	2020	2054	1.24	0.22	0.43	0.43	26%	0.08	0.08	26%	0.05	0.05	0	0	1.25			0.43	0.08
NC	1800	1800	BaseMetal Halide, 465W	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Retail	2014	2054	0.30	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.30	0.05	0.00	0.00
NC	1850	1851	LED Exit Sign	Retail	2014	2054	0.13	0.02	0.17	0.17	56%	0.03	0.03	56%	0.04	0.04	0	0	1.45			0.17	0.03
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Retail	2014	2054	1.36	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.36	0.09	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Retail	2014	2054	1.32	0.08	0.03	0.03	2%	0.01	0.01	7%	0.04	0.04	0	0	1.98			0.03	0.01
NC	1900	1902	LED Outdoor Area Lighting	Retail	2014	2054	0.64	0.04	0.69	0.72	53%	0.04	0.05	58%	0.10	0.10	2	1	0.66			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Retail	2014	2054	0.45	0.03	0.19	0.91	67%	0.01	0.06	70%	0.68	0.22	11	3	0.10			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Retail	2014	2054	24.20	20.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.20	20.00	0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Retail	2014	2054	18.64	15.40	5.57	5.57	23%	4.60	4.60	23%	0.04	0.04	0	0	3.17			5.57	4.60
NC	2100	2111	Economizer Repair - DX	Retail	2014	2054	17.33	13.88	1.30	6.87	28%	1.52	6.12	31%	0.08	0.05	0	0	1.13			1.30	1.52
NC	2100	2107	Cool Roof - DX	Retail	2014	2054	16.56	13.24	0.77	7.64	32%	0.64	6.76	34%	0.12	0.05	0	0	0.87			0.00	0.00
NC	2100	2108	Optimize Controls - DX	Retail	2014	2054	16.29	13.19	0.27	7.91	33%	0.06	6.82	34%	0.10	0.06	0	0	0.56			0.00	0.00
NC	2100	2109	Economizer - DX	Retail	2014	2054	14.90	12.89	1.39	9.30	38%	0.30	7.11	36%	0.13	0.07	1	0	0.50			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Retail	2014	2054	14.00	12.14	0.91	10.20	42%	0.75	7.86	39%	0.31	0.09	0	0	0.42			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Retail	2014	2054	13.61	12.06	0.39	10.59	44%	0.08	7.95	40%	0.17	0.09	1	0	0.35			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	Retail	2014	2054	13.56	12.02	0.05	10.64	44%	0.04	7.99	40%	0.38	0.09	0	0	0.27			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Retail	2014	2054	13.56	12.01	0.01	10.65	44%	0.00	7.99	40%	0.29	0.09	1	0	0.23			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Retail	2014	2054	13.46	11.93	0.10	10.75	44%	0.08	8.07	40%	3.43	0.12	4	0	0.03			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Retail	2014	2054	12.96	10.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.96	10.71	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	2014	2054	11.36	9.38	1.60	1.60	12%	1.32	1.32	12%	0.03	0.03	0	0	4.44			1.60	1.32
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Retail	2014	2054	1.11	0.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.11	0.92	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Retail	2014	2054	15.33	4.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.33	4.29	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Retail	2014	2054	15.08	4.23	0.24	0.24	2%	0.07	0.07	2%	0.02	0.02	0	0	3.79			0.24	0.07
NC	3000	3002	Variable Speed Drive Control, 5 HP	Retail	2014	2054	10.56	3.91	4.52	4.76	31%	0.32	0.38	9%	0.02	0.02	0	0	3.59			4.52	0.32
NC	3000	3003	Demand Controlled Ventilation	Retail	2014	2054	9.45	3.32	1.11	5.87	38%	0.59	0.98	23%	1.16	0.23	2	1	0.09			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Retail	2014	2054	0.53	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.53	0.15	0.00	0.00
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Retail	2014	2054	0.46	0.13	0.08	0.08	14%	0.02	0.02	13%	0.03	0.03	0	0	2.72			0.08	0.02
NC	3100	3103	Air Handler Optimization, 15 HP	Retail	2014	2054	0.41	0.13	0.05	0.12	23%	0.00	0.02	15%	0.03	0.03	0	0	2.08			0.05	0.00
NC	3100	3102	Variable Speed Drive Control, 15 HP	Retail	2014	2054	0.29	0.12	0.12	0.25	46%	0.01	0.03	21%	0.07	0.05	1	0	0.97			0.00	0.00
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Retail	2014	2054	0.29	0.12	0.00	0.25	46%	0.00	0.03	21%	0.21	0.05	1	0	0.43			0.00	0.00
NC	3100	3105	Energy Recovery Ventilation (ERV)	Retail	2014	2054	0.27	0.11	0.02	0.27	50%	0.01	0.04	28%	0.46	0.08	1	0	0.25			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	Retail	2014	2054	0.24	0.09	0.03	0.29	55%	0.01	0.06	38%	1.59	0.22	3	1	0.06			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Retail	2014	2054	0.53	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.53	0.15	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	Retail	2014	2054	0.48	0.15	0.05	0.05	10%	0.00	0.00	3%	0.02	0.02	0	0	2.44			0.05	0.00
NC	3200	3202	Variable Speed Drive Control, 40 HP	Retail	2014	2054	0.34	0.14	0.14	0.20	37%	0.01	0.01	9%	0.06	0.05	1	1	1.16			0.14	0.01
NC	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Retail	2014	2054	0.34	0.14	0.00	0.20	37%	0.00	0.01	9%	0.28	0.05	1	1	0.32			0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	Retail	2014	2054	0.30	0.12	0.04	0.23	44%	0.02	0.03	22%	1.27	0.23	2	2	0.08			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Retail	2014	2054	5.88	0.89	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.88	0.89	0.00	0.00
NC	4100	4109	Energy-Star Freezer, glass door	Retail	2014	2054	5.85	0.89	0.03	0.03	0%	0.00	0.00	0%	0.04	0.04	0	0	1.76			0.03	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Retail	2014	2054	5.72	0.87	0.13	0.15	3%	0.02	0.02	3%	0.04	0.04	0	0	1.52			0.13	0.02
NC	4100	4107	Energy-Star Freezer, solid door	Retail	2014	2054	5.71	0.87	0.01	0.16	3%	0.00	0.02	3%	0.09	0.04	1	0	0.70			0.00	0.00
NC	4100	4108	Energy-Star Refrigerator, glass door	Retail	2014	2054	5.61	0.85	0.11	0.27	5%	0.02	0.04	5%	0.11	0.07	1	0	0.60			0.00	0.00
NC	4100	4106	Energy-Star Refrigerator, solid door	Retail	2014	2054	5.59	0.85	0.02	0.28	5%	0.00	0.04	5%	0.12	0.07	1	0	0.55			0.00	0.00
NC	4100	4112	Reach-in unit occupancy sensors	Retail	2014	2054	5.56	0.85	0.03	0.31	5%	0.00	0.05	5%	0.27	0.09	2	1	0.23			0.00	0.00
NC	4100	4110	Energy Star Ice Machines	Retail	2014	2054	5.56	0.84	0.01	0.32	5%	0.00	0.05	5%	0.32	0.09	2	1	0.20			0.00	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Retail	2014	2054	5.51	0.84	0.05	0.37	6%	0.01	0.06	6%	0.31	0.12	2	1	0.19			0.00	0.00
NC	4100	4101	Strip curtains for walk-ins (self-contained)	Retail	2014	2054	5.50	0.84	0.00	0.37	6%	0.00	0.06	6%	1.91	0.13	13	1	0.03			0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Year Measure Start Year	Year Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	5000	5000	Base Desktop PC	Retail	2014	2054	0.82	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.82	0.15	0.00	0.00
NC	5000	5002	Energy Star or Better PC	Retail	2014	2054	0.70	0.12	0.12	0.12	15%	0.02	0.02	15%	0.01	0.01	0	0	3.72			0.12	0.02
NC	5000	5001	PC Network Power Management Enabling	Retail	2014	2054	0.38	0.10	0.31	0.44	53%	0.03	0.05	35%	0.02	0.02	0	0	2.93			0.31	0.03
NC	5100	5100	Base Laptop PC	Retail	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Retail	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	4.83			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Retail	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.38	0.12	8	1	0.04			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Retail	2014	2054	0.25	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.25	0.05	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Retail	2014	2054	0.11	0.02	0.14	0.14	56%	0.03	0.03	56%	0.00	0.00	0	0	38.40			0.14	0.03
NC	5200	5202	Monitor Power Management Enabling - CRT	Retail	2014	2054	0.09	0.02	0.02	0.16	63%	0.00	0.03	60%	0.02	0.00	0	0	2.95			0.02	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Retail	2014	2054	0.09	0.02	0.01	0.17	66%	0.00	0.03	63%	0.21	0.01	1	0	0.26			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Retail	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Retail	2014	2054	0.07	0.01	0.01	0.01	14%	0.00	0.00	14%	0.01	0.01	0	0	4.55			0.01	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Retail	2014	2054	0.07	0.01	0.00	0.01	17%	0.00	0.00	16%	0.11	0.03	1	0	0.45			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Retail	2014	2054	0.06	0.01	0.00	0.02	24%	0.00	0.00	17%	0.32	0.11	7	1	0.15			0.00	0.00
NC	5400	5400	Base Copier	Retail	2014	2054	0.50	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.50	0.09	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Retail	2014	2054	0.43	0.08	0.07	0.07	14%	0.01	0.01	14%	0.00	0.00	0	0	28.81			0.07	0.01
NC	5400	5402	Copier Power Management Enabling	Retail	2014	2054	0.41	0.07	0.02	0.09	18%	0.00	0.01	16%	0.11	0.03	1	0	0.50			0.00	0.00
NC	5500	5500	Base Multifunction	Retail	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Retail	2014	2054	0.06	0.01	0.02	0.02	25%	0.00	0.00	25%	0.01	0.01	0	0	8.20			0.02	0.00
NC	5500	5501	Multifunction Power Management Enabling	Retail	2014	2054	0.05	0.01	0.01	0.03	36%	0.00	0.00	30%	0.28	0.09	3	1	0.19			0.00	0.00
NC	5600	5600	Base Printer	Retail	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Retail	2014	2054	0.05	0.01	0.03	0.03	35%	0.01	0.01	35%	0.00	0.00	0	0	37.69			0.03	0.01
NC	5600	5601	Printer Power Management Enabling	Retail	2014	2054	0.05	0.01	0.01	0.04	44%	0.00	0.01	39%	0.06	0.01	1	0	0.87			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Retail	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Retail	2014	2054	0.07	0.01	0.01	0.01	10%	0.00	0.00	10%	0.00	0.00	0	0	135.09			0.01	0.00
NC	5700	5702	Data Center Best Practices	Retail	2014	2054	0.06	0.01	0.01	0.02	21%	0.00	0.00	21%	0.00	0.00	0	0	55.00			0.01	0.00
NC	5700	5703	Data Center State of the Art practices	Retail	2014	2054	0.06	0.01	0.00	0.02	26%	0.00	0.00	26%	0.00	0.00	0	0	28.52			0.00	0.00
NC	6000	6000	Base Water Heating	Retail	2014	2054	3.11	0.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.11	0.50	0.00	0.00
NC	6000	6007	Heat Trap	Retail	2014	2054	2.95	0.47	0.16	0.16	5%	0.03	0.03	5%	0.02	0.02	0	0	3.20			0.16	0.03
NC	6000	6002	High Efficiency Water Heater (electric)	Retail	2014	2054	2.89	0.47	0.06	0.22	7%	0.01	0.04	7%	0.04	0.03	0	0	1.72			0.06	0.01
NC	6000	6004	Tankless Water Heater	Retail	2014	2054	2.68	0.43	0.22	0.44	14%	0.03	0.07	14%	0.07	0.05	0	0	1.23			0.22	0.03
NC	6000	6008	Solar Water Heater	Retail	2014	2054	2.60	0.42	0.07	0.51	16%	0.01	0.08	16%	0.08	0.05	0	0	1.05			0.07	0.01
NC	6000	6003	Hot Water Pipe Insulation	Retail	2014	2054	2.56	0.41	0.04	0.55	18%	0.01	0.09	18%	0.08	0.05	0	0	0.92			0.00	0.00
NC	6000	6006	Heat Recovery Unit	Retail	2014	2054	2.48	0.40	0.08	0.64	20%	0.01	0.10	20%	0.09	0.06	1	0	0.72			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	Retail	2014	2054	2.44	0.39	0.04	0.68	22%	0.01	0.11	22%	0.13	0.06	1	0	0.57			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Retail	2014	2054	1.91	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.91	0.34	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Retail	2014	2054	1.61	0.31	0.30	0.30	16%	0.03	0.03	8%	0.03	0.03	0	0	2.02			0.30	0.03
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Retail	2014	2054	1.44	0.30	0.16	0.47	24%	0.01	0.04	12%	0.05	0.03	1	0	1.10			0.16	0.01
NC	7100	7100	Base Non-Refrigerated Vending Machines	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7200	7200	Base Oven	Retail	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	7200	7201	Convection Oven	Retail	2014	2054	0.01	0.00	0.00	0.00	23%	0.00	0.00	23%	0.09	0.09	1	1	0.76			0.00	0.00
NC	7300	7300	Base Fryer	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7300	7301	Efficient Fryer	Retail	2014	2054	0.00	0.00	0.00	0.00	6%	0.00	0.00	6%	0.30	0.30	2	2	0.23			0.00	0.00
NC	7400	7400	Base Steamer	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7400	7401	Efficient Steamer	Retail	2014	2054	0.00	0.00	0.00	0.00	64%	0.00	0.00	64%	0.04	0.04	0	0	1.94			0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Retail	2014	2054	1.44	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.44	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	2014	2054	1.36	0.00	0.08	0.08	6%	0.00	0.00	0%	0.04	0.04	N/A	N/A	1.66			0.08	0.00
NC	8100	8100	Base Heating, Other Electric	Retail	2014	2054	0.39	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Retail	2014	2054	36.79	6.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	36.79	6.58	0.00	0.00
NC	9500	9501	Xmisc	Retail	2014	2054	36.79	6.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Grocery	2020	2054	4.64	0.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.64	0.71	0.00	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Grocery	2020	2054	4.64	0.71	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	4.92			0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Grocery	2020	2054	4.28	0.67	0.36	0.36	8%	0.04	0.04	6%	0.02	0.02	0	0	4.31			0.36	0.04
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Grocery	2020	2054	3.85	0.60	0.44	0.79	17%	0.07	0.11	15%	0.04	0.03	0	0	1.38			0.44	0.07
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Grocery	2020	2054	3.36	0.52	0.49	1.28	28%	0.07	0.18	26%	0.08	0.05	1	0	0.66			0.00	0.00
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Grocery	2020	2054	3.31	0.52	0.05	1.33	29%	0.00	0.19	26%	0.12	0.05	3	0	0.48			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Grocery	2020	2054	2.77	0.44	0.53	1.87	40%	0.08	0.27	38%	0.50	0.18	3	1	0.12			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Grocery	2020	2054	2.54	0.40	0.24	2.10	45%	0.04	0.30	43%	0.41	0.21	3	1	0.15			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Grocery	2020	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Grocery	2020	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	4.11			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Grocery	2020	2054	0.02	0.00	0.00	0.00	8%	0.00	0.00	6%	0.02	0.02	0	0	3.60			0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	17%	0.00	0.00	15%	0.05	0.04	0	0	1.10			0.00	0.00
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	27%	0.00	0.00	26%	0.11	0.06	1	0	0.53			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	28%	0.00	0.00	26%	0.20	0.07	6	0	0.27			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Grocery	2020	2054	0.01	0.00	0.00	0.01	32%	0.00	0.00	29%	0.40	0.11	3	1	0.15			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Grocery	2020	2054	0.01	0.00	0.00	0.01	38%	0.00	0.00	35%	0.51	0.17	3	1	0.12			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Grocery	2020	2054	0.42	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.42	0.06	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Grocery	2020	2054	0.08	0.01	0.34	0.34	81%	0.05	0.05	81%	0.01	0.01	0	0	5.17			0.34	0.05
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Grocery	2020	2054	0.15	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.15	0.02	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Grocery	2020	2054	0.03	0.00	0.12	0.12	80%	0.02	0.02	80%	0.01	0.01	0	0	4.36			0.12	0.02
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Grocery	2020	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Grocery	2020	2054	0.03	0.00	0.08	0.08	72%	0.01	0.01	72%	0.02	0.02	0	0	3.22			0.08	0.01
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Grocery	2020	2054	0.67	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.67	0.10	0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Grocery	2020	2054	0.48	0.07	0.19	0.19	28%	0.03	0.03	28%	0.12	0.12	1	1	0.48			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Grocery	2020	2054	0.85	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.85	0.13	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Grocery	2020	2054	0.63	0.10	0.22	0.22	26%	0.03	0.03	26%	0.09	0.09	1	1	0.64			0.00	0.00
NC	1800	1800	BaseMetal Halide, 465W	Grocery	2014	2054	0.19	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.03	0.00	0.00
NC	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Grocery	2014	2054	0.17	0.03	0.01	0.01	8%	0.00	0.00	6%	0.01	0.01	0	0	9.93			0.01	0.00
NC	1800	1801	T5 (240W) (base metal halide)	Grocery	2014	2054	0.12	0.02	0.06	0.07	39%	0.01	0.01	37%	0.02	0.01	0	0	4.91			0.06	0.01
NC	1800	1806	Occupancy Sensor, High Bay T5	Grocery	2014	2054	0.11	0.02	0.00	0.08	41%	0.00	0.01	38%	0.04	0.02	1	0	1.40			0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Grocery	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	1850	1851	LED Exit Sign	Grocery	2014	2054	0.01	0.00	0.00	0.00	2%	0.00	0.00	2%	0.03	0.03	0	0	1.75			0.00	0.00
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Grocery	2014	2054	0.18	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.00	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Grocery	2014	2054	0.16	0.00	0.03	0.03	15%	0.00	0.00	49%	0.10	0.10	1	1	0.74			0.00	0.00
NC	1900	1902	LED Outdoor Area Lighting	Grocery	2014	2054	0.08	0.00	0.08	0.11	59%	0.00	0.00	93%	0.22	0.19	9	5	0.30			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Grocery	2014	2054	0.05	0.00	0.02	0.13	71%	0.00	0.00	104%	1.40	0.39	65	11	0.05			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Grocery	2014	2054	1.49	0.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.49	0.97	0.00	0.00
NC	2100	2113	Ceiling/roof Insulation - DX	Grocery	2014	2054	1.49	0.97	0.00	0.00	0%	0.00	0.00	0%	0.04	0.04	0	0	3.34			0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Grocery	2014	2054	1.15	0.75	0.34	0.34	23%	0.22	0.22	23%	0.04	0.04	0	0	2.89			0.34	0.22
NC	2100	2115	Window Film (Standard) - DX	Grocery	2014	2054	1.07	0.70	0.08	0.42	28%	0.05	0.28	28%	0.10	0.05	0	0	0.91			0.00	0.00
NC	2100	2107	Cool Roof - DX	Grocery	2014	2054	0.98	0.64	0.08	0.51	34%	0.05	0.33	34%	0.14	0.06	0	0	0.67			0.00	0.00
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	Grocery	2014	2054	0.98	0.64	0.00	0.51	34%	0.00	0.33	34%	0.14	0.06	0	0	0.50			0.00	0.00
NC	2100	2108	Optimize Controls - DX	Grocery	2014	2054	0.96	0.64	0.02	0.53	35%	0.00	0.33	34%	0.12	0.07	1	0	0.46			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Grocery	2014	2054	0.95	0.64	0.01	0.54	36%	0.00	0.34	35%	0.14	0.07	1	0	0.41			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Grocery	2014	2054	0.89	0.60	0.06	0.60	40%	0.04	0.37	38%	0.29	0.09	0	0	0.39			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Grocery	2014	2054	0.89	0.60	0.00	0.60	40%	0.00	0.37	38%	0.84	0.09	5	0	0.07			0.00	0.00
NC	2100	2111	Economizer Repair - DX	Grocery	2014	2054	0.88	0.59	0.01	0.61	41%	0.01	0.38	39%	1.63	0.11	2	0	0.05			0.00	0.00
NC	2100	2109	Economizer - DX	Grocery	2014	2054	0.88	0.59	0.00	0.61	41%	0.00	0.38	39%	2.04	0.11	13	0	0.03			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Grocery	2014	2054	0.87	0.58	0.01	0.62	42%	0.01	0.39	40%	3.94	0.20	6	0	0.02			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Grocery	2014	2054	1.02	0.67	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.02	0.67	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	2014	2054	0.89	0.58	0.13	0.13	12%	0.08	0.08	12%	0.03	0.03	0	0	3.31			0.13	0.08
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Grocery	2014	2054	0.17	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.17	0.11	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Grocery	2014	2054	2.67	0.57	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.67	0.57	0.00	0.00
NC	3000	3002	Variable Speed Drive Control, 5 HP	Grocery	2014	2054	1.85	0.53	0.83	0.83	31%	0.04	0.04	7%	0.03	0.03	1	1	1.84			0.83	0.04
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Grocery	2014	2054	1.81	0.52	0.03	0.86	32%	0.01	0.05	9%	0.07	0.04	0	1	1.22			0.03	0.01
NC	3000	3003	Demand Controlled Ventilation	Grocery	2014	2054	1.56	0.41	0.26	1.12	42%	0.11	0.16	28%	1.37	0.34	3	2	0.07			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Grocery	2014	2054	2.64	0.57	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.64	0.57	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	Grocery	2014	2054	2.37	0.55	0.27	0.27	10%	0.01	0.01	3%	0.02	0.02	0	0	2.22			0.27	0.01
NC	3200	3204	Demand Controlled Ventilation	Grocery	2014	2054	2.03	0.41	0.34	0.61	23%	0.14	0.16	28%	1.04	0.58	2	2	0.09			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Grocery	2014	2054	12.34	1.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.34	1.99	0.00	0.00
NC	4000	4007	Efficient compressor motor	Grocery	2014	2054	12.31	1.98	0.02	0.02	0%	0.00	0.00	0%	0.02	0.02	0	0	3.94			0.02	0.00
NC	4000	4011	Demand Hot Gas Defrost	Grocery	2014	2054	12.01	1.93	0.31	0.33	3%	0.05	0.05	3%	0.02	0.02	0	0	3.64			0.31	0.05
NC	4000	4009	Floating head pressure controls	Grocery	2014	2054	11.98	1.93	0.03	0.36	3%	0.00	0.06	3%	0.02	0.02	0	0	3.35			0.03	0.00
NC	4000	4006	Electronically commutated evaporator fan motor	Grocery	2014	2054	11.13	1.86	0.85	1.21	10%	0.07	0.12	6%	0.02	0.02	0	0	3.02			0.85	0.07
NC	4000	4013	Anti-sweat (humidistat) controls	Grocery	2014	2054	10.97	1.85	0.16	1.37	11%	0.01	0.14	7%	0.04	0.02	1	0	1.48			0.16	0.01
NC	4000	4002	Strip curtains for walk-ins (built-up)	Grocery	2014	2054	10.66	1.80	0.31	1.68	14%	0.05	0.19	9%	0.04	0.03	0	0	1.39			0.31	0.05
NC	4000	4014	Freezer-Cooler Replacement Gaskets	Grocery	2014	2054	10.30	1.74	0.36	2.04	17%	0.06	0.24	12%	0.06	0.03	0	0	0.97			0.00	0.00
NC	4000	4018	Oversized Air Cooled Condenser	Grocery	2014	2054	9.87	1.67	0.43	2.47	20%	0.07	0.31	16%	0.08	0.04	0	0	0.94			0.00	0.00
NC	4000	4001	High-efficiency fan motors	Grocery	2014	2054	9.52	1.62	0.35	2.82	23%	0.06	0.37	19%	0.11	0.05	1	0	0.75			0.00	0.00
NC	4000	4004	Night covers for display cases	Grocery	2014	2054	8.97	1.62	0.54	3.36	27%	0.00	0.37	19%	0.07	0.05	N/A	0	0.66			0.00	0.00
NC	4000	4008	Compressor VSD retrofit	Grocery	2014	2054	8.42	1.57	0.56	3.92	32%	0.04	0.42	21%	0.10	0.06	1	1	0.62			0.00	0.00
NC	4000	4010	Refrigeration Commissioning	Grocery	2014	2054	8.38	1.56	0.04	3.96	32%	0.01	0.42	21%	0.18	0.06	1	1	0.29			0.00	0.00
NC	4000	4005	Evaporator fan controller for MT walk-ins	Grocery	2014	2054	8.37	1.56	0.01	3.97	32%	0.00	0.42	21%	0.25	0.06	3	1	0.27			0.00	0.00
NC	4000	4017	Multiplex Compressor System	Grocery	2014	2054	8.22	1.54	0.15	4.12	33%	0.02	0.45	22%	0.27	0.07	2	1	0.26			0.00	0.00
NC	4000	4016	LED Display Lighting	Grocery	2014	2054	7.64	1.45	0.58	4.70	38%	0.09	0.54	27%	0.44	0.11	3	1	0.14			0.00	0.00
NC	4000	4015	High R-Value Glass Doors	Grocery	2014	2054	7.52	1.43	0.12	4.82	39%	0.02	0.56	28%	1.97	0.16	12	1	0.03			0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Grocery	2014	2054	1.23	0.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.23	0.20	0.00	0.00
NC	4100	4103	Night covers for display cases (self-contained)	Grocery	2014	2054	1.14	0.18	0.09	0.09	7%	0.01	0.01	7%	0.00	0.00	0	0	173.74			0.09	0.01
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Grocery	2014	2054	1.13	0.18	0.02	0.10	8%	0.00	0.02	8%	0.01	0.00	0	0	3.80			0.02	0.00
NC	4100	4109	Energy-Star Freezer, glass door	Grocery	2014	2054	1.06	0.17	0.07	0.17	14%	0.01	0.03	14%	0.03	0.01	0	0	2.32			0.07	0.01
NC	4100	4107	Energy-Star Freezer, solid door	Grocery	2014	2054	1.03	0.17	0.03	0.20	16%	0.00	0.03	16%	0.07	0.02	0	0	0.88			0.00	0.00
NC	4100	4108	Energy-Star Refrigerator, glass door	Grocery	2014	2054	1.03	0.17	0.00	0.20	16%	0.00	0.03	16%	0.09	0.02	1	0	0.68			0.00	0.00
NC	4100	4106	Energy-Star Refrigerator, solid door	Grocery	2014	2054	1.03	0.17	0.00	0.20	16%	0.00	0.03	16%	0.10	0.02	1	0	0.65			0.00	0.00
NC	4100	4110	Energy Star Ice Machines	Grocery	2014	2054	1.03	0.17	0.00	0.20	16%	0.00	0.03	16%	0.25	0.02	2	0	0.26			0.00	0.00
NC	4100	4112	Reach-in unit occupancy sensors	Grocery	2014	2054	1.03	0.17	0.00	0.20	16%	0.00	0.03	16%	0.31	0.02	2	0	0.21			0.00	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Grocery	2014	2054	1.02	0.16	0.01	0.21	17%	0.00	0.03	17%	0.35	0.03	2	0	0.17			0.00	0.00
NC	4100	4101	Strip curtains for walk-ins (self-contained)	Grocery	2014	2054	1.01	0.16	0.01	0.22	18%	0.00	0.04	18%	0.68	0.07	4	0	0.08			0.00	0.00
NC	5000	5000	Base Desktop PC	Grocery	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Grocery	2014	2054	0.04	0.01	0.03	0.03	45%	0.00	0.00	23%	0.03	0.03	0	0	1.92			0.03	0.00
NC	5000	5002	Energy Star or Better PC	Grocery	2014	2054	0.02	0.01	0.01	0.04	63%	0.00	0.00	41%	0.06	0.04	0	0	0.96			0.00	0.00
NC	5100	5100	Base Laptop PC	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Grocery	2014	2054	0.00	0.00	0.00	0.00	19%	0.00	0.00	19%	0.02	0.02	0	0	2.68			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	2.48	0.22	14	1	0.02			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Grocery	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Grocery	2014	2054	0.01	0.00	0.01	0.01	56%	0.00	0.00	56%	0.00	0.00	0	0	21.32			0.01	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	5200	5202	Monitor Power Management Enabling - CRT	Grocery	2014	2054	0.01	0.00	0.00	0.02	73%	0.00	0.00	65%	0.05	0.01	1	0	1.00			0.00	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Grocery	2014	2054	0.01	0.00	0.00	0.02	76%	0.00	0.00	67%	0.52	0.03	3	0	0.11			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Grocery	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Grocery	2014	2054	0.01	0.00	0.00	0.00	20%	0.00	0.00	20%	0.02	0.02	0	0	2.34			0.00	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Grocery	2014	2054	0.01	0.00	0.00	0.00	31%	0.00	0.00	26%	0.25	0.10	3	1	0.20			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Grocery	2014	2054	0.01	0.00	0.00	0.00	36%	0.00	0.00	27%	0.70	0.19	15	1	0.07			0.00	0.00
NC	5400	5400	Base Copier	Grocery	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Grocery	2014	2054	0.04	0.01	0.01	0.01	20%	0.00	0.00	20%	0.00	0.00	0	0	14.87			0.01	0.00
NC	5400	5402	Copier Power Management Enabling	Grocery	2014	2054	0.03	0.01	0.01	0.02	31%	0.00	0.00	26%	0.24	0.09	3	1	0.23			0.00	0.00
NC	5500	5500	Base Multifunction	Grocery	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Grocery	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	4.55			0.00	0.00
NC	5500	5501	Multifunction Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	36%	0.64	0.30	7	2	0.08			0.00	0.00
NC	5600	5600	Base Printer	Grocery	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Grocery	2014	2054	0.00	0.00	0.00	0.00	35%	0.00	0.00	35%	0.00	0.00	0	0	20.93			0.00	0.00
NC	5600	5601	Printer Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	53%	0.00	0.00	44%	0.14	0.05	2	0	0.38			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Grocery	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Grocery	2014	2054	0.02	0.00	0.00	0.00	10%	0.00	0.00	10%	0.00	0.00	0	0	75.03			0.00	0.00
NC	5700	5702	Data Center Best Practices	Grocery	2014	2054	0.02	0.00	0.00	0.00	21%	0.00	0.00	21%	0.00	0.00	0	0	30.54			0.00	0.00
NC	5700	5703	Data Center State of the Art practices	Grocery	2014	2054	0.02	0.00	0.00	0.01	26%	0.00	0.00	26%	0.00	0.00	0	0	15.84			0.00	0.00
NC	6000	6000	Base Water Heating	Grocery	2014	2054	0.30	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.30	0.05	0.00	0.00
NC	6000	6007	Heat Trap	Grocery	2014	2054	0.29	0.05	0.02	0.02	5%	0.00	0.00	5%	0.03	0.03	0	0	2.23			0.02	0.00
NC	6000	6002	High Efficiency Water Heater (electric)	Grocery	2014	2054	0.28	0.04	0.01	0.02	7%	0.00	0.00	7%	0.06	0.04	0	0	1.20			0.01	0.00
NC	6000	6006	Heat Recovery Unit	Grocery	2014	2054	0.13	0.02	0.15	0.17	55%	0.02	0.03	55%	0.07	0.07	0	0	0.92			0.00	0.00
NC	6000	6004	Tankless Water Heater	Grocery	2014	2054	0.12	0.02	0.01	0.18	59%	0.00	0.03	59%	0.19	0.07	1	0	0.41			0.00	0.00
NC	6000	6008	Solar Water Heater	Grocery	2014	2054	0.11	0.02	0.02	0.19	65%	0.00	0.03	65%	0.23	0.09	1	1	0.35			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	Grocery	2014	2054	0.10	0.02	0.00	0.20	66%	0.00	0.03	66%	0.26	0.09	2	1	0.28			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	Grocery	2014	2054	0.10	0.02	0.00	0.20	66%	0.00	0.03	66%	0.28	0.09	2	1	0.26			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Grocery	2014	2054	0.71	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.71	0.11	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Grocery	2014	2054	0.59	0.10	0.12	0.12	16%	0.01	0.01	8%	0.03	0.03	0	0	2.01			0.12	0.01
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Grocery	2014	2054	0.53	0.10	0.06	0.18	25%	0.00	0.01	12%	0.05	0.03	1	0	1.10			0.06	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7100	7101	Vending Misers (Non-Refrigerated)	Grocery	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	23%	0.43	0.43	5	5	0.12			0.00	0.00
NC	7200	7200	Base Oven	Grocery	2014	2054	0.16	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.02	0.00	0.00
NC	7300	7300	Base Fryer	Grocery	2014	2054	0.04	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.00	0.00	0.00
NC	7400	7400	Base Steamer	Grocery	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	7400	7401	Efficient Steamer	Grocery	2014	2054	0.02	0.00	0.05	0.05	69%	0.01	0.01	69%	0.04	0.04	0	0	1.84			0.05	0.01
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Grocery	2014	2054	0.12	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	2014	2054	0.11	0.00	0.01	0.01	6%	0.00	0.00	0%	0.04	0.04	N/A	N/A	1.37			0.01	0.00
NC	8100	8100	Base Heating, Other Electric	Grocery	2014	2054	0.05	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Grocery	2014	2054	3.48	0.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.48	0.55	0.00	0.00
NC	9500	9501	Xmisc	Grocery	2014	2054	3.48	0.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Warehouse	2020	2054	30.12	5.35	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	30.12	5.35	0.00	0.00
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Warehouse	2020	2054	27.61	4.91	2.51	2.51	8%	0.45	0.45	8%	0.01	0.01	0	0	5.24			2.51	0.45
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	2020	2054	24.10	4.28	3.51	6.02	20%	0.62	1.07	20%	0.02	0.02	0	0	2.51			3.51	0.62
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Warehouse	2020	2054	22.29	4.03	1.81	7.83	26%	0.26	1.33	25%	0.03	0.02	0	0	2.43			1.81	0.26
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Warehouse	2020	2054	21.66	4.00	0.63	8.46	28%	0.03	1.35	25%	0.05	0.02	1	0	1.11			0.63	0.03
NC	1030	1034	ROB 4L4' LED Tube, 2020	Warehouse	2020	2054	18.17	3.38	3.49	11.95	40%	0.62	1.97	37%	0.16	0.06	1	0	0.45			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Warehouse	2020	2054	16.62	3.10	1.55	13.50	45%	0.28	2.25	42%	0.13	0.07	1	0	0.55			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Warehouse	2020	2054	0.21	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.21	0.04	0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Warehouse	2020	2054	0.18	0.03	0.02	0.02	10%	0.00	0.00	10%	0.02	0.02	0	0	4.05			0.02	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Warehouse	2020	2054	0.17	0.03	0.01	0.04	17%	0.00	0.01	16%	0.03	0.02	0	0	2.63			0.01	0.00
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	2020	2054	0.15	0.03	0.02	0.06	28%	0.00	0.01	26%	0.03	0.03	0	0	1.80			0.02	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Warehouse	2020	2054	0.14	0.03	0.01	0.06	31%	0.00	0.01	30%	0.13	0.04	1	0	0.56			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Warehouse	2020	2054	0.13	0.02	0.01	0.08	37%	0.00	0.01	36%	0.16	0.06	1	0	0.44			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Warehouse	2020	2054	0.13	0.02	0.00	0.08	39%	0.00	0.01	36%	0.10	0.06	2	0	0.53			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Warehouse	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Warehouse	2014	2054	0.03	0.01	0.00	0.00	8%	0.00	0.00	6%	0.02	0.02	0	0	4.60			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Warehouse	2014	2054	0.03	0.00	0.00	0.01	17%	0.00	0.00	16%	0.05	0.04	0	0	1.17			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Warehouse	2014	2054	0.02	0.00	0.00	0.01	23%	0.00	0.00	17%	0.06	0.04	1	0	0.91			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Warehouse	2020	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Warehouse	2020	2054	1.36	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.36	0.24	0.00	0.00
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Warehouse	2020	2054	1.00	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.00	0.18	0.00	0.00
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Warehouse	2020	2054	0.19	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.03	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Warehouse	2020	2054	0.14	0.02	0.05	0.05	28%	0.01	0.01	28%	0.03	0.03	0	0	1.77			0.05	0.01
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Warehouse	2020	2054	0.25	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.25	0.04	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Warehouse	2020	2054	0.18	0.03	0.06	0.06	26%	0.01	0.01	26%	0.03	0.03	0	0	2.36			0.06	0.01
NC	1800	1800	BaseMetal Halide, 465W	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Warehouse	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	1850	1851	LED Exit Sign	Warehouse	2014	2054	0.02	0.00	0.05	0.05	69%	0.01	0.01	69%	0.03	0.03	0	0	2.07			0.05	0.01
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Warehouse	2014	2054	0.16	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.00	0.00	0.00
NC	1900	1902	LED Outdoor Area Lighting	Warehouse	2014	2054	0.08	0.00	0.08	0.08	52%	0.00	0.00	52%	0.05	0.05	4	4	1.26			0.08	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Warehouse	2014	2054	0.06	0.00	0.02	0.11	66%	0.00	0.00	65%	0.33	0.11	27	8	0.19			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Warehouse	2014	2054	2.75	2.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.75	2.62	0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	2100	2113	Ceiling/roof Insulation - DX	Warehouse	2014	2054	2.63	2.50	0.13	0.13	5%	0.12	0.12	5%	0.03	0.03	0	0	4.84			0.13	0.12
NC	2100	2107	Cool Roof - DX	Warehouse	2014	2054	2.43	2.31	0.20	0.32	12%	0.19	0.31	12%	0.07	0.05	0	0	1.65			0.20	0.19
NC	2100	2108	Optimize Controls - DX	Warehouse	2014	2054	2.40	2.30	0.04	0.36	13%	0.01	0.32	12%	0.08	0.05	0	0	0.71			0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Warehouse	2014	2054	1.84	1.78	0.55	0.91	33%	0.52	0.84	32%	0.26	0.18	0	0	0.49			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Warehouse	2014	2054	1.73	1.67	0.11	1.02	37%	0.10	0.94	36%	1.71	0.35	2	0	0.08			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	Warehouse	2014	2054	1.66	1.60	0.07	1.09	40%	0.07	1.02	39%	1.52	0.43	2	0	0.07			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Warehouse	2014	2054	1.61	1.59	0.05	1.14	42%	0.01	1.03	39%	1.12	0.46	4	1	0.06			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Warehouse	2014	2054	1.61	1.59	0.00	1.15	42%	0.00	1.03	39%	3.12	0.46	3	1	0.03			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Warehouse	2014	2054	1.61	1.59	0.00	1.15	42%	0.00	1.03	39%	2.06	0.47	8	1	0.03			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Warehouse	2014	2054	1.32	1.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.32	1.25	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Warehouse	2014	2054	5.72	1.77	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.72	1.77	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Warehouse	2014	2054	5.62	1.74	0.10	0.10	2%	0.03	0.03	2%	0.03	0.03	0	0	3.65			0.10	0.03
NC	3000	3002	Variable Speed Drive Control, 5 HP	Warehouse	2014	2054	3.97	1.61	1.65	1.75	31%	0.13	0.16	9%	0.02	0.02	0	0	3.34			1.65	0.13
NC	3000	3003	Demand Controlled Ventilation	Warehouse	2014	2054	3.92	1.58	0.05	1.80	31%	0.03	0.19	11%	1.03	0.05	2	0	0.10			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Warehouse	2014	2054	1.90	0.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.90	0.59	0.00	0.00
NC	3200	3202	Variable Speed Drive Control, 40 HP	Warehouse	2014	2054	1.34	0.54	0.56	0.56	29%	0.04	0.04	8%	0.01	0.01	0	0	6.53			0.56	0.04
NC	3200	3203	Air Handler Optimization, 40 HP	Warehouse	2014	2054	1.21	0.53	0.13	0.69	36%	0.01	0.05	9%	0.04	0.02	0	0	1.58			0.13	0.01
NC	3200	3204	Demand Controlled Ventilation	Warehouse	2014	2054	1.19	0.52	0.02	0.70	37%	0.01	0.06	11%	1.12	0.04	2	0	0.09			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Warehouse	2014	2054	0.96	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.96	0.18	0.00	0.00
NC	4000	4018	Oversized Air Cooled Condenser	Warehouse	2014	2054	0.92	0.17	0.04	0.04	4%	0.01	0.01	4%	0.02	0.02	0	0	4.35			0.04	0.01
NC	4000	4010	Refrigeration Commissioning	Warehouse	2014	2054	0.92	0.17	0.00	0.05	5%	0.00	0.01	5%	0.03	0.02	0	0	1.57			0.00	0.00
NC	4000	4006	Electronically commutated evaporator fan motor	Warehouse	2014	2054	0.86	0.17	0.06	0.10	10%	0.01	0.01	8%	0.06	0.04	1	0	1.14			0.06	0.01
NC	4000	4005	Evaporator fan controller for MT walk-ins	Warehouse	2014	2054	0.86	0.17	0.00	0.10	11%	0.00	0.01	8%	0.10	0.04	1	0	0.65			0.00	0.00
NC	4000	4002	Strip curtains for walk-ins (built-up)	Warehouse	2014	2054	0.82	0.16	0.03	0.14	14%	0.01	0.02	11%	0.10	0.06	1	0	0.53			0.00	0.00
NC	4000	4001	High-efficiency fan motors	Warehouse	2014	2054	0.80	0.16	0.03	0.16	17%	0.00	0.03	14%	0.26	0.09	1	1	0.31			0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Warehouse	2014	2054	1.43	0.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.43	0.27	0.00	0.00
NC	5000	5000	Base Desktop PC	Warehouse	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Warehouse	2014	2054	0.01	0.00	0.01	0.01	44%	0.00	0.00	23%	0.01	0.01	0	0	6.82			0.01	0.00
NC	5000	5002	Energy Star or Better PC	Warehouse	2014	2054	0.01	0.00	0.00	0.01	63%	0.00	0.00	41%	0.02	0.01	0	0	3.49			0.00	0.00
NC	5100	5100	Base Laptop PC	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Warehouse	2014	2054	0.00	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	9.66			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Warehouse	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	0.69	0.06	4	0	0.08			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Warehouse	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Warehouse	2014	2054	0.01	0.00	0.02	0.02	56%	0.00	0.00	56%	0.00	0.00	0	0	76.79			0.02	0.00
NC	5200	5202	Monitor Power Management Enabling - CRT	Warehouse	2014	2054	0.01	0.00	0.00	0.02	70%	0.00	0.00	63%	0.01	0.00	0	0	4.20			0.00	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Warehouse	2014	2054	0.01	0.00	0.00	0.02	73%	0.00	0.00	66%	0.13	0.01	1	0	0.43			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Warehouse	2014	2054	0.00	0.00	0.00	0.00	20%	0.00	0.00	20%	0.01	0.01	0	0	8.43			0.00	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Warehouse	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	0.06	0.01	1	0	0.85			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Warehouse	2014	2054	0.00	0.00	0.00	0.00	27%	0.00	0.00	22%	0.17	0.04	4	0	0.27			0.00	0.00
NC	5400	5400	Base Copier	Warehouse	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Warehouse	2014	2054	0.01	0.00	0.00	0.00	12%	0.00	0.00	12%	0.00	0.00	0	0	59.20			0.00	0.00
NC	5400	5402	Copier Power Management Enabling	Warehouse	2014	2054	0.01	0.00	0.00	0.00	15%	0.00	0.00	14%	0.05	0.01	1	0	1.04			0.00	0.00
NC	5500	5500	Base Multifunction	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Warehouse	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	25%	0.00	0.00	0	0	16.40			0.00	0.00
NC	5500	5501	Multifunction Power Management Enabling	Warehouse	2014	2054	0.00	0.00	0.00	0.00	32%	0.00	0.00	29%	0.13	0.03	2	0	0.40			0.00	0.00
NC	5600	5600	Base Printer	Warehouse	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Warehouse	2014	2054	0.02	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00	0.00	0	0	75.41			0.01	0.00
NC	5600	5601	Printer Power Management Enabling	Warehouse	2014	2054	0.02	0.00	0.00	0.01	41%	0.00	0.00	38%	0.03	0.01	0	0	1.82			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Warehouse	2014	2054	0.44	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.07	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Warehouse	2014	2054	0.40	0.07	0.04	0.04	10%	0.01	0.01	10%	0.00	0.00	0	0	119.82			0.04	0.01
NC	5700	5702	Data Center Best Practices	Warehouse	2014	2054	0.35	0.06	0.05	0.09	21%	0.01	0.02	21%	0.00	0.00	0	0	48.78			0.05	0.01
NC	5700	5703	Data Center State of the Art practices	Warehouse	2014	2054	0.33	0.05	0.02	0.11	26%	0.00	0.02	26%	0.00	0.00	0	0	25.30			0.02	0.00
NC	6000	6000	Base Water Heating	Warehouse	2014	2054	0.41	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.41	0.06	0.00	0.00
NC	6000	6006	Heat Recovery Unit	Warehouse	2014	2054	0.38	0.06	0.03	0.03	7%	0.00	0.00	7%	0.14	0.14	1	1	0.47			0.00	0.00
NC	6000	6007	Heat Trap	Warehouse	2014	2054	0.36	0.06	0.02	0.05	11%	0.00	0.01	11%	0.25	0.19	2	1	0.26			0.00	0.00
NC	6000	6002	High Efficiency Water Heater (electric)	Warehouse	2014	2054	0.36	0.06	0.01	0.05	13%	0.00	0.01	13%	0.52	0.23	3	1	0.14			0.00	0.00
NC	6000	6004	Tankless Water Heater	Warehouse	2014	2054	0.33	0.05	0.03	0.08	20%	0.00	0.01	20%	0.79	0.42	5	3	0.10			0.00	0.00
NC	6000	6008	Solar Water Heater	Warehouse	2014	2054	0.22	0.03	0.11	0.19	47%	0.02	0.03	47%	0.92	0.71	6	5	0.09			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	Warehouse	2014	2054	0.21	0.03	0.00	0.20	48%	0.00	0.03	48%	1.43	0.73	9	5	0.05			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	Warehouse	2014	2054	0.21	0.03	0.00	0.20	49%	0.00	0.03	49%	1.60	0.74	10	5	0.05			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7200	7200	Base Oven	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7300	7300	Base Fryer	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7400	7400	Base Steamer	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8100	8100	Base Heating, Other Electric	Warehouse	2014	2054	1.39	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.39	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Warehouse	2014	2054	8.68	1.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.68	1.64	0.00	0.00
NC	9500	9501	Xmisc	Warehouse	2014	2054	8.68	1.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	School	2020	2054	5.21	0.70	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.21	0.70	0.00	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	School	2020	2054	5.20	0.70	0.01	0.01	0%	0.00	0.00	0%	0.02	0.02	0	0	3.19			0.01	0.00

Base Avoided Costs

Commercial Electric Existing Construction
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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	School	2020	2054	4.67	0.63	0.53	0.55	11%	0.07	0.07	10%	0.02	0.02	0	0	3.15			0.53	0.07
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	School	2020	2054	4.32	0.59	0.35	0.90	17%	0.04	0.11	16%	0.03	0.02	0	0	2.55			0.35	0.04
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	School	2020	2054	3.77	0.52	0.55	1.45	28%	0.07	0.19	26%	0.05	0.03	0	0	1.40			0.55	0.07
NC	1030	1034	ROB 4L4' LED Tube, 2020	School	2020	2054	3.16	0.44	0.61	2.05	39%	0.08	0.27	38%	0.31	0.12	2	1	0.25			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	School	2020	2054	2.89	0.40	0.27	2.32	45%	0.04	0.30	43%	0.26	0.13	2	1	0.30			0.00	0.00
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	School	2020	2054	2.70	0.39	0.19	2.51	48%	0.01	0.31	44%	0.18	0.14	5	1	0.31			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	School	2020	2054	0.33	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.33	0.04	0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	School	2020	2054	0.29	0.04	0.03	0.03	10%	0.00	0.00	10%	0.03	0.03	0	0	2.49			0.03	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	School	2020	2054	0.29	0.04	0.00	0.03	11%	0.00	0.00	10%	0.03	0.03	0	0	1.93			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	School	2020	2054	0.27	0.04	0.02	0.06	17%	0.00	0.01	16%	0.04	0.03	0	0	1.74			0.02	0.00
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	School	2020	2054	0.24	0.03	0.03	0.09	28%	0.00	0.01	26%	0.06	0.04	0	0	1.10			0.03	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	School	2020	2054	0.23	0.03	0.01	0.10	31%	0.00	0.01	30%	0.26	0.07	2	1	0.31			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	School	2020	2054	0.21	0.03	0.02	0.12	37%	0.00	0.02	36%	0.32	0.11	2	1	0.24			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	School	2020	2054	0.19	0.03	0.01	0.14	41%	0.00	0.02	37%	0.28	0.13	8	1	0.20			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	School	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00	0.00
NC	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	School	2014	2054	0.02	0.00	0.00	0.00	2%	0.00	0.00	1%	0.02	0.02	0	0	2.63			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	School	2014	2054	0.02	0.00	0.00	0.00	10%	0.00	0.00	9%	0.09	0.08	1	1	0.78			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	School	2014	2054	0.02	0.00	0.00	0.01	35%	0.00	0.00	24%	0.17	0.15	5	2	0.33			0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	School	2014	2054	0.02	0.00	0.00	0.01	40%	0.00	0.00	28%	0.29	0.17	3	2	0.24			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	School	2020	2054	0.43	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.43	0.06	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	School	2020	2054	0.07	0.01	0.36	0.36	83%	0.05	0.05	83%	0.01	0.01	0	0	10.33			0.36	0.05
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	School	2020	2054	0.16	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.02	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	School	2020	2054	0.03	0.00	0.13	0.13	81%	0.02	0.02	81%	0.01	0.01	0	0	8.72			0.13	0.02
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	School	2020	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	School	2020	2054	0.03	0.00	0.09	0.09	74%	0.01	0.01	74%	0.01	0.01	0	0	6.50			0.09	0.01
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	School	2020	2054	4.78	0.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.78	0.65	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	School	2020	2054	3.46	0.47	1.32	1.32	28%	0.18	0.18	28%	0.06	0.06	0	0	1.05			1.32	0.18
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	School	2020	2054	6.11	0.83	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.11	0.83	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	School	2020	2054	4.52	0.61	1.59	1.59	26%	0.21	0.21	26%	0.05	0.05	0	0	1.40			1.59	0.21
NC	1800	1800	BaseMetal Halide, 465W	School	2014	2054	0.68	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.68	0.09	0.00	0.00
NC	1800	1801	T5 (240W) (base metal halide)	School	2014	2054	0.45	0.06	0.23	0.23	34%	0.03	0.03	34%	0.02	0.02	0	0	4.76			0.23	0.03
NC	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	School	2014	2054	0.42	0.06	0.03	0.26	39%	0.00	0.03	38%	0.02	0.02	0	0	3.02			0.03	0.00
NC	1800	1806	Occupancy Sensor, High Bay T5	School	2014	2054	0.40	0.06	0.01	0.28	41%	0.00	0.04	38%	0.05	0.02	1	0	1.16			0.01	0.00
NC	1850	1850	Base CFL Exit Sign	School	2014	2054	0.22	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.22	0.03	0.00	0.00
NC	1850	1851	LED Exit Sign	School	2014	2054	0.10	0.01	0.12	0.12	55%	0.02	0.02	55%	0.03	0.03	0	0	1.78			0.12	0.02
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	School	2014	2054	7.24	0.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.24	0.29	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	School	2014	2054	5.86	0.11	1.37	1.37	19%	0.17	0.17	60%	0.05	0.05	0	0	1.66			1.37	0.17
NC	1900	1902	LED Outdoor Area Lighting	School	2014	2054	2.82	-0.01	3.04	4.42	61%	0.12	0.30	102%	0.10	0.09	3	1	0.65			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	School	2014	2054	1.99	-0.04	0.83	5.24	72%	0.03	0.33	113%	0.67	0.18	19	3	0.10			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	School	2014	2054	15.88	8.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.88	8.15	0.00	0.00
NC	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	School	2014	2054	14.52	7.46	1.36	1.36	9%	0.70	0.70	9%	0.06	0.06	0	0	1.79			1.36	0.70
NC	2000	2005	Chiller Tune Up/Diagnostics	School	2014	2054	14.46	7.44	0.06	1.42	9%	0.02	0.71	9%	0.05	0.06	0	0	1.45			0.06	0.02
NC	2000	2013	High Efficiency Chiller Motors	School	2014	2054	14.45	7.43	0.01	1.43	9%	0.01	0.72	9%	0.09	0.06	0	0	1.16			0.01	0.01
NC	2000	2006	VSD for Chiller Pumps and Towers	School	2014	2054	14.42	7.42	0.03	1.46	9%	0.01	0.73	9%	0.07	0.06	0	0	1.09			0.03	0.01
NC	2000	2003	EMS - Chiller	School	2014	2054	13.64	7.31	0.78	2.24	14%	0.11	0.84	10%	0.12	0.08	1	0	0.61			0.00	0.00
NC	2000	2004	Cool Roof - Chiller	School	2014	2054	13.38	7.18	0.26	2.50	16%	0.13	0.97	12%	0.19	0.09	0	0	0.46			0.00	0.00
NC	2000	2002	Window Film (Standard) - Chiller	School	2014	2054	13.31	7.14	0.07	2.57	16%	0.03	1.01	12%	0.22	0.09	0	0	0.40			0.00	0.00
NC	2000	2012	Duct Testing/Sealing	School	2014	2054	11.10	6.01	2.21	4.77	30%	1.13	2.14	26%	0.31	0.19	1	0	0.34			0.00	0.00
NC	2000	2008	New Economizer - Chiller	School	2014	2054	9.92	5.84	1.18	5.95	38%	0.17	2.31	28%	0.36	0.23	2	1	0.18			0.00	0.00
NC	2000	2011	Duct/Pipe Insulation - Chiller	School	2014	2054	9.86	5.81	0.06	6.01	38%	0.03	2.34	29%	5.08	0.27	10	1	0.02			0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	School	2014	2054	24.78	12.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.78	12.72	0.00	0.00
NC	2100	2113	Ceiling/roof Insulation - DX	School	2014	2054	24.76	12.71	0.02	0.02	0%	0.01	0.01	0%	0.02	0.02	0	0	4.63			0.02	0.01
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	School	2014	2054	19.07	9.79	5.70	5.71	23%	2.92	2.93	23%	0.05	0.05	0	0	1.89			5.70	2.92
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	School	2014	2054	19.06	9.79	0.00	5.71	23%	0.00	2.93	23%	0.16	0.05	1	0	0.40			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	School	2014	2054	18.89	9.70	0.18	5.89	24%	0.09	3.02	24%	0.23	0.06	0	0	0.37			0.00	0.00
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	School	2014	2054	18.84	9.69	0.05	5.94	24%	0.01	3.04	24%	0.19	0.06	1	0	0.37			0.00	0.00
NC	2100	2108	Optimize Controls - DX	School	2014	2054	18.55	9.64	0.29	6.23	25%	0.04	3.08	24%	0.16	0.06	1	0	0.34			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	School	2014	2054	17.57	9.14	0.98	7.21	29%	0.51	3.58	28%	0.35	0.10	1	0	0.31			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	School	2014	2054	17.41	9.12	0.15	7.36	30%	0.02	3.60	28%	0.21	0.10	1	0	0.28			0.00	0.00
NC	2100	2107	Cool Roof - DX	School	2014	2054	17.11	8.96	0.31	7.67	31%	0.16	3.76	30%	0.39	0.12	1	0	0.22			0.00	0.00
NC	2100	2111	Economizer Repair - DX	School	2014	2054	17.07	8.93	0.04	7.71	31%	0.03	3.79	30%	0.86	0.12	1	0	0.09			0.00	0.00
NC	2100	2109	Economizer - DX	School	2014	2054	16.99	8.92	0.08	7.79	31%	0.01	3.80	30%	1.25	0.13	9	0	0.05			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	School	2014	2054	16.78	8.82	0.20	7.99	32%	0.10	3.90	31%	4.66	0.25	9	1	0.02			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	School	2014	2054	17.76	9.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.76	9.12	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	2014	2054	15.57	7.99	2.20	2.20	12%	1.13	1.13	12%	0.04	0.04	0	0	2.24			2.20	1.13
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	School	2014	2054	24.65	12.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.65	12.65	0.00	0.00
NC	2300	2301	HE PTAC, EER=9.6, 1 ton	School	2014	2054	21.31	10.94	3.34	3.34	14%	1.71	1.71	14%	0.11	0.11	0	0	0.89			0.00	0.00
NC	2300	2302	Occupancy Sensor (hotels)	School	2014	2054	17.98	8.81	3.33	6.66	27%	2.13	3.85	30%	0.35	0.23	1	0	0.27			0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	School	2014	2054	5.22	1.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.22	1.02	0.00	0.00
NC	3000	3002	Variable Speed Drive Control, 5 HP	School	2014	2054	4.45	0.98	0.76	0.76	15%	0.04	0.04	4%	0.03	0.03	1	1	1.96			0.76	0.04
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	School	2014	2054	4.38	0.96	0.08	0.84	16%	0.01	0.05	5%	0.06	0.04	0	1	1.39			0.08	0.01
NC	3000	3003	Demand Controlled Ventilation	School	2014	2054	3.72	0.74	0.65	1.49	29%	0.23	0.28	28%	1.68	0.76	5	4	0.05			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	School	2014	2054	13.96	2.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.96	2.72	0.00	0.00
NC	3100	3102	Variable Speed Drive Control, 15 HP	School	2014	2054	11.92	2.62	2.04	2.04	15%	0.10	0.10	4%	0.04	0.04	1	1	1.62			2.04	0.10

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	School	2014	2054	10.25	2.33	1.67	3.71	27%	0.30	0.40	15%	0.06	0.05	0	0	1.36			1.67	0.30
NC	3100	3103	Air Handler Optimization, 15 HP	School	2014	2054	9.26	2.28	1.00	4.71	34%	0.05	0.45	16%	0.06	0.05	1	1	0.91			0.00	0.00
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	School	2014	2054	9.17	2.26	0.09	4.80	34%	0.02	0.47	17%	0.15	0.05	1	1	0.54			0.00	0.00
NC	3100	3105	Energy Recovery Ventilation (ERV)	School	2014	2054	8.69	2.09	0.48	5.28	38%	0.17	0.63	23%	0.56	0.10	2	1	0.18			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	School	2014	2054	7.39	1.64	1.30	6.58	47%	0.45	1.09	40%	2.26	0.53	6	3	0.04			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	School	2014	2054	5.82	1.14	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.82	1.14	0.00	0.00
NC	3200	3202	Variable Speed Drive Control, 40 HP	School	2014	2054	4.97	1.09	0.85	0.85	15%	0.04	0.04	4%	0.01	0.01	0	0	11.33			0.85	0.04
NC	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	School	2014	2054	4.96	1.09	0.01	0.86	15%	0.00	0.04	4%	0.03	0.01	0	0	3.09			0.01	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	School	2014	2054	4.48	1.07	0.48	1.34	23%	0.02	0.07	6%	0.05	0.02	1	0	1.06			0.48	0.02
NC	3200	3204	Demand Controlled Ventilation	School	2014	2054	3.81	0.83	0.67	2.01	35%	0.23	0.30	27%	1.83	0.62	5	4	0.05			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	School	2014	2054	7.25	1.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.25	1.00	0.00	0.00
NC	4100	4103	Night covers for display cases (self-contained)	School	2014	2054	7.24	1.00	0.01	0.01	0%	0.00	0.00	0%	0.00	0.00	0	0	25.26			0.01	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	School	2014	2054	7.14	0.99	0.10	0.11	1%	0.01	0.01	1%	0.00	0.00	0	0	15.98			0.10	0.01
NC	4100	4109	Energy-Star Freezer, glass door	School	2014	2054	7.08	0.98	0.06	0.16	2%	0.01	0.02	2%	0.01	0.00	0	0	10.45			0.06	0.01
NC	4100	4106	Energy-Star Refrigerator, solid door	School	2014	2054	6.95	0.96	0.13	0.30	4%	0.02	0.04	4%	0.01	0.01	0	0	6.33			0.13	0.02
NC	4100	4107	Energy-Star Freezer, solid door	School	2014	2054	6.92	0.96	0.02	0.32	4%	0.00	0.04	4%	0.01	0.01	0	0	4.14			0.02	0.00
NC	4100	4108	Energy-Star Refrigerator, glass door	School	2014	2054	6.88	0.95	0.04	0.36	5%	0.01	0.05	5%	0.02	0.01	0	0	3.44			0.04	0.01
NC	4100	4110	Energy Star Ice Machines	School	2014	2054	6.77	0.94	0.11	0.48	7%	0.02	0.07	7%	0.03	0.01	0	0	2.27			0.11	0.02
NC	4100	4112	Reach-in unit occupancy sensors	School	2014	2054	6.77	0.94	0.00	0.48	7%	0.00	0.07	7%	0.25	0.01	2	0	0.25			0.00	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	School	2014	2054	6.76	0.93	0.01	0.49	7%	0.00	0.07	7%	0.29	0.02	2	0	0.21			0.00	0.00
NC	4100	4101	Strip curtains for walk-ins (self-contained)	School	2014	2054	6.74	0.93	0.02	0.51	7%	0.00	0.07	7%	0.93	0.05	7	0	0.06			0.00	0.00
NC	5000	5000	Base Desktop PC	School	2014	2054	2.19	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.19	0.19	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	School	2014	2054	1.20	0.14	0.99	0.99	45%	0.04	0.04	23%	0.01	0.01	0	0	4.10			0.99	0.04
NC	5000	5002	Energy Star or Better PC	School	2014	2054	0.85	0.11	0.35	1.33	61%	0.03	0.07	39%	0.02	0.02	0	0	2.09			0.35	0.03
NC	5100	5100	Base Laptop PC	School	2014	2054	0.30	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.30	0.03	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	School	2014	2054	0.24	0.02	0.06	0.06	19%	0.00	0.00	19%	0.01	0.01	0	0	5.56			0.06	0.00
NC	5100	5101	Laptop Network Power Management Enabling	School	2014	2054	0.24	0.02	0.01	0.06	21%	0.00	0.01	21%	1.13	0.10	13	1	0.05			0.00	0.00
NC	5200	5200	Base Monitor, CRT	School	2014	2054	1.28	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.28	0.11	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	School	2014	2054	0.56	0.05	0.72	0.72	56%	0.06	0.06	56%	0.00	0.00	0	0	44.25			0.72	0.06
NC	5200	5202	Monitor Power Management Enabling - CRT	School	2014	2054	0.40	0.04	0.16	0.87	68%	0.01	0.07	62%	0.02	0.00	0	0	2.81			0.16	0.01
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	School	2014	2054	0.37	0.04	0.03	0.90	71%	0.00	0.07	65%	0.20	0.01	2	0	0.26			0.00	0.00
NC	5300	5300	Base Monitor, LCD	School	2014	2054	0.31	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.31	0.03	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	School	2014	2054	0.26	0.02	0.06	0.06	18%	0.00	0.00	18%	0.01	0.01	0	0	5.01			0.06	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	School	2014	2054	0.25	0.02	0.01	0.06	20%	0.00	0.01	19%	0.09	0.02	2	0	0.52			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	School	2014	2054	0.23	0.02	0.02	0.08	26%	0.00	0.01	20%	0.27	0.08	12	1	0.17			0.00	0.00
NC	5400	5400	Base Copier	School	2014	2054	0.61	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.61	0.05	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	School	2014	2054	0.57	0.05	0.03	0.03	6%	0.00	0.00	6%	0.00	0.00	0	0	36.66			0.03	0.00
NC	5400	5402	Copier Power Management Enabling	School	2014	2054	0.55	0.05	0.02	0.06	10%	0.00	0.00	8%	0.08	0.03	2	0	0.66			0.00	0.00
NC	5500	5500	Base Multifunction	School	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	School	2014	2054	0.05	0.00	0.02	0.02	25%	0.00	0.00	25%	0.01	0.01	0	0	9.48			0.02	0.00
NC	5500	5501	Multifunction Power Management Enabling	School	2014	2054	0.04	0.00	0.01	0.03	39%	0.00	0.00	32%	0.24	0.09	6	1	0.21			0.00	0.00
NC	5600	5600	Base Printer	School	2014	2054	1.02	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.02	0.09	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	School	2014	2054	0.66	0.06	0.35	0.35	35%	0.03	0.03	35%	0.00	0.00	0	0	43.58			0.35	0.03
NC	5600	5601	Printer Power Management Enabling	School	2014	2054	0.54	0.05	0.12	0.48	47%	0.01	0.04	41%	0.05	0.01	1	0	0.96			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	School	2014	2054	7.34	0.63	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.34	0.63	0.00	0.00
NC	5700	5701	Data Center Improved Operations	School	2014	2054	6.61	0.57	0.73	0.73	10%	0.06	0.06	10%	0.00	0.00	0	0	111.93			0.73	0.06
NC	5700	5702	Data Center Best Practices	School	2014	2054	5.77	0.50	0.84	1.58	21%	0.07	0.14	21%	0.00	0.00	0	0	45.57			0.84	0.07
NC	5700	5703	Data Center State of the Art practices	School	2014	2054	5.45	0.47	0.32	1.90	26%	0.03	0.16	26%	0.00	0.00	0	0	23.63			0.32	0.03
NC	6000	6000	Base Water Heating	School	2014	2054	2.13	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.13	0.17	0.00	0.00
NC	6000	6007	Heat Trap	School	2014	2054	2.02	0.16	0.11	0.11	5%	0.01	0.01	5%	0.04	0.04	1	1	1.60			0.11	0.01
NC	6000	6002	High Efficiency Water Heater (electric)	School	2014	2054	1.98	0.15	0.04	0.15	7%	0.00	0.01	7%	0.08	0.05	1	1	0.85			0.00	0.00
NC	6000	6006	Heat Recovery Unit	School	2014	2054	1.79	0.14	0.19	0.34	16%	0.02	0.03	16%	0.08	0.07	1	1	0.79			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	School	2014	2054	1.72	0.13	0.07	0.41	19%	0.01	0.03	19%	0.11	0.07	1	1	0.65			0.00	0.00
NC	6000	6004	Tankless Water Heater	School	2014	2054	1.59	0.12	0.13	0.54	25%	0.01	0.04	25%	0.14	0.09	2	1	0.52			0.00	0.00
NC	6000	6008	Solar Water Heater	School	2014	2054	1.48	0.12	0.11	0.65	31%	0.01	0.05	31%	0.17	0.10	2	1	0.45			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	School	2014	2054	1.47	0.11	0.02	0.67	31%	0.00	0.05	31%	0.18	0.10	2	1	0.38			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	School	2014	2054	1.48	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.48	0.13	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	School	2014	2054	1.25	0.12	0.23	0.23	15%	0.01	0.01	8%	0.03	0.03	1	1	1.98			0.23	0.01
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	School	2014	2054	1.13	0.11	0.12	0.35	24%	0.01	0.02	12%	0.05	0.03	1	1	1.09			0.12	0.01
NC	7100	7100	Base Non-Refrigerated Vending Machines	School	2014	2054	0.05	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.00	0.00	0.00
NC	7100	7101	Vending Misers (Non-Refrigerated)	School	2014	2054	0.03	0.00	0.02	0.02	44%	0.00	0.00	22%	0.43	0.43	10	10	0.12			0.00	0.00
NC	7200	7200	Base Oven	School	2014	2054	2.21	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.21	0.16	0.00	0.00
NC	7200	7201	Convection Oven	School	2014	2054	1.70	0.13	0.51	0.51	23%	0.04	0.04	23%	0.41	0.41	5	5	0.16			0.00	0.00
NC	7300	7300	Base Fryer	School	2014	2054	0.06	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.00	0.00	0.00
NC	7400	7400	Base Steamer	School	2014	2054	0.48	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.48	0.04	0.00	0.00
NC	7400	7401	Efficient Steamer	School	2014	2054	0.18	0.01	0.31	0.31	63%	0.02	0.02	63%	0.17	0.17	2	2	0.39			0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	School	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	2014	2054	0.02	0.00	0.00	0.00	6%	0.00	0.00	0%	0.06	0.06	N/A	N/A	1.14			0.00	0.00
NC	8100	8100	Base Heating, Other Electric	School	2014	2054	1.64	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.64	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	School	2014	2054	8.43	0.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.43	0.73	0.00	0.00
NC	9500	9501	Xmisc	School	2014	2054	8.43	0.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Health	2020	2054	3.92	0.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.92	0.60	0.00	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Health	2020	2054	3.90	0.60	0.01	0.01	0%	0.00	0.00	0%	0.02	0.02	0	0	2.27			0.01	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Health	2020	2054	3.60	0.56	0.30	0.31	8%	0.04	0.04	6%	0.04	0.03	0	0	1.98			0.30	0.04
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Health	2020	2054	3.23	0.50	0.37	0.69	18%	0.06	0.09	16%	0.04	0.04	0	0	1.52			0.37	0.06
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Health	2020	2054	2.82	0.44	0.41	1.10	28%	0.06	0.16	26%	0.08	0.05	1	0	0.73			0.00	0.00
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Health	2020	2054	2.62	0.43	0.20	1.30	33%	0.01	0.16	27%	0.14	0.07	4	1	0.39			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Health	2020	2054	2.19	0.37	0.42	1.72	44%	0.06	0.23	38%	0.50	0.17	3	1	0.14			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Health	2020	2054	2.01	0.34	0.19	1.91	49%	0.03	0.26	43%	0.42	0.20	3	1	0.16			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Health	2020	2054	0.47	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.47	0.07	0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Health	2020	2054	0.42	0.06	0.05	0.05	10%	0.01	0.01	10%	0.05	0.05	0	0	1.31			0.05	0.01
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Health	2020	2054	0.42	0.06	0.00	0.05	11%	0.00	0.01	11%	0.05	0.05	1	0	0.97			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Health	2020	2054	0.39	0.06	0.03	0.08	18%	0.00	0.01	16%	0.08	0.06	1	0	0.84			0.00	0.00
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Health	2020	2054	0.34	0.05	0.05	0.13	28%	0.01	0.02	26%	0.10	0.08	1	1	0.58			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Health	2020	2054	0.32	0.05	0.02	0.15	32%	0.00	0.02	30%	0.38	0.11	3	1	0.18			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Health	2020	2054	0.30	0.05	0.03	0.18	37%	0.00	0.03	36%	0.48	0.17	3	1	0.14			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Health	2020	2054	0.27	0.05	0.02	0.20	42%	0.00	0.03	37%	0.29	0.18	8	1	0.19			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Health	2014	2054	0.13	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.02	0.00	0.00
NC	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Health	2014	2054	0.13	0.02	0.00	0.00	1%	0.00	0.00	1%	0.01	0.01	0	0	6.12			0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Health	2014	2054	0.12	0.02	0.01	0.01	9%	0.00	0.00	7%	0.09	0.08	1	1	0.74			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Health	2014	2054	0.10	0.02	0.01	0.02	18%	0.00	0.00	16%	0.16	0.12	1	1	0.37			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Health	2014	2054	0.08	0.02	0.02	0.04	34%	0.00	0.00	20%	0.17	0.14	5	2	0.33			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Health	2020	2054	0.24	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.24	0.04	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Health	2020	2054	0.04	0.01	0.20	0.20	83%	0.03	0.03	83%	0.01	0.01	0	0	5.69			0.20	0.03
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Health	2020	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.01	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Health	2020	2054	0.02	0.00	0.07	0.07	82%	0.01	0.01	82%	0.01	0.01	0	0	4.80			0.07	0.01
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Health	2020	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Health	2020	2054	0.02	0.00	0.05	0.05	75%	0.01	0.01	75%	0.02	0.02	0	0	3.58			0.05	0.01
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Health	2020	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.01	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Health	2020	2054	0.07	0.01	0.03	0.03	28%	0.00	0.00	28%	0.11	0.11	1	1	0.58			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Health	2020	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Health	2020	2054	0.09	0.01	0.03	0.03	26%	0.00	0.00	26%	0.08	0.08	1	1	0.77			0.00	0.00
NC	1800	1800	BaseMetal Halide, 465W	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Health	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	1850	1851	LED Exit Sign	Health	2014	2054	0.09	0.01	0.01	0.01	12%	0.00	0.00	12%	0.03	0.03	0	0	1.89			0.01	0.00
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Health	2014	2054	0.35	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.35	0.00	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Health	2014	2054	0.32	0.00	0.03	0.03	8%	0.00	0.00	25%	0.08	0.08	3	3	0.89			0.00	0.00
NC	1900	1902	LED Outdoor Area Lighting	Health	2014	2054	0.16	0.00	0.17	0.19	56%	0.00	0.00	73%	0.17	0.15	18	12	0.39			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Health	2014	2054	0.11	0.00	0.05	0.24	69%	0.00	0.00	85%	1.07	0.33	127	28	0.06			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Health	2014	2054	2.64	1.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.64	1.45	0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Health	2014	2054	2.03	1.12	0.61	0.61	23%	0.33	0.33	23%	0.03	0.03	0	0	2.99			0.61	0.33
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	Health	2014	2054	2.00	1.11	0.03	0.64	24%	0.01	0.34	24%	0.11	0.04	0	0	0.63			0.00	0.00
NC	2100	2108	Optimize Controls - DX	Health	2014	2054	1.97	1.10	0.04	0.67	25%	0.00	0.35	24%	0.09	0.04	1	0	0.61			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Health	2014	2054	1.92	1.10	0.04	0.71	27%	0.01	0.35	24%	0.11	0.04	1	0	0.54			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Health	2014	2054	1.81	1.03	0.12	0.83	31%	0.06	0.42	29%	0.23	0.07	0	0	0.46			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	Health	2014	2054	1.80	1.03	0.01	0.84	32%	0.01	0.42	29%	0.29	0.07	1	0	0.29			0.00	0.00
NC	2100	2107	Cool Roof - DX	Health	2014	2054	1.79	1.03	0.01	0.84	32%	0.00	0.42	29%	0.77	0.08	1	0	0.11			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Health	2014	2054	1.77	1.01	0.02	0.86	33%	0.01	0.43	30%	3.01	0.14	5	0	0.03			0.00	0.00
NC	2100	2111	Economizer Repair - DX	Health	2014	2054	1.77	1.01	0.00	0.86	33%	0.00	0.43	30%	27206.90	0.15	32,812	0	0.00			0.00	0.00
NC	2100	2109	Economizer - DX	Health	2014	2054	1.77	1.01	0.00	0.86	33%	0.00	0.43	30%	31674.79	0.18	246,502	0	0.00			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Health	2014	2054	5.27	2.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.27	2.90	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	2014	2054	4.62	2.54	0.65	0.65	12%	0.36	0.36	12%	0.03	0.03	0	0	3.50			0.65	0.36
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Health	2014	2054	0.45	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.25	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Health	2014	2054	1.45	0.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.45	0.29	0.00	0.00
NC	3000	3002	Variable Speed Drive Control, 5 HP	Health	2014	2054	1.00	0.27	0.46	0.46	31%	0.02	0.02	8%	0.02	0.02	0	0	4.04			0.46	0.02
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Health	2014	2054	0.98	0.27	0.02	0.47	33%	0.00	0.03	9%	0.03	0.02	0	0	2.62			0.02	0.00
NC	3000	3003	Demand Controlled Ventilation	Health	2014	2054	0.89	0.23	0.09	0.57	39%	0.04	0.06	22%	1.01	0.18	2	2	0.09			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Health	2014	2054	5.05	1.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.05	1.02	0.00	0.00
NC	3100	3102	Variable Speed Drive Control, 15 HP	Health	2014	2054	3.46	0.95	1.58	1.58	31%	0.08	0.08	7%	0.01	0.01	0	0	11.68			1.58	0.08
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Health	2014	2054	3.46	0.95	0.01	1.59	32%	0.00	0.08	8%	0.02	0.01	0	0	4.63			0.01	0.00
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Health	2014	2054	2.95	0.85	0.50	2.09	41%	0.09	0.17	17%	0.03	0.01	0	0	2.51			0.50	0.09
NC	3100	3105	Energy Recovery Ventilation (ERV)	Health	2014	2054	2.76	0.78	0.19	2.28	45%	0.08	0.25	24%	0.31	0.04	1	0	0.32			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	Health	2014	2054	2.50	0.67	0.26	2.55	50%	0.11	0.36	35%	1.24	0.16	3	1	0.08			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Health	2014	2054	5.36	1.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.36	1.09	0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	Health	2014	2054	4.85	0.88	0.51	0.51	10%	0.21	0.21	20%	0.68	0.68	2	2	0.14			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Health	2014	2054	1.30	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.30	0.19	0.00	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Health	2014	2054	1.28	0.18	0.02	0.02	2%	0.00	0.00	2%	0.01	0.01	0	0	9.74			0.02	0.00
NC	4100	4108	Energy-Star Refrigerator, glass door	Health	2014	2054	1.27	0.18	0.00	0.02	2%	0.00	0.00	2%	0.02	0.01	0	0	3.40			0.00	0.00
NC	4100	4106	Energy-Star Refrigerator, solid door	Health	2014	2054	1.27	0.18	0.00	0.03	2%	0.00	0.00	2%	0.02	0.01	0	0	3.32			0.00	0.00
NC	4100	4110	Energy Star Ice Machines	Health	2014	2054	1.26	0.18	0.01	0.03	3%	0.00	0.01	3%	0.05	0.02	0	0	1.22			0.01	0.00
NC	4100	4112	Reach-in unit occupancy sensors	Health	2014	2054	1.26	0.18	0.00	0.03	3%	0.00	0.01	3%	0.31	0.02	2	0	0.20			0.00	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Health	2014	2054	1.26	0.18	0.00	0.04	3%	0.00	0.01	3%	0.36	0.02	2	0	0.17			0.00	0.00
NC	5000	5000	Base Desktop PC	Health	2014	2054	0.63	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.63	0.09	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Health	2014	2054	0.34	0.07	0.29	0.29	46%	0.02	0.02	23%	0.02	0.02	0	0	2.31			0.29	0.02
NC	5000	5002	Energy Star or Better PC	Health	2014	2054	0.23	0.05	0.11	0.40	63%	0.02	0.04	40%	0.05	0.03	0	0	1.10			0.11	0.02

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Year Measure Start Year	Year Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	5100	5100	Base Laptop PC	Health	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Health	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.02	0.02	0	0	3.11			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Health	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	2.07	0.18	15	1	0.03			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Health	2014	2054	0.19	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.03	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Health	2014	2054	0.08	0.01	0.10	0.10	55%	0.01	0.01	55%	0.00	0.00	0	0	25.37			0.10	0.01
NC	5200	5202	Monitor Power Management Enabling - CRT	Health	2014	2054	0.06	0.01	0.03	0.13	70%	0.00	0.02	62%	0.03	0.01	0	0	1.50			0.03	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Health	2014	2054	0.05	0.01	0.00	0.13	72%	0.00	0.02	65%	0.38	0.02	3	0	0.14			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Health	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Health	2014	2054	0.09	0.01	0.02	0.02	20%	0.00	0.00	20%	0.02	0.02	0	0	2.74			0.02	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Health	2014	2054	0.09	0.01	0.00	0.03	24%	0.00	0.00	22%	0.18	0.05	3	0	0.28			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Health	2014	2054	0.08	0.01	0.01	0.03	30%	0.00	0.00	23%	0.50	0.14	14	1	0.09			0.00	0.00
NC	5400	5400	Base Copier	Health	2014	2054	0.32	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.05	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Health	2014	2054	0.27	0.04	0.05	0.05	17%	0.01	0.01	17%	0.00	0.00	0	0	18.03			0.05	0.01
NC	5400	5402	Copier Power Management Enabling	Health	2014	2054	0.25	0.04	0.02	0.07	22%	0.00	0.01	19%	0.17	0.04	2	0	0.32			0.00	0.00
NC	5500	5500	Base Multifunction	Health	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Health	2014	2054	0.04	0.01	0.02	0.02	25%	0.00	0.00	25%	0.01	0.01	0	0	5.29			0.02	0.00
NC	5500	5501	Multifunction Power Management Enabling	Health	2014	2054	0.04	0.01	0.01	0.02	36%	0.00	0.00	31%	0.40	0.13	6	1	0.13			0.00	0.00
NC	5600	5600	Base Printer	Health	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Health	2014	2054	0.04	0.01	0.02	0.02	35%	0.00	0.00	35%	0.00	0.00	0	0	24.30			0.02	0.00
NC	5600	5601	Printer Power Management Enabling	Health	2014	2054	0.04	0.01	0.01	0.03	44%	0.00	0.00	40%	0.09	0.02	1	0	0.59			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Health	2014	2054	3.19	0.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.19	0.45	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Health	2014	2054	2.87	0.41	0.32	0.32	10%	0.05	0.05	10%	0.00	0.00	0	0	86.68			0.32	0.05
NC	5700	5702	Data Center Best Practices	Health	2014	2054	2.51	0.36	0.37	0.68	21%	0.05	0.10	21%	0.00	0.00	0	0	35.29			0.37	0.05
NC	5700	5703	Data Center State of the Art practices	Health	2014	2054	2.37	0.34	0.14	0.82	26%	0.02	0.12	26%	0.00	0.00	0	0	18.30			0.14	0.02
NC	6000	6000	Base Water Heating	Health	2014	2054	0.58	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.58	0.07	0.00	0.00
NC	6000	6001	Demand controlled circulating systems	Health	2014	2054	0.56	0.07	0.02	0.02	4%	0.00	0.00	4%	0.04	0.04	0	0	1.60			0.02	0.00
NC	6000	6007	Heat Trap	Health	2014	2054	0.53	0.07	0.03	0.05	9%	0.00	0.01	9%	0.05	0.04	0	0	1.41			0.03	0.00
NC	6000	6002	High Efficiency Water Heater (electric)	Health	2014	2054	0.52	0.07	0.01	0.06	11%	0.00	0.01	11%	0.09	0.05	1	0	0.76			0.00	0.00
NC	6000	6006	Heat Recovery Unit	Health	2014	2054	0.25	0.03	0.27	0.33	57%	0.03	0.04	57%	0.09	0.08	1	1	0.72			0.00	0.00
NC	6000	6004	Tankless Water Heater	Health	2014	2054	0.23	0.03	0.02	0.35	60%	0.00	0.04	60%	0.30	0.09	2	1	0.26			0.00	0.00
NC	6000	6008	Solar Water Heater	Health	2014	2054	0.20	0.03	0.03	0.38	66%	0.00	0.05	66%	0.35	0.11	3	1	0.22			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	Health	2014	2054	0.19	0.02	0.00	0.38	67%	0.00	0.05	67%	0.41	0.12	3	1	0.17			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Health	2014	2054	0.55	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.55	0.08	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Health	2014	2054	0.46	0.07	0.09	0.09	16%	0.01	0.01	8%	0.03	0.03	0	0	2.00			0.09	0.01
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Health	2014	2054	0.41	0.07	0.05	0.14	25%	0.00	0.01	12%	0.05	0.03	1	0	1.09			0.05	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7100	7101	Vending Misers (Non-Refrigerated)	Health	2014	2054	0.00	0.00	0.00	0.00	47%	0.00	0.00	23%	0.43	0.43	6	6	0.12			0.00	0.00
NC	7200	7200	Base Oven	Health	2014	2054	0.09	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.02	0.00	0.00
NC	7300	7300	Base Fryer	Health	2014	2054	0.13	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.02	0.00	0.00
NC	7300	7301	Efficient Fryer	Health	2014	2054	0.12	0.02	0.01	0.01	6%	0.00	0.00	6%	1.32	1.32	7	7	0.05			0.00	0.00
NC	7400	7400	Base Steamer	Health	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Health	2014	2054	1.32	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.32	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	2014	2054	1.25	0.00	0.07	0.07	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	2.95			0.07	0.00
NC	8100	8100	Base Heating, Other Electric	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Health	2014	2054	10.03	1.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.03	1.40	0.00	0.00
NC	9500	9501	Xmisc	Health	2014	2054	10.03	1.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Lodging	2020	2054	0.14	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.14	0.02	0.00	0.00
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Lodging	2020	2054	0.12	0.02	0.01	0.01	10%	0.00	0.00	10%	0.03	0.03	0	0	2.57			0.01	0.00
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Lodging	2020	2054	0.11	0.02	0.02	0.03	22%	0.00	0.00	22%	0.06	0.04	0	0	1.23			0.02	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Lodging	2020	2054	0.11	0.01	0.00	0.03	22%	0.00	0.00	22%	0.05	0.04	1	0	1.00			0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Lodging	2020	2054	0.10	0.01	0.01	0.04	28%	0.00	0.01	27%	0.08	0.05	1	0	0.87			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Lodging	2020	2054	0.08	0.01	0.02	0.05	40%	0.00	0.01	38%	0.39	0.15	3	1	0.20			0.00	0.00
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Lodging	2020	2054	0.08	0.01	0.00	0.06	41%	0.00	0.01	39%	0.20	0.15	6	1	0.28			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Lodging	2020	2054	0.07	0.01	0.01	0.06	46%	0.00	0.01	44%	0.34	0.17	2	1	0.24			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Lodging	2020	2054	0.55	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.55	0.08	0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Lodging	2020	2054	0.49	0.07	0.06	0.06	10%	0.01	0.01	10%	0.03	0.03	0	0	2.03			0.06	0.01
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Lodging	2020	2054	0.43	0.06	0.06	0.12	22%	0.01	0.02	22%	0.07	0.05	1	0	0.97			0.00	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Lodging	2020	2054	0.43	0.06	0.00	0.12	22%	0.00	0.02	22%	0.07	0.05	1	0	0.71			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Lodging	2020	2054	0.40	0.06	0.03	0.15	28%	0.00	0.02	27%	0.11	0.07	1	0	0.62			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Lodging	2020	2054	0.38	0.05	0.02	0.17	32%	0.00	0.02	30%	0.32	0.09	2	1	0.25			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Lodging	2020	2054	0.34	0.05	0.03	0.21	37%	0.00	0.03	36%	0.41	0.14	3	1	0.20			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Lodging	2020	2054	0.33	0.05	0.01	0.22	39%	0.00	0.03	36%	0.33	0.15	10	1	0.16			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Lodging	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Lodging	2014	2054	0.01	0.00	0.00	0.00	2%	0.00	0.00	1%	0.02	0.02	0	0	2.43			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Lodging	2014	2054	0.01	0.00	0.00	0.00	12%	0.00	0.00	11%	0.11	0.10	1	1	0.62			0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Lodging	2014	2054	0.01	0.00	0.00	0.00	29%	0.00	0.00	27%	0.26	0.18	2	1	0.27			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Lodging	2014	2054	0.01	0.00	0.00	0.00	35%	0.00	0.00	28%	0.22	0.19	7	2	0.25			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Lodging	2020	2054	1.11	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.11	0.16	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Lodging	2020	2054	0.19	0.03	0.92	0.92	83%	0.13	0.13	83%	0.01	0.01	0	0	7.09			0.92	0.13
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Lodging	2020	2054	0.40	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.40	0.06	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Lodging	2020	2054	0.07	0.01	0.33	0.33	82%	0.05	0.05	82%	0.01	0.01	0	0	5.99			0.33	0.05
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Lodging	2020	2054	0.29	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.29	0.04	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Lodging	2020	2054	0.08	0.01	0.22	0.22	75%	0.03	0.03	75%	0.02	0.02	0	0	4.46			0.22	0.03
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Lodging	2020	2054	0.43	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.43	0.06	0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Lodging	2020	2054	0.31	0.04	0.12	0.12	28%	0.02	0.02	28%	0.10	0.10	1	1	0.73			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Lodging	2020	2054	0.55	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.55	0.08	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Lodging	2020	2054	0.41	0.06	0.14	0.14	26%	0.02	0.02	26%	0.08	0.08	1	1	0.97			0.00	0.00
NC	1800	1800	BaseMetal Halide, 465W	Lodging	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	1800	1801	T5 (240W) (base metal halide)	Lodging	2014	2054	0.07	0.01	0.04	0.04	34%	0.01	0.01	34%	0.02	0.02	0	0	3.63			0.04	0.01
NC	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Lodging	2014	2054	0.06	0.01	0.01	0.04	39%	0.00	0.01	38%	0.05	0.03	0	0	1.27			0.01	0.00
NC	1800	1806	Occupancy Sensor, High Bay T5	Lodging	2014	2054	0.06	0.01	0.00	0.04	41%	0.00	0.01	38%	0.06	0.03	2	0	0.97			0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Lodging	2014	2054	0.16	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.02	0.00	0.00
NC	1850	1851	LED Exit Sign	Lodging	2014	2054	0.09	0.01	0.07	0.07	44%	0.01	0.01	44%	0.03	0.03	0	0	1.80			0.07	0.01
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Lodging	2014	2054	1.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.05	0.01	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Lodging	2014	2054	1.01	0.01	0.04	0.04	4%	0.00	0.00	13%	0.05	0.05	2	2	1.39			0.04	0.00
NC	1900	1902	LED Outdoor Area Lighting	Lodging	2014	2054	0.49	0.00	0.52	0.57	54%	0.00	0.01	63%	0.11	0.10	12	10	0.60			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Lodging	2014	2054	0.34	0.00	0.14	0.71	67%	0.00	0.01	75%	0.69	0.22	89	23	0.09			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Lodging	2014	2054	10.34	6.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.34	6.22	0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	Lodging	2014	2054	9.81	5.91	0.53	0.53	5%	0.32	0.32	5%	0.03	0.03	0	0	2.58			0.53	0.32
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Lodging	2014	2054	7.55	4.55	2.26	2.79	27%	1.36	1.68	27%	0.05	0.05	0	0	2.07			2.26	1.36
NC	2100	2108	Optimize Controls - DX	Lodging	2014	2054	7.41	4.53	0.14	2.92	28%	0.02	1.70	27%	0.09	0.05	1	0	0.58			0.00	0.00
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	Lodging	2014	2054	7.31	4.50	0.11	3.03	29%	0.03	1.73	28%	0.17	0.05	1	0	0.42			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Lodging	2014	2054	7.09	4.47	0.21	3.25	31%	0.03	1.76	28%	0.16	0.06	1	0	0.36			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Lodging	2014	2054	6.66	4.21	0.43	3.68	36%	0.26	2.02	32%	0.35	0.09	1	0	0.32			0.00	0.00
NC	2100	2111	Economizer Repair - DX	Lodging	2014	2054	6.63	4.18	0.03	3.71	36%	0.03	2.05	33%	0.99	0.10	1	0	0.09			0.00	0.00
NC	2100	2107	Cool Roof - DX	Lodging	2014	2054	6.61	4.17	0.01	3.72	36%	0.01	2.06	33%	1.35	0.11	2	0	0.07			0.00	0.00
NC	2100	2109	Economizer - DX	Lodging	2014	2054	6.50	4.15	0.11	3.83	37%	0.02	2.07	33%	1.17	0.14	8	0	0.05			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Lodging	2014	2054	6.50	4.15	0.00	3.83	37%	0.00	2.07	33%	1.97	0.14	14	0	0.03			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Lodging	2014	2054	6.43	4.11	0.07	3.90	38%	0.04	2.11	34%	3.30	0.19	5	0	0.03			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Lodging	2014	2054	9.53	5.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.53	5.74	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	2014	2054	8.35	5.03	1.18	1.18	12%	0.71	0.71	12%	0.03	0.03	0	0	3.57			1.18	0.71
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Lodging	2014	2054	8.66	5.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.66	5.22	0.00	0.00
NC	2300	2301	HE PTAC, EER=9.6, 1 ton	Lodging	2014	2054	7.49	4.51	1.17	1.17	14%	0.71	0.71	14%	0.09	0.09	0	0	1.21			1.17	0.71
NC	2300	2302	Occupancy Sensor (hotels)	Lodging	2014	2054	6.41	3.63	1.08	2.26	26%	0.88	1.59	30%	0.29	0.18	0	0	0.35			0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Lodging	2014	2054	5.98	1.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.98	1.27	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Lodging	2014	2054	5.88	1.24	0.10	0.10	2%	0.02	0.02	2%	0.03	0.03	0	0	2.39			0.10	0.02
NC	3000	3003	Demand Controlled Ventilation	Lodging	2014	2054	5.06	0.89	0.81	0.92	15%	0.35	0.38	30%	1.07	0.96	2	2	0.09			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Lodging	2014	2054	1.03	0.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.03	0.22	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	Lodging	2014	2054	0.93	0.21	0.11	0.11	10%	0.01	0.01	3%	0.03	0.03	1	1	2.02			0.11	0.01
NC	3200	3204	Demand Controlled Ventilation	Lodging	2014	2054	0.80	0.16	0.13	0.24	23%	0.06	0.06	28%	1.18	0.65	3	3	0.08			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Lodging	2014	2054	3.43	0.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.43	0.50	0.00	0.00
NC	4100	4103	Night covers for display cases (self-contained)	Lodging	2014	2054	3.33	0.49	0.10	0.10	3%	0.02	0.02	3%	0.00	0.00	0	0	68.13			0.10	0.02
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Lodging	2014	2054	3.28	0.48	0.04	0.15	4%	0.01	0.02	4%	0.00	0.00	0	0	26.03			0.04	0.01
NC	4100	4109	Energy-Star Freezer, glass door	Lodging	2014	2054	3.23	0.47	0.05	0.20	6%	0.01	0.03	6%	0.00	0.00	0	0	20.32			0.05	0.01
NC	4100	4107	Energy-Star Freezer, solid door	Lodging	2014	2054	3.21	0.47	0.02	0.22	6%	0.00	0.03	6%	0.01	0.00	0	0	8.09			0.02	0.00
NC	4100	4106	Energy-Star Refrigerator, solid door	Lodging	2014	2054	3.19	0.47	0.01	0.24	7%	0.00	0.03	7%	0.01	0.00	0	0	6.44			0.01	0.00
NC	4100	4110	Energy Star Ice Machines	Lodging	2014	2054	3.17	0.46	0.03	0.26	8%	0.00	0.04	8%	0.03	0.01	0	0	2.39			0.03	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Lodging	2014	2054	3.17	0.46	0.00	0.26	8%	0.00	0.04	8%	0.36	0.01	2	0	0.17			0.00	0.00
NC	4100	4101	Strip curtains for walk-ins (self-contained)	Lodging	2014	2054	3.15	0.46	0.01	0.28	8%	0.00	0.04	8%	0.39	0.02	3	0	0.14			0.00	0.00
NC	5000	5000	Base Desktop PC	Lodging	2014	2054	0.42	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.42	0.06	0.00	0.00
NC	5000	5002	Energy Star or Better PC	Lodging	2014	2054	0.33	0.05	0.09	0.09	21%	0.01	0.01	21%	0.02	0.02	0	0	3.57			0.09	0.01
NC	5000	5001	PC Network Power Management Enabling	Lodging	2014	2054	0.18	0.04	0.15	0.24	58%	0.01	0.02	39%	0.02	0.02	0	0	2.75			0.15	0.01
NC	5100	5100	Base Laptop PC	Lodging	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Lodging	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	4.68			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Lodging	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.38	0.12	9	1	0.04			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Lodging	2014	2054	0.24	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.24	0.04	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Lodging	2014	2054	0.10	0.02	0.13	0.13	56%	0.02	0.02	56%	0.00	0.00	0	0	37.23			0.13	0.02
NC	5200	5202	Monitor Power Management Enabling - CRT	Lodging	2014	2054	0.08	0.01	0.03	0.16	67%	0.00	0.02	61%	0.02	0.00	0	0	2.63			0.03	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Lodging	2014	2054	0.07	0.01	0.01	0.17	69%	0.00	0.02	64%	0.23	0.01	2	0	0.23			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Lodging	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Lodging	2014	2054	0.10	0.01	0.01	0.01	10%	0.00	0.00	10%	0.01	0.01	0	0	4.61			0.01	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Lodging	2014	2054	0.09	0.01	0.01	0.02	20%	0.00	0.00	15%	0.12	0.07	2	1	0.42			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Lodging	2014	2054	0.08	0.01	0.01	0.03	27%	0.00	0.00	17%	0.32	0.13	9	1	0.15			0.00	0.00
NC	5400	5400	Base Copier	Lodging	2014	2054	0.17	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.17	0.03	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Lodging	2014	2054	0.16	0.02	0.02	0.02	10%	0.00	0.00	10%	0.00	0.00	0	0	29.48			0.02	0.00
NC	5400	5402	Copier Power Management Enabling	Lodging	2014	2054	0.15	0.02	0.01	0.02	13%	0.00	0.00	12%	0.10	0.03	1	0	0.54			0.00	0.00
NC	5500	5500	Base Multifunction	Lodging	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Lodging	2014	2054	0.02	0.00	0.01	0.01	25%	0.00	0.00	25%	0.01	0.01	0	0	7.96			0.01	0.00
NC	5500	5501	Multifunction Power Management Enabling	Lodging	2014	2054	0.01	0.00	0.00	0.01	39%	0.00	0.00	32%	0.28	0.11	4	1	0.18			0.00	0.00
NC	5600	5600	Base Printer	Lodging	2014	2054	0.14	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.14	0.02	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Lodging	2014	2054	0.09	0.01	0.05	0.05	35%	0.01	0.01	35%	0.00	0.00	0	0	36.59			0.05	0.01
NC	5600	5601	Printer Power Management Enabling	Lodging	2014	2054	0.07	0.01	0.02	0.07	47%	0.00	0.01	41%	0.06	0.02	1	0	0.83			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Lodging	2014	2054	2.94	0.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.94	0.44	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Lodging	2014	2054	2.65	0.39	0.29	0.29	10%	0.04	0.04	10%	0.00	0.00	0	0	116.16			0.29	0.04
NC	5700	5702	Data Center Best Practices	Lodging	2014	2054	2.31	0.34	0.34	0.63	21%	0.05	0.09	21%	0.00	0.00	0	0	47.29			0.34	0.05

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage Year 2020

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	5700	5703	Data Center State of the Art practices	Lodging	2014	2054	2.18	0.32	0.13	0.76	26%	0.02	0.11	26%	0.00	0.00	0	0	24.53			0.13	0.02
NC	6000	6000	Base Water Heating	Lodging	2014	2054	2.12	0.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.12	0.29	0.00	0.00
NC	6000	6007	Heat Trap	Lodging	2014	2054	2.01	0.27	0.11	0.11	5%	0.01	0.01	5%	0.01	0.01	0	0	4.29			0.11	0.01
NC	6000	6006	Heat Recovery Unit	Lodging	2014	2054	1.75	0.24	0.26	0.37	18%	0.04	0.05	18%	0.02	0.02	0	0	3.21			0.26	0.04
NC	6000	6001	Demand controlled circulating systems	Lodging	2014	2054	1.68	0.23	0.07	0.44	21%	0.01	0.06	21%	0.03	0.02	0	0	2.22			0.07	0.01
NC	6000	6002	High Efficiency Water Heater (electric)	Lodging	2014	2054	1.65	0.22	0.03	0.47	22%	0.00	0.06	22%	0.04	0.02	0	0	1.93			0.03	0.00
NC	6000	6004	Tankless Water Heater	Lodging	2014	2054	1.53	0.21	0.12	0.59	28%	0.02	0.08	28%	0.06	0.03	0	0	1.37			0.12	0.02
NC	6000	6008	Solar Water Heater	Lodging	2014	2054	1.31	0.18	0.21	0.81	38%	0.03	0.11	38%	0.07	0.04	0	0	1.18			0.21	0.03
NC	6000	6003	Hot Water Pipe Insulation	Lodging	2014	2054	1.29	0.17	0.02	0.83	39%	0.00	0.11	39%	0.08	0.04	1	0	0.92			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Lodging	2014	2054	0.62	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.62	0.10	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Lodging	2014	2054	0.52	0.09	0.10	0.10	16%	0.01	0.01	8%	0.03	0.03	0	0	2.01			0.10	0.01
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Lodging	2014	2054	0.46	0.09	0.06	0.16	25%	0.00	0.01	12%	0.05	0.03	1	0	1.10			0.06	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7100	7101	Vending Misers (Non-Refrigerated)	Lodging	2014	2054	0.00	0.00	0.00	0.00	47%	0.00	0.00	23%	0.43	0.43	5	5	0.12			0.00	0.00
NC	7200	7200	Base Oven	Lodging	2014	2054	0.15	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.15	0.03	0.00	0.00
NC	7300	7300	Base Fryer	Lodging	2014	2054	0.18	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.04	0.00	0.00
NC	7400	7400	Base Steamer	Lodging	2014	2054	0.09	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.02	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Lodging	2014	2054	1.37	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.37	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	2014	2054	1.29	0.00	0.08	0.08	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	2.19			0.08	0.00
NC	8100	8100	Base Heating, Other Electric	Lodging	2014	2054	0.66	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.66	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Lodging	2014	2054	7.41	1.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.41	1.21	0.00	0.00
NC	9500	9501	Xmisc	Lodging	2014	2054	7.41	1.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Data Centers	2020	2054	0.32	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.06	0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Data Centers	2020	2054	0.30	0.05	0.02	0.02	7%	0.00	0.00	6%	0.02	0.02	0	0	4.14			0.02	0.00
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Data Centers	2020	2054	0.27	0.05	0.03	0.05	17%	0.01	0.01	15%	0.03	0.02	0	0	2.35			0.03	0.01
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	2020	2054	0.24	0.04	0.03	0.09	27%	0.01	0.01	26%	0.06	0.04	0	0	1.13			0.03	0.01
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Data Centers	2020	2054	0.22	0.04	0.02	0.11	33%	0.00	0.02	28%	0.08	0.04	2	0	0.66			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Data Centers	2020	2054	0.18	0.03	0.03	0.14	44%	0.01	0.02	38%	0.36	0.12	2	1	0.21			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Data Centers	2020	2054	0.17	0.03	0.02	0.16	49%	0.00	0.02	43%	0.30	0.14	2	1	0.25			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Data Centers	2020	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Data Centers	2020	2054	0.01	0.00	0.00	0.00	7%	0.00	0.00	6%	0.03	0.03	0	0	2.41			0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Data Centers	2020	2054	0.00	0.00	0.00	0.00	17%	0.00	0.00	16%	0.03	0.03	0	0	1.85			0.00	0.00
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	2020	2054	0.00	0.00	0.00	0.00	28%	0.00	0.00	26%	0.07	0.05	0	0	0.89			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	Data Centers	2020	2054	0.00	0.00	0.00	0.00	31%	0.00	0.00	30%	0.27	0.07	2	0	0.28			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Data Centers	2020	2054	0.00	0.00	0.00	0.00	37%	0.00	0.00	31%	0.16	0.09	3	1	0.35			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Data Centers	2020	2054	0.00	0.00	0.00	0.00	42%	0.00	0.00	37%	0.37	0.12	2	1	0.20			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Data Centers	2014	2054	0.01	0.00	0.00	0.00	7%	0.00	0.00	6%	0.04	0.04	0	0	1.94			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Data Centers	2014	2054	0.01	0.00	0.00	0.00	17%	0.00	0.00	16%	0.11	0.08	1	0	0.58			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Data Centers	2014	2054	0.01	0.00	0.00	0.00	28%	0.00	0.00	19%	0.15	0.11	3	1	0.37			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Data Centers	2020	2054	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Data Centers	2020	2054	0.02	0.00	0.08	0.08	83%	0.01	0.01	83%	0.01	0.01	0	0	8.13			0.08	0.01
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Data Centers	2020	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Data Centers	2020	2054	0.01	0.00	0.03	0.03	82%	0.01	0.01	82%	0.01	0.01	0	0	6.86			0.03	0.01
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Data Centers	2020	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Data Centers	2020	2054	0.01	0.00	0.02	0.02	75%	0.00	0.00	75%	0.01	0.01	0	0	5.12			0.02	0.00
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Data Centers	2020	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Data Centers	2020	2054	0.01	0.00	0.01	0.01	28%	0.00	0.00	28%	0.07	0.07	0	0	0.83			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Data Centers	2020	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Data Centers	2020	2054	0.02	0.00	0.01	0.01	26%	0.00	0.00	26%	0.06	0.06	0	0	1.11			0.01	0.00
NC	1800	1800	BaseMetal Halide, 465W	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	1850	1850	Base CFL Exit Sign	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	1850	1851	LED Exit Sign	Data Centers	2014	2054	0.00	0.00	0.00	0.00	44%	0.00	0.00	44%	0.03	0.03	0	0	1.78			0.00	0.00
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Data Centers	2014	2054	0.08	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.00	0.00	0.00
NC	1900	1902	LED Outdoor Area Lighting	Data Centers	2014	2054	0.04	0.00	0.04	0.04	52%	0.00	0.00	52%	0.11	0.11	10	10	0.63			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Data Centers	2014	2054	0.03	0.00	0.01	0.05	66%	0.00	0.00	65%	0.72	0.24	70	22	0.09			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Data Centers	2014	2054	0.66	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.66	0.16	0.00	0.00
NC	2000	2010	Ceiling/roof Insulation - Chiller	Data Centers	2014	2054	0.65	0.16	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0	0	22.49			0.00	0.00
NC	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Data Centers	2014	2054	0.60	0.15	0.06	0.06	9%	0.01	0.01	9%	0.02	0.02	0	0	5.12			0.06	0.01
NC	2000	2006	VSD for Chiller Pumps and Towers	Data Centers	2014	2054	0.59	0.15	0.00	0.06	10%	0.00	0.01	9%	0.02	0.02	0	0	3.78			0.00	0.00
NC	2000	2013	High Efficiency Chiller Motors	Data Centers	2014	2054	0.59	0.15	0.00	0.06	10%	0.00	0.02	9%	0.03	0.02	0	0	3.32			0.00	0.00
NC	2000	2003	EMS - Chiller	Data Centers	2014	2054	0.58	0.15	0.02	0.08	12%	0.00	0.02	10%	0.03	0.02	0	0	2.55			0.02	0.00
NC	2000	2008	New Economizer - Chiller	Data Centers	2014	2054	0.54	0.14	0.04	0.12	18%	0.00	0.02	11%	0.03	0.02	1	0	1.99			0.04	0.00
NC	2000	2002	Window Film (Standard) - Chiller	Data Centers	2014	2054	0.54	0.14	0.00	0.12	18%	0.00	0.02	11%	0.05	0.02	0	0	1.32			0.00	0.00
NC	2000	2012	Duct Testing/Sealing	Data Centers	2014	2054	0.43	0.12	0.10	0.22	34%	0.03	0.04	27%	0.09	0.05	0	0	0.94			0.00	0.00
NC	2000	2004	Cool Roof - Chiller	Data Centers	2014	2054	0.43	0.12	0.00	0.22	34%	0.00	0.04	27%	0.14	0.05	1	0	0.53			0.00	0.00
NC	2000	2011	Duct/Pipe Insulation - Chiller	Data Centers	2014	2054	0.43	0.12	0.00	0.23	34%	0.00	0.04	27%	1.13	0.06	5	0	0.06			0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Data Centers	2014	2054	0.37	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.37	0.09	0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Data Centers	2014	2054	0.29	0.07	0.09	0.09	23%	0.02	0.02	23%	0.01	0.01	0	0	5.45			0.09	0.02
NC	2100	2111	Economizer Repair - DX	Data Centers	2014	2054	0.28	0.07	0.00	0.09	24%	0.00	0.02	25%	0.04	0.02	0	0	1.68			0.00	0.00
NC	2100	2108	Optimize Controls - DX	Data Centers	2014	2054	0.28	0.07	0.01	0.10	26%	0.00	0.02	25%	0.03	0.02	1	0	1.65			0.01	0.00
NC	2100	2109	Economizer - DX	Data Centers	2014	2054	0.24	0.07	0.03	0.13	35%	0.00	0.03	28%	0.04	0.02	1	0	1.45			0.03	0.00
NC	2100	2115	Window Film (Standard) - DX	Data Centers	2014	2054	0.24	0.07	0.01	0.13	36%	0.00	0.03	29%	0.07	0.02	0	0	1.03			0.01	0.00
NC	2100	2106	Prog. Thermostat - DX	Data Centers	2014	2054	0.23	0.06	0.01	0.15	39%	0.00	0.03	30%	0.06	0.03	1	0	1.01			0.01	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Year Measure Start Year	Year Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	2100	2112	Aerosol Duct Sealing - DX	Data Centers	2014	2054	0.21	0.06	0.01	0.16	43%	0.00	0.03	33%	0.12	0.04	0	0	0.70			0.00	0.00
NC	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Data Centers	2014	2054	0.21	0.06	0.00	0.16	43%	0.00	0.03	33%	0.12	0.04	2	0	0.51			0.00	0.00
NC	2100	2107	Cool Roof - DX	Data Centers	2014	2054	0.21	0.06	0.00	0.16	43%	0.00	0.03	34%	0.16	0.04	1	0	0.45			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Data Centers	2014	2054	0.21	0.06	0.00	0.16	44%	0.00	0.03	34%	1.32	0.05	5	0	0.05			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Data Centers	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Data Centers	2014	2054	0.04	0.01	0.01	0.01	12%	0.00	0.00	12%	0.01	0.01	0	0	7.64			0.01	0.00
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Data Centers	2014	2054	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Data Centers	2014	2054	0.09	0.02	0.00	0.00	2%	0.00	0.00	2%	0.02	0.02	0	0	5.03			0.00	0.00
NC	3000	3002	Variable Speed Drive Control, 5 HP	Data Centers	2014	2054	0.07	0.02	0.02	0.02	26%	0.00	0.00	8%	0.01	0.01	0	0	4.84			0.02	0.00
NC	3000	3003	Demand Controlled Ventilation	Data Centers	2014	2054	0.07	0.02	0.00	0.03	30%	0.00	0.00	15%	0.55	0.09	1	1	0.18			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Data Centers	2014	2054	0.33	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.33	0.08	0.00	0.00
NC	3100	3102	Variable Speed Drive Control, 15 HP	Data Centers	2014	2054	0.25	0.08	0.08	0.08	24%	0.01	0.01	6%	0.00	0.00	0	0	17.82			0.08	0.01
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Data Centers	2014	2054	0.25	0.08	0.00	0.08	25%	0.00	0.01	7%	0.01	0.00	0	0	8.36			0.00	0.00
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Data Centers	2014	2054	0.23	0.07	0.02	0.10	30%	0.00	0.01	11%	0.02	0.01	0	0	3.68			0.02	0.00
NC	3100	3103	Air Handler Optimization, 15 HP	Data Centers	2014	2054	0.21	0.07	0.02	0.12	36%	0.00	0.01	13%	0.02	0.01	0	0	2.93			0.02	0.00
NC	3100	3105	Energy Recovery Ventilation (ERV)	Data Centers	2014	2054	0.21	0.07	0.01	0.13	38%	0.00	0.01	16%	0.21	0.02	0	0	0.51			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	Data Centers	2014	2054	0.20	0.06	0.01	0.14	42%	0.01	0.02	22%	0.65	0.07	1	1	0.15			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Data Centers	2014	2054	0.36	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.36	0.09	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	Data Centers	2014	2054	0.32	0.09	0.03	0.03	9%	0.00	0.00	2%	0.01	0.01	0	0	4.17			0.03	0.00
NC	3200	3202	Variable Speed Drive Control, 40 HP	Data Centers	2014	2054	0.24	0.08	0.08	0.11	32%	0.00	0.01	8%	0.02	0.02	0	0	3.20			0.08	0.00
NC	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Data Centers	2014	2054	0.24	0.08	0.00	0.11	32%	0.00	0.01	8%	0.09	0.02	0	0	0.94			0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	Data Centers	2014	2054	0.23	0.07	0.01	0.13	36%	0.01	0.01	15%	0.60	0.08	1	1	0.16			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Data Centers	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Data Centers	2014	2054	0.07	0.01	0.00	0.00	2%	0.00	0.00	2%	0.00	0.00	0	0	22.67			0.00	0.00
NC	5000	5000	Base Desktop PC	Data Centers	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Data Centers	2014	2054	0.01	0.00	0.01	0.01	44%	0.00	0.00	23%	0.02	0.02	0	0	3.22			0.01	0.00
NC	5000	5002	Energy Star or Better PC	Data Centers	2014	2054	0.01	0.00	0.00	0.01	56%	0.00	0.00	35%	0.03	0.02	0	0	1.78			0.00	0.00
NC	5100	5100	Base Laptop PC	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Data Centers	2014	2054	0.00	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	4.64			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Data Centers	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	1.46	0.13	8	1	0.04			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Data Centers	2014	2054	0.01	0.00	0.01	0.01	43%	0.00	0.00	43%	0.00	0.00	0	0	48.34			0.01	0.00
NC	5200	5202	Monitor Power Management Enabling - CRT	Data Centers	2014	2054	0.01	0.00	0.00	0.01	50%	0.00	0.00	46%	0.01	0.00	0	0	3.75			0.00	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Data Centers	2014	2054	0.01	0.00	0.00	0.01	54%	0.00	0.00	50%	0.16	0.01	1	0	0.35			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Data Centers	2014	2054	0.00	0.00	0.00	0.00	13%	0.00	0.00	13%	0.01	0.01	0	0	4.42			0.00	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Data Centers	2014	2054	0.00	0.00	0.00	0.00	19%	0.00	0.00	16%	0.13	0.05	1	0	0.40			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Data Centers	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	18%	0.37	0.12	8	1	0.13			0.00	0.00
NC	5400	5400	Base Copier	Data Centers	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Data Centers	2014	2054	0.02	0.00	0.00	0.00	10%	0.00	0.00	10%	0.00	0.00	0	0	29.08			0.00	0.00
NC	5400	5402	Copier Power Management Enabling	Data Centers	2014	2054	0.02	0.00	0.00	0.00	14%	0.00	0.00	12%	0.11	0.03	1	0	0.49			0.00	0.00
NC	5500	5500	Base Multifunction	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Data Centers	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	7.88			0.00	0.00
NC	5500	5501	Multifunction Power Management Enabling	Data Centers	2014	2054	0.00	0.00	0.00	0.00	38%	0.00	0.00	32%	0.32	0.11	4	1	0.16			0.00	0.00
NC	5600	5600	Base Printer	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	5700	5700	Base Data Center/Server Room	Data Centers	2014	2054	18.10	3.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.10	3.15	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Data Centers	2014	2054	16.29	2.83	1.81	1.81	10%	0.31	0.31	10%	0.00	0.00	0	0	129.50			1.81	0.31
NC	5700	5702	Data Center Best Practices	Data Centers	2014	2054	14.22	2.47	2.07	3.88	21%	0.36	0.68	21%	0.00	0.00	0	0	52.72			2.07	0.36
NC	5700	5703	Data Center State of the Art practices	Data Centers	2014	2054	13.42	2.33	0.80	4.68	26%	0.14	0.81	26%	0.00	0.00	0	0	27.34			0.80	0.14
NC	6000	6000	Base Water Heating	Data Centers	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	6000	6007	Heat Trap	Data Centers	2014	2054	0.01	0.00	0.00	0.00	5%	0.00	0.00	5%	0.04	0.04	0	0	1.59			0.00	0.00
NC	6000	6002	High Efficiency Water Heater (electric)	Data Centers	2014	2054	0.01	0.00	0.00	0.00	7%	0.00	0.00	7%	0.09	0.05	1	0	0.86			0.00	0.00
NC	6000	6004	Tankless Water Heater	Data Centers	2014	2054	0.01	0.00	0.00	0.00	14%	0.00	0.00	14%	0.13	0.09	1	1	0.61			0.00	0.00
NC	6000	6008	Solar Water Heater	Data Centers	2014	2054	0.01	0.00	0.01	0.01	60%	0.00	0.00	60%	0.16	0.14	1	1	0.52			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	Data Centers	2014	2054	0.01	0.00	0.00	0.01	60%	0.00	0.00	60%	0.34	0.14	2	1	0.22			0.00	0.00
NC	6000	6006	Heat Recovery Unit	Data Centers	2014	2054	0.01	0.00	0.00	0.01	63%	0.00	0.00	63%	0.35	0.15	2	1	0.19			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	Data Centers	2014	2054	0.01	0.00	0.00	0.01	64%	0.00	0.00	64%	1.05	0.17	6	1	0.07			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7200	7200	Base Oven	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7300	7300	Base Fryer	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7400	7400	Base Steamer	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8100	8100	Base Heating, Other Electric	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Data Centers	2014	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.01	0.00	0.00
NC	9500	9501	Xmisc	Data Centers	2014	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	eligious Worsh	2020	2054	0.79	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.79	0.13	0.00	0.00
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	eligious Worsh	2020	2054	0.71	0.12	0.08	0.08	10%	0.01	0.01	10%	0.05	0.05	0	0	1.36			0.08	0.01
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	eligious Worsh	2020	2054	0.71	0.12	0.00	0.08	10%	0.00	0.01	10%	0.05	0.05	1	0	0.96			0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	eligious Worsh	2020	2054	0.66	0.11	0.05	0.14	17%	0.01	0.02	16%	0.08	0.06	1	0	0.87			0.00	0.00
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	eligious Worsh	2020	2054	0.57	0.10	0.08	0.22	28%	0.01	0.04	26%	0.11	0.08	1	1	0.60			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	eligious Worsh	2020	2054	0.48	0.08	0.09	0.31	39%	0.02	0.05	38%	0.70	0.26	4	2	0.11			0.00	0.00

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	eligious Worsh	2020	2054	0.47	0.08	0.01	0.33	41%	0.00	0.05	38%	0.35	0.27	8	2	0.16			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	eligious Worsh	2020	2054	0.43	0.08	0.04	0.37	46%	0.01	0.06	43%	0.60	0.30	4	2	0.13			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	eligious Worsh	2020	2054	0.61	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.61	0.10	0.00	0.00
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	eligious Worsh	2020	2054	0.55	0.09	0.06	0.06	9%	0.01	0.01	9%	0.06	0.06	0	0	1.09			0.06	0.01
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	eligious Worsh	2020	2054	0.55	0.09	0.00	0.06	9%	0.00	0.01	9%	0.07	0.06	1	0	0.79			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	eligious Worsh	2020	2054	0.51	0.09	0.04	0.10	16%	0.01	0.02	15%	0.10	0.08	1	1	0.71			0.00	0.00
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	eligious Worsh	2020	2054	0.44	0.08	0.06	0.16	27%	0.01	0.03	26%	0.14	0.10	1	1	0.48			0.00	0.00
NC	1130	1134	ROB 2L4' LED Tube, 2020	eligious Worsh	2020	2054	0.42	0.07	0.02	0.19	30%	0.00	0.03	29%	0.56	0.16	3	1	0.14			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	eligious Worsh	2020	2054	0.39	0.07	0.04	0.22	36%	0.01	0.04	35%	0.72	0.25	4	2	0.11			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	eligious Worsh	2020	2054	0.37	0.07	0.01	0.23	38%	0.00	0.04	35%	0.59	0.26	14	2	0.09			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	eligious Worsh	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	eligious Worsh	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	0.04	0.04	0	0	1.38			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	eligious Worsh	2014	2054	0.01	0.00	0.00	0.00	8%	0.00	0.00	8%	0.20	0.20	1	1	0.35			0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	eligious Worsh	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	24%	0.43	0.35	3	2	0.17			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	eligious Worsh	2014	2054	0.01	0.00	0.00	0.00	31%	0.00	0.00	26%	0.39	0.36	9	3	0.14			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	eligious Worsh	2020	2054	1.41	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.41	0.24	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	eligious Worsh	2020	2054	0.24	0.04	1.17	1.17	83%	0.20	0.20	83%	0.02	0.02	0	0	4.47			1.17	0.20
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	eligious Worsh	2020	2054	0.51	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.51	0.09	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	eligious Worsh	2020	2054	0.09	0.02	0.41	0.41	82%	0.07	0.07	82%	0.02	0.02	0	0	3.78			0.41	0.07
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	eligious Worsh	2020	2054	0.37	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.37	0.06	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	eligious Worsh	2020	2054	0.10	0.02	0.28	0.28	75%	0.05	0.05	75%	0.02	0.02	0	0	2.82			0.28	0.05
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	eligious Worsh	2020	2054	0.35	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.35	0.06	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	eligious Worsh	2020	2054	0.25	0.04	0.10	0.10	28%	0.02	0.02	28%	0.15	0.15	1	1	0.46			0.00	0.00
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	eligious Worsh	2020	2054	0.44	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.08	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	eligious Worsh	2020	2054	0.33	0.06	0.12	0.12	26%	0.02	0.02	26%	0.11	0.11	1	1	0.61			0.00	0.00
NC	1800	1800	BaseMetal Halide, 465W	eligious Worsh	2014	2054	1.77	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.77	0.30	0.00	0.00
NC	1800	1801	T5 (240W) (base metal halide)	eligious Worsh	2014	2054	1.17	0.20	0.60	0.60	34%	0.10	0.10	34%	0.03	0.03	0	0	2.24			0.60	0.10
NC	1800	1806	Occupancy Sensor, High Bay T5	eligious Worsh	2014	2054	1.13	0.20	0.04	0.64	36%	0.00	0.10	34%	0.09	0.04	2	0	0.60			0.00	0.00
NC	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	eligious Worsh	2014	2054	1.05	0.19	0.09	0.72	41%	0.01	0.11	38%	0.17	0.05	1	0	0.41			0.00	0.00
NC	1850	1850	Base CFL Exit Sign	eligious Worsh	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
NC	1850	1851	LED Exit Sign	eligious Worsh	2014	2054	0.02	0.00	0.02	0.02	46%	0.00	0.00	46%	0.07	0.07	0	0	0.92			0.00	0.00
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	eligious Worsh	2014	2054	0.56	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.56	0.04	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	eligious Worsh	2014	2054	0.50	0.03	0.05	0.05	10%	0.01	0.01	28%	0.09	0.09	0	0	0.99			0.00	0.00
NC	1900	1902	LED Outdoor Area Lighting	eligious Worsh	2014	2054	0.24	0.01	0.26	0.32	57%	0.02	0.03	75%	0.22	0.19	3	2	0.32			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	eligious Worsh	2014	2054	0.17	0.01	0.07	0.39	69%	0.00	0.04	86%	1.41	0.42	20	4	0.05			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	eligious Worsh	2014	2054	4.00	3.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.00	3.10	0.00	0.00
NC	2100	2113	Ceiling/roof Insulation - DX	eligious Worsh	2014	2054	4.00	3.10	0.00	0.00	0%	0.00	0.00	0%	0.05	0.05	0	0	2.77			0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	eligious Worsh	2014	2054	3.08	2.38	0.92	0.92	23%	0.71	0.71	23%	0.08	0.08	0	0	1.47			0.92	0.71
NC	2100	2112	Aerosol Duct Sealing - DX	eligious Worsh	2014	2054	2.90	2.24	0.18	1.10	28%	0.14	0.85	28%	0.51	0.15	1	0	0.24			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	eligious Worsh	2014	2054	2.83	2.23	0.07	1.17	29%	0.01	0.87	28%	0.29	0.16	1	0	0.21			0.00	0.00
NC	2100	2108	Optimize Controls - DX	eligious Worsh	2014	2054	2.79	2.22	0.05	1.21	30%	0.01	0.87	28%	0.30	0.16	2	0	0.18			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	eligious Worsh	2014	2054	2.78	2.21	0.01	1.23	31%	0.01	0.88	29%	1.43	0.18	2	0	0.07			0.00	0.00
NC	2100	2107	Cool Roof - DX	eligious Worsh	2014	2054	2.77	2.21	0.01	1.23	31%	0.00	0.89	29%	7.28	0.21	9	0	0.01			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	eligious Worsh	2014	2054	2.75	2.19	0.02	1.25	31%	0.01	0.90	29%	8.70	0.33	11	0	0.01			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	eligious Worsh	2014	2054	3.33	2.57	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.33	2.57	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	eligious Worsh	2014	2054	2.92	2.26	0.41	0.41	12%	0.32	0.32	12%	0.09	0.09	0	0	1.37			0.41	0.32
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	eligious Worsh	2014	2054	0.06	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.04	0.00	0.00
NC	2300	2301	HE PTAC, EER=9.6, 1 ton	eligious Worsh	2014	2054	0.05	0.04	0.01	0.01	14%	0.01	0.01	14%	0.20	0.20	0	0	0.60			0.00	0.00
NC	2300	2302	Occupancy Sensor (hotels)	eligious Worsh	2014	2054	0.04	0.03	0.01	0.02	27%	0.01	0.01	30%	0.63	0.41	1	0	0.18			0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	eligious Worsh	2014	2054	1.61	0.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.61	0.46	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	eligious Worsh	2014	2054	1.59	0.45	0.03	0.03	2%	0.01	0.01	2%	0.15	0.15	1	1	0.59			0.00	0.00
NC	3000	3002	Variable Speed Drive Control, 5 HP	eligious Worsh	2014	2054	1.11	0.42	0.48	0.51	31%	0.03	0.04	9%	0.12	0.12	2	1	0.56			0.00	0.00
NC	3000	3003	Demand Controlled Ventilation	eligious Worsh	2014	2054	1.09	0.41	0.02	0.53	33%	0.01	0.05	12%	3.72	0.27	7	3	0.03			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	eligious Worsh	2014	2054	1.29	0.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.29	0.37	0.00	0.00
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	eligious Worsh	2014	2054	1.10	0.32	0.19	0.19	14%	0.05	0.05	13%	0.07	0.07	0	0	1.12			0.19	0.05
NC	3100	3103	Air Handler Optimization, 15 HP	eligious Worsh	2014	2054	1.03	0.31	0.08	0.26	20%	0.01	0.05	14%	0.09	0.08	1	0	0.59			0.00	0.00
NC	3100	3102	Variable Speed Drive Control, 15 HP	eligious Worsh	2014	2054	0.72	0.29	0.31	0.57	44%	0.02	0.07	20%	0.16	0.12	2	1	0.41			0.00	0.00
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	eligious Worsh	2014	2054	0.71	0.29	0.01	0.58	45%	0.00	0.08	21%	0.50	0.13	2	1	0.18			0.00	0.00
NC	3100	3105	Energy Recovery Ventilation (ERV)	eligious Worsh	2014	2054	0.70	0.28	0.01	0.59	46%	0.00	0.08	23%	1.04	0.14	2	1	0.11			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	eligious Worsh	2014	2054	0.68	0.28	0.01	0.60	47%	0.01	0.09	25%	4.72	0.25	9	2	0.02			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	eligious Worsh	2014	2054	1.02	0.29	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.02	0.29	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	eligious Worsh	2014	2054	0.95	0.29	0.07	0.07	7%	0.00	0.00	2%	0.08	0.08	1	1	0.69			0.00	0.00
NC	3200	3202	Variable Speed Drive Control, 40 HP	eligious Worsh	2014	2054	0.67	0.27	0.29	0.36	35%	0.02	0.03	9%	0.25	0.22	4	3	0.26			0.00	0.00
NC	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	eligious Worsh	2014	2054	0.66	0.26	0.00	0.36	35%	0.00	0.03	9%	1.22	0.22	4	3	0.07			0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	eligious Worsh	2014	2054	0.65	0.26	0.01	0.37	36%	0.01	0.03	11%	3.94	0.35	7	4	0.03			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	eligious Worsh	2014	2054	2.27	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.27	0.34	0.00	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	eligious Worsh	2014	2054	2.24	0.34	0.03	0.03	1%	0.00	0.00	1%	0.00	0.00	0	0	15.89			0.03	0.00
NC	4100	4110	Energy Star Ice Machines	eligious Worsh	2014	2054	2.23	0.34	0.01	0.04	2%	0.00	0.01	2%	0.03	0.01	0	0	1.96			0.01	0.00
NC	5000	5000	Base Desktop PC	eligious Worsh	2014	2054	0.96	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.96	0.15	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	eligious Worsh	2014	2054	0.53	0.11	0.43	0.43	45%	0.03	0.03	23%	0.03	0.03	0	0	1.75			0.43	0.03
NC	5000	5002	Energy Star or Better PC	eligious Worsh	2014	2054	0.36	0.09	0.17	0.60	62%	0.03	0.06	40%	0.06	0.04	0	0	0.89			0.00	0.00
NC	5100	5100	Base Laptop PC	eligious Worsh	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	5100	5102	Energy Star or Better Laptop	eligious Worsh	2014	2054	0.02	0.00	0.00	0.00	19%	0.00	0.00	19%	0.02	0.02	0	0	2.42			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	eligious Worsh	2014	2054	0.02	0.00	0.00	0.00	21%	0.00	0.00	21%	2.69	0.24	18	2	0.02			0.00	0.00
NC	5200	5200	Base Monitor, CRT	eligious Worsh	2014	2054	0.26	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.26	0.04	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	eligious Worsh	2014	2054	0.11	0.02	0.14	0.14	56%	0.02	0.02	56%	0.00	0.00	0	0	19.31			0.14	0.02
NC	5200	5202	Monitor Power Management Enabling - CRT	eligious Worsh	2014	2054	0.08	0.01	0.03	0.17	67%	0.00	0.02	62%	0.04	0.01	1	0	1.26			0.03	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	eligious Worsh	2014	2054	0.08	0.01	0.01	0.18	70%	0.00	0.02	64%	0.46	0.03	3	0	0.12			0.00	0.00
NC	5300	5300	Base Monitor, LCD	eligious Worsh	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	eligious Worsh	2014	2054	0.04	0.01	0.01	0.01	18%	0.00	0.00	18%	0.03	0.03	0	0	2.18			0.01	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	eligious Worsh	2014	2054	0.04	0.01	0.00	0.01	21%	0.00	0.00	19%	0.23	0.05	3	0	0.22			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	eligious Worsh	2014	2054	0.03	0.01	0.00	0.01	27%	0.00	0.00	21%	0.66	0.19	17	2	0.07			0.00	0.00
NC	5400	5400	Base Copier	eligious Worsh	2014	2054	1.02	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.02	0.15	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	eligious Worsh	2014	2054	0.88	0.13	0.14	0.14	13%	0.02	0.02	13%	0.00	0.00	0	0	14.64			0.14	0.02
NC	5400	5402	Copier Power Management Enabling	eligious Worsh	2014	2054	0.84	0.13	0.04	0.18	18%	0.00	0.02	16%	0.21	0.05	3	0	0.26			0.00	0.00
NC	5500	5500	Base Multifunction	eligious Worsh	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	eligious Worsh	2014	2054	0.02	0.00	0.01	0.01	25%	0.00	0.00	25%	0.01	0.01	0	0	4.12			0.01	0.00
NC	5500	5501	Multifunction Power Management Enabling	eligious Worsh	2014	2054	0.01	0.00	0.00	0.01	37%	0.00	0.00	31%	0.56	0.19	7	2	0.09			0.00	0.00
NC	5600	5600	Base Printer	eligious Worsh	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	eligious Worsh	2014	2054	0.02	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00	0.00	0	0	18.95			0.01	0.00
NC	5600	5601	Printer Power Management Enabling	eligious Worsh	2014	2054	0.02	0.00	0.00	0.02	45%	0.00	0.00	40%	0.12	0.03	2	0	0.42			0.00	0.00
NC	5700	5700	Base Data Center/Server Room	eligious Worsh	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00	0.00
NC	5700	5701	Data Center Improved Operations	eligious Worsh	2014	2054	0.08	0.01	0.01	0.01	10%	0.00	0.00	10%	0.00	0.00	0	0	67.63			0.01	0.00
NC	5700	5702	Data Center Best Practices	eligious Worsh	2014	2054	0.07	0.01	0.01	0.02	21%	0.00	0.00	21%	0.00	0.00	0	0	27.53			0.01	0.00
NC	5700	5703	Data Center State of the Art practices	eligious Worsh	2014	2054	0.06	0.01	0.00	0.02	26%	0.00	0.00	26%	0.00	0.00	0	0	14.28			0.00	0.00
NC	6000	6000	Base Water Heating	eligious Worsh	2014	2054	0.37	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.37	0.06	0.00	0.00
NC	6000	6007	Heat Trap	eligious Worsh	2014	2054	0.35	0.05	0.02	0.02	5%	0.00	0.00	5%	0.03	0.03	0	0	1.87			0.02	0.00
NC	6000	6002	High Efficiency Water Heater (electric)	eligious Worsh	2014	2054	0.35	0.05	0.01	0.03	7%	0.00	0.00	7%	0.07	0.04	0	0	1.00			0.01	0.00
NC	6000	6004	Tankless Water Heater	eligious Worsh	2014	2054	0.32	0.05	0.03	0.05	14%	0.00	0.01	14%	0.11	0.08	1	1	0.72			0.00	0.00
NC	6000	6003	Hot Water Pipe Insulation	eligious Worsh	2014	2054	0.31	0.05	0.01	0.06	16%	0.00	0.01	16%	0.13	0.08	1	1	0.55			0.00	0.00
NC	6000	6006	Heat Recovery Unit	eligious Worsh	2014	2054	0.30	0.04	0.01	0.07	18%	0.00	0.01	18%	0.13	0.09	1	1	0.52			0.00	0.00
NC	6000	6001	Demand controlled circulating systems	eligious Worsh	2014	2054	0.29	0.04	0.01	0.08	22%	0.00	0.01	22%	0.37	0.13	2	1	0.20			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7200	7200	Base Oven	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7300	7300	Base Fryer	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7400	7400	Base Steamer	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	eligious Worsh	2014	2054	0.13	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	eligious Worsh	2014	2054	0.12	0.00	0.01	0.01	6%	0.00	0.00	0%	0.07	0.07	N/A	N/A	0.91			0.00	0.00
NC	8100	8100	Base Heating, Other Electric	eligious Worsh	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	eligious Worsh	2014	2054	8.84	1.47	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.84	1.47	0.00	0.00
NC	9500	9501	Xmisc	eligious Worsh	2014	2054	8.84	1.47	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00
NC	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Misc	2020	2054	5.29	0.90	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.29	0.90	0.00	0.00
NC	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Misc	2020	2054	5.29	0.90	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	4.07			0.00	0.00
NC	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Misc	2020	2054	4.89	0.84	0.40	0.40	8%	0.05	0.05	6%	0.02	0.02	0	0	3.66			0.40	0.05
NC	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Misc	2020	2054	4.38	0.76	0.51	0.91	17%	0.09	0.14	16%	0.02	0.02	0	0	3.05			0.51	0.09
NC	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Misc	2020	2054	3.82	0.66	0.56	1.46	28%	0.09	0.23	26%	0.04	0.03	0	0	1.46			0.56	0.09
NC	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Misc	2020	2054	3.71	0.66	0.11	1.58	30%	0.00	0.24	27%	0.08	0.03	2	0	0.72			0.00	0.00
NC	1030	1034	ROB 4L4' LED Tube, 2020	Misc	2020	2054	3.11	0.56	0.60	2.17	41%	0.10	0.34	38%	0.25	0.09	1	1	0.29			0.00	0.00
NC	1030	1035	LED Troffer (base 4L4'T8), 2020	Misc	2020	2054	2.85	0.51	0.27	2.44	46%	0.05	0.39	43%	0.20	0.10	1	1	0.34			0.00	0.00
NC	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Misc	2020	2054	4.05	0.69	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.05	0.69	0.00	0.00
NC	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Misc	2020	2054	4.05	0.69	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	3.31			0.00	0.00
NC	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Misc	2020	2054	3.74	0.65	0.31	0.31	8%	0.04	0.04	6%	0.02	0.02	0	0	2.97			0.31	0.04
NC	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Misc	2020	2054	3.39	0.59	0.35	0.66	16%	0.06	0.10	15%	0.02	0.02	0	0	2.43			0.35	0.06
NC	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Misc	2020	2054	2.96	0.51	0.43	1.09	27%	0.07	0.17	25%	0.05	0.04	0	0	1.17			0.43	0.07
NC	1130	1134	ROB 2L4' LED Tube, 2020	Misc	2020	2054	2.81	0.49	0.14	1.23	31%	0.02	0.20	29%	0.19	0.05	1	0	0.36			0.00	0.00
NC	1130	1135	LED Troffer (base 2L4'T8), 2020	Misc	2020	2054	2.57	0.45	0.24	1.47	36%	0.04	0.24	35%	0.24	0.08	1	1	0.29			0.00	0.00
NC	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Misc	2020	2054	2.50	0.44	0.07	1.55	38%	0.00	0.24	35%	0.15	0.09	4	1	0.36			0.00	0.00
NC	1200	1200	Base Other Fluorescent Fixture	Misc	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Misc	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	5.21			0.00	0.00
NC	1200	1201	ROB High Performance T8 (base other fluorescent)	Misc	2014	2054	0.05	0.01	0.00	0.00	8%	0.00	0.00	8%	0.07	0.07	0	0	0.84			0.00	0.00
NC	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Misc	2014	2054	0.05	0.01	0.00	0.01	15%	0.00	0.00	13%	0.10	0.08	1	1	0.72			0.00	0.00
NC	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Misc	2014	2054	0.04	0.01	0.00	0.01	21%	0.00	0.00	15%	0.09	0.09	2	1	0.63			0.00	0.00
NC	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Misc	2020	2054	24.26	4.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	24.26	4.12	0.00	0.00
NC	1330	1332	LEDs (base incandescent flood) 2020	Misc	2020	2054	4.12	0.70	20.13	20.13	83%	3.42	3.42	83%	0.01	0.01	0	0	11.21			20.13	3.42
NC	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Misc	2020	2054	8.73	1.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.73	1.48	0.00	0.00
NC	1430	1432	LEDs (base incandescent A-line 72W) 2020	Misc	2020	2054	1.62	0.27	7.12	7.12	82%	1.21	1.21	82%	0.01	0.01	0	0	9.46			7.12	1.21
NC	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Misc	2020	2054	6.43	1.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.43	1.09	0.00	0.00
NC	1530	1532	LEDs (base incandescent A-line 53W) 2020	Misc	2020	2054	1.64	0.28	4.79	4.79	75%	0.81	0.81	75%	0.01	0.01	0	0	7.05			4.79	0.81
NC	1630	1630	Base CFL 18W to screw-in replacement 2020	Misc	2020	2054	0.78	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.78	0.13	0.00	0.00
NC	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Misc	2020	2054	0.56	0.10	0.22	0.22	28%	0.04	0.04	28%	0.05	0.05	0	0	1.15			0.22	0.04
NC	1730	1730	Base CFL 23W to screw-in replacement 2020	Misc	2020	2054	0.99	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.99	0.17	0.00	0.00
NC	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Misc	2020	2054	0.73	0.12	0.26	0.26	26%	0.04	0.04	26%	0.04	0.04	0	0	1.53			0.26	0.04
NC	1800	1800	BaseMetal Halide, 465W	Misc	2014	2054	3.54	0.60	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.54	0.60	0.00	0.00
NC	1800	1801	T5 (240W) (base metal halide)	Misc	2014	2054	2.34	0.40	1.20	1.20	34%	0.20	0.20	34%	0.01	0.01	0	0	8.49			1.20	0.20
NC	1800	1806	Occupancy Sensor, High Bay T5	Misc	2014	2054	2.27	0.39	0.08	1.27	36%	0.00	0.21	34%	0.02	0.01	1	0	2.28			0.08	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Misc	2014	2054	2.09	0.37	0.17	1.44	41%	0.02	0.23	38%	0.05	0.01	0	0	1.56			0.17	0.02
NC	1850	1850	Base CFL Exit Sign	Misc	2014	2054	0.26	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.26	0.04	0.00	0.00
NC	1850	1851	LED Exit Sign	Misc	2014	2054	0.14	0.02	0.12	0.12	46%	0.02	0.02	46%	0.03	0.03	0	0	2.16			0.12	0.02
NC	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Misc	2014	2054	1.53	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.53	0.12	0.00	0.00
NC	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Misc	2014	2054	1.40	0.09	0.13	0.13	9%	0.03	0.03	25%	0.04	0.04	0	0	2.37			0.13	0.03
NC	1900	1902	LED Outdoor Area Lighting	Misc	2014	2054	0.68	0.03	0.73	0.86	56%	0.06	0.09	72%	0.09	0.08	1	1	0.77			0.00	0.00
NC	1900	1903	Bi-Level LED Outdoor Lighting	Misc	2014	2054	0.48	0.02	0.20	1.06	69%	0.01	0.10	84%	0.59	0.18	8	2	0.12			0.00	0.00
NC	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Misc	2014	2054	3.24	2.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.24	2.51	0.00	0.00
NC	2100	2113	Ceiling/roof Insulation - DX	Misc	2014	2054	3.24	2.51	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	6.63			0.00	0.00
NC	2100	2102	DX Packaged System, EER=13.4, 10 tons	Misc	2014	2054	2.49	1.93	0.75	0.75	23%	0.58	0.58	23%	0.03	0.03	0	0	3.51			0.75	0.58
NC	2100	2105	DX Tune Up/ Advanced Diagnostics	Misc	2014	2054	2.49	1.93	0.00	0.75	23%	0.00	0.58	23%	0.11	0.03	0	0	0.67			0.00	0.00
NC	2100	2112	Aerosol Duct Sealing - DX	Misc	2014	2054	2.35	1.82	0.15	0.89	28%	0.11	0.69	28%	0.21	0.06	0	0	0.58			0.00	0.00
NC	2100	2106	Prog. Thermostat - DX	Misc	2014	2054	2.30	1.81	0.04	0.94	29%	0.01	0.70	28%	0.12	0.07	1	0	0.51			0.00	0.00
NC	2100	2108	Optimize Controls - DX	Misc	2014	2054	2.26	1.80	0.04	0.98	30%	0.01	0.71	28%	0.13	0.07	1	0	0.44			0.00	0.00
NC	2100	2115	Window Film (Standard) - DX	Misc	2014	2054	2.25	1.79	0.01	0.98	30%	0.01	0.71	28%	0.59	0.07	1	0	0.17			0.00	0.00
NC	2100	2107	Cool Roof - DX	Misc	2014	2054	2.25	1.79	0.00	0.99	31%	0.00	0.72	29%	3.03	0.09	4	0	0.03			0.00	0.00
NC	2100	2114	Duct/Pipe Insulation - DX	Misc	2014	2054	2.24	1.78	0.01	1.00	31%	0.01	0.73	29%	3.63	0.14	5	0	0.03			0.00	0.00
NC	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Misc	2014	2054	17.26	13.35	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.26	13.35	0.00	0.00
NC	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	2014	2054	15.13	11.70	2.14	2.14	12%	1.65	1.65	12%	0.04	0.04	0	0	3.28			2.14	1.65
NC	2300	2300	Base PTAC, EER=8.3, 1 ton	Misc	2014	2054	4.26	3.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.26	3.30	0.00	0.00
NC	2300	2301	HE PTAC, EER=9.6, 1 ton	Misc	2014	2054	3.69	2.85	0.58	0.58	14%	0.45	0.45	14%	0.08	0.08	0	0	1.43			0.58	0.45
NC	2300	2302	Occupancy Sensor (hotels)	Misc	2014	2054	3.13	2.29	0.55	1.13	27%	0.56	1.00	30%	0.26	0.17	0	0	0.43			0.00	0.00
NC	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Misc	2014	2054	9.78	2.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.78	2.78	0.00	0.00
NC	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Misc	2014	2054	9.61	2.73	0.17	0.17	2%	0.05	0.05	2%	0.06	0.06	0	0	1.40			0.17	0.05
NC	3000	3002	Variable Speed Drive Control, 5 HP	Misc	2014	2054	6.72	2.53	2.89	3.06	31%	0.20	0.25	9%	0.05	0.05	1	1	1.33			2.89	0.20
NC	3000	3003	Demand Controlled Ventilation	Misc	2014	2054	6.59	2.45	0.13	3.19	33%	0.07	0.32	12%	1.56	0.11	3	1	0.07			0.00	0.00
NC	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Misc	2014	2054	7.79	2.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.79	2.21	0.00	0.00
NC	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Misc	2014	2054	6.67	1.93	1.12	1.12	14%	0.29	0.29	13%	0.03	0.03	0	0	2.68			1.12	0.29
NC	3100	3103	Air Handler Optimization, 15 HP	Misc	2014	2054	6.21	1.90	0.46	1.58	20%	0.03	0.32	14%	0.04	0.03	1	0	1.41			0.46	0.03
NC	3100	3102	Variable Speed Drive Control, 15 HP	Misc	2014	2054	4.34	1.76	1.87	3.45	44%	0.13	0.45	20%	0.07	0.05	1	0	0.98			0.00	0.00
NC	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Misc	2014	2054	4.28	1.74	0.06	3.52	45%	0.02	0.47	21%	0.21	0.05	1	0	0.43			0.00	0.00
NC	3100	3105	Energy Recovery Ventilation (ERV)	Misc	2014	2054	4.22	1.71	0.05	3.57	46%	0.03	0.50	23%	0.43	0.06	1	0	0.26			0.00	0.00
NC	3100	3107	Demand Controlled Ventilation	Misc	2014	2054	4.14	1.67	0.08	3.65	47%	0.05	0.55	25%	1.97	0.10	4	1	0.05			0.00	0.00
NC	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Misc	2014	2054	6.19	1.76	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.19	1.76	0.00	0.00
NC	3200	3203	Air Handler Optimization, 40 HP	Misc	2014	2054	5.76	1.73	0.42	0.42	7%	0.03	0.03	2%	0.03	0.03	0	0	1.65			0.42	0.03
NC	3200	3202	Variable Speed Drive Control, 40 HP	Misc	2014	2054	4.03	1.60	1.73	2.16	35%	0.12	0.15	9%	0.10	0.09	1	1	0.63			0.00	0.00
NC	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Misc	2014	2054	4.01	1.60	0.02	2.17	35%	0.00	0.16	9%	0.51	0.09	2	1	0.17			0.00	0.00
NC	3200	3204	Demand Controlled Ventilation	Misc	2014	2054	3.93	1.56	0.08	2.25	36%	0.04	0.20	11%	1.65	0.15	3	2	0.06			0.00	0.00
NC	4000	4000	Base Built-Up Refrigeration System	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	4100	4100	Base Self-Contained Refrigeration	Misc	2014	2054	10.36	1.56	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.36	1.56	0.00	0.00
NC	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Misc	2014	2054	10.21	1.54	0.15	0.15	1%	0.02	0.02	1%	0.00	0.00	0	0	38.00			0.15	0.02
NC	4100	4108	Energy-Star Refrigerator, glass door	Misc	2014	2054	10.20	1.54	0.01	0.15	1%	0.00	0.02	1%	0.00	0.00	0	0	12.86			0.01	0.00
NC	4100	4106	Energy-Star Refrigerator, solid door	Misc	2014	2054	10.19	1.53	0.01	0.17	2%	0.00	0.03	2%	0.01	0.00	0	0	12.69			0.01	0.00
NC	4100	4110	Energy Star Ice Machines	Misc	2014	2054	10.17	1.53	0.02	0.18	2%	0.00	0.03	2%	0.01	0.00	0	0	4.68			0.02	0.00
NC	4100	4112	Reach-in unit occupancy sensors	Misc	2014	2054	10.17	1.53	0.00	0.18	2%	0.00	0.03	2%	0.26	0.00	2	0	0.24			0.00	0.00
NC	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Misc	2014	2054	10.17	1.53	0.00	0.18	2%	0.00	0.03	2%	0.30	0.00	2	0	0.20			0.00	0.00
NC	5000	5000	Base Desktop PC	Misc	2014	2054	0.72	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.72	0.11	0.00	0.00
NC	5000	5001	PC Network Power Management Enabling	Misc	2014	2054	0.40	0.08	0.33	0.33	45%	0.03	0.03	23%	0.01	0.01	0	0	4.18			0.33	0.03
NC	5000	5002	Energy Star or Better PC	Misc	2014	2054	0.27	0.07	0.12	0.45	62%	0.02	0.04	40%	0.03	0.02	0	0	2.12			0.12	0.02
NC	5100	5100	Base Laptop PC	Misc	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00	0.00
NC	5100	5102	Energy Star or Better Laptop	Misc	2014	2054	0.02	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	5.80			0.00	0.00
NC	5100	5101	Laptop Network Power Management Enabling	Misc	2014	2054	0.02	0.00	0.00	0.01	21%	0.00	0.00	21%	1.13	0.10	7	1	0.05			0.00	0.00
NC	5200	5200	Base Monitor, CRT	Misc	2014	2054	0.24	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.24	0.04	0.00	0.00
NC	5200	5201	Energy Star or Better Monitor - CRT	Misc	2014	2054	0.11	0.02	0.13	0.13	56%	0.02	0.02	56%	0.00	0.00	0	0	46.17			0.13	0.02
NC	5200	5202	Monitor Power Management Enabling - CRT	Misc	2014	2054	0.08	0.01	0.03	0.16	67%	0.00	0.02	62%	0.02	0.00	0	0	3.02			0.03	0.00
NC	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Misc	2014	2054	0.07	0.01	0.01	0.17	70%	0.00	0.02	64%	0.19	0.01	1	0	0.28			0.00	0.00
NC	5300	5300	Base Monitor, LCD	Misc	2014	2054	0.10	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.01	0.00	0.00
NC	5300	5301	Energy Star or Better Monitor - LCD	Misc	2014	2054	0.08	0.01	0.02	0.02	18%	0.00	0.00	18%	0.01	0.01	0	0	5.21			0.02	0.00
NC	5300	5302	Monitor Power Management Enabling - LCD	Misc	2014	2054	0.08	0.01	0.00	0.02	21%	0.00	0.00	19%	0.10	0.02	1	0	0.52			0.00	0.00
NC	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Misc	2014	2054	0.07	0.01	0.01	0.03	27%	0.00	0.00	21%	0.28	0.08	7	1	0.17			0.00	0.00
NC	5400	5400	Base Copier	Misc	2014	2054	0.23	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.23	0.04	0.00	0.00
NC	5400	5401	Energy Star or Better Copier	Misc	2014	2054	0.20	0.03	0.03	0.03	13%	0.00	0.00	13%	0.00	0.00	0	0	35.00			0.03	0.00
NC	5400	5402	Copier Power Management Enabling	Misc	2014	2054	0.19	0.03	0.01	0.04	18%	0.00	0.01	16%	0.09	0.02	1	0	0.61			0.00	0.00
NC	5500	5500	Base Multifunction	Misc	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	5500	5502	ENERGY STAR Multi-Function Device	Misc	2014	2054	0.02	0.00	0.01	0.01	25%	0.00	0.00	25%	0.01	0.01	0	0	9.86			0.01	0.00
NC	5500	5501	Multifunction Power Management Enabling	Misc	2014	2054	0.01	0.00	0.00	0.01	37%	0.00	0.00	31%	0.23	0.08	3	1	0.22			0.00	0.00
NC	5600	5600	Base Printer	Misc	2014	2054	0.16	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.02	0.00	0.00
NC	5600	5602	ENERGY STAR Printer	Misc	2014	2054	0.10	0.02	0.06	0.06	35%	0.01	0.01	35%	0.00	0.00	0	0	45.31			0.06	0.01
NC	5600	5601	Printer Power Management Enabling	Misc	2014	2054	0.09	0.01	0.02	0.07	45%	0.00	0.01	40%	0.05	0.01	1	0	1.02			0.02	0.00
NC	5700	5700	Base Data Center/Server Room	Misc	2014	2054	2.15	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.15	0.33	0.00	0.00
NC	5700	5701	Data Center Improved Operations	Misc	2014	2054	1.94	0.29	0.22	0.22	10%	0.03	0.03	10%	0.00	0.00	0	0	117.62			0.22	0.03
NC	5700	5702	Data Center Best Practices	Misc	2014	2054	1.69	0.26	0.25	0.46	21%	0.04	0.07	21%	0.00	0.00	0	0	47.88			0.25	0.04
NC	5700	5703	Data Center State of the Art practices	Misc	2014	2054	1.60	0.24	0.09	0.56	26%	0.01	0.08	26%	0.00	0.00	0	0	24.83			0.09	0.01

APPENDIX H

Base Avoided Costs

Commercial Electric Existing Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2020 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
NC	6000	6000	Base Water Heating	Misc	2014	2054	4.94	0.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.94	0.73	0.00	0.00
NC	6000	6007	Heat Trap	Misc	2014	2054	4.68	0.69	0.26	0.26	5%	0.04	0.04	5%	0.01	0.01	0	0	4.47			0.26	0.04
NC	6000	6002	High Efficiency Water Heater (electric)	Misc	2014	2054	4.59	0.68	0.09	0.35	7%	0.01	0.05	7%	0.03	0.02	0	0	2.40			0.09	0.01
NC	6000	6004	Tankless Water Heater	Misc	2014	2054	4.24	0.63	0.34	0.69	14%	0.05	0.10	14%	0.05	0.03	0	0	1.71			0.34	0.05
NC	6000	6003	Hot Water Pipe Insulation	Misc	2014	2054	4.16	0.61	0.08	0.78	16%	0.01	0.11	16%	0.05	0.03	0	0	1.33			0.08	0.01
NC	6000	6006	Heat Recovery Unit	Misc	2014	2054	4.02	0.59	0.14	0.91	18%	0.02	0.13	18%	0.05	0.04	0	0	1.24			0.14	0.02
NC	6000	6001	Demand controlled circulating systems	Misc	2014	2054	3.87	0.57	0.15	1.06	22%	0.02	0.16	22%	0.15	0.05	1	0	0.48			0.00	0.00
NC	7000	7000	Base Refrigerated Vending Machines	Misc	2014	2054	0.60	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.60	0.10	0.00	0.00
NC	7000	7001	Vending Misers (Refrigerated units)	Misc	2014	2054	0.51	0.09	0.09	0.09	16%	0.01	0.01	8%	0.03	0.03	0	0	2.02			0.09	0.01
NC	7000	7002	Vending Misers (Refrigerated glass-front units)	Misc	2014	2054	0.46	0.09	0.05	0.15	24%	0.00	0.01	12%	0.05	0.03	1	0	1.10			0.05	0.00
NC	7100	7100	Base Non-Refrigerated Vending Machines	Misc	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	7100	7101	Vending Misers (Non-Refrigerated)	Misc	2014	2054	0.00	0.00	0.00	0.00	45%	0.00	0.00	23%	0.43	0.43	5	5	0.12			0.00	0.00
NC	7200	7200	Base Oven	Misc	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	7300	7300	Base Fryer	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	7300	7301	Efficient Fryer	Misc	2014	2054	0.00	0.00	0.00	0.00	6%	0.00	0.00	6%	0.46	0.46	3	3	0.15			0.00	0.00
NC	7400	7400	Base Steamer	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Misc	2014	2054	3.96	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.96	0.00	0.00	0.00
NC	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	2014	2054	3.73	0.00	0.22	0.22	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	2.18			0.22	0.00
NC	8100	8100	Base Heating, Other Electric	Misc	2014	2054	0.12	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.00	0.00	0.00
NC	9500	9500	Base Miscellaneous	Misc	2014	2054	22.38	3.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	22.38	3.72	0.00	0.00
NC	9500	9501	Xmisc	Misc	2014	2054	22.38	3.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020 Year 2014

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	100	100	Base Bldg Design - 15%	Office	2014	2053	45.23	10.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	45.23	10.30	0.00	0.00
VA	100	101	High Performance Building/Int Design - Tier 1 15% - Office	Office	2014	2053	38.32	8.29	6.91	6.91	15%	2.01	2.01	20%	0.04	0.04	0	0	2.15			6.91	2.01
VA	200	200	Base Bldg Design - 30%	Office	2014	2053	36.18	8.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	36.18	8.24	0.00	0.00
VA	200	201	High Performance Building/Int Design - Tier 2 30% - Office	Office	2014	2053	25.13	5.03	11.05	11.05	31%	3.21	3.21	39%	0.03	0.03	0	0	3.01			11.05	3.21
VA	300	300	Base Bldg Design - 50%	Office	2014	2053	8.14	1.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.14	1.85	0.00	0.00
VA	300	301	High Performance Building/Int Design - Tier 3 50% - Office	Office	2014	2053	4.00	0.65	4.14	4.14	51%	1.21	1.21	65%	0.03	0.03	0	0	2.86			4.14	1.21
VA	400	400	Base Bldg Design - 70%	Office	2014	2053	0.90	0.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.90	0.21	0.00	0.00
VA	400	401	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Office	Office	2014	2053	0.26	0.02	0.64	0.64	71%	0.19	0.19	91%	0.04	0.04	0	0	2.55			0.64	0.19
NC	100	100	Base Bldg Design - 15%	Office	2014	2053	1.89	0.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.89	0.43	0.00	0.00
NC	100	101	High Performance Building/Int Design - Tier 1 15% - Office	Office	2014	2053	1.60	0.35	0.29	0.29	15%	0.08	0.08	20%	0.04	0.04	0	0	2.56			0.29	0.08
NC	200	200	Base Bldg Design - 30%	Office	2014	2053	1.51	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.51	0.34	0.00	0.00
NC	200	201	High Performance Building/Int Design - Tier 2 30% - Office	Office	2014	2053	1.05	0.21	0.46	0.46	31%	0.13	0.13	39%	0.03	0.03	0	0	3.58			0.46	0.13
NC	300	300	Base Bldg Design - 50%	Office	2014	2053	0.34	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.34	0.08	0.00	0.00
NC	300	301	High Performance Building/Int Design - Tier 3 50% - Office	Office	2014	2053	0.17	0.03	0.17	0.17	51%	0.05	0.05	65%	0.03	0.03	0	0	3.41			0.17	0.05
NC	400	400	Base Bldg Design - 70%	Office	2014	2053	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
NC	400	401	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Office	Office	2014	2053	0.01	0.00	0.03	0.03	71%	0.01	0.01	91%	0.03	0.03	0	0	3.04			0.03	0.01
VA	100	100	Base Bldg Design - 15%	Restaurant	2014	2053	19.73	4.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.73	4.18	0.00	0.00
VA	100	102	High Performance Building/Int Design - Tier 1 15% - Restaurant	Restaurant	2014	2053	16.73	3.36	3.00	3.00	15%	0.81	0.81	20%	0.05	0.05	0	0	1.78			3.00	0.81
VA	200	200	Base Bldg Design - 30%	Restaurant	2014	2053	15.79	3.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.79	3.34	0.00	0.00
VA	200	202	High Performance Building/Int Design - Tier 2 30% - Restaurant	Restaurant	2014	2053	10.98	2.04	4.80	4.80	30%	1.30	1.30	39%	0.04	0.04	0	0	2.49			4.80	1.30
VA	300	300	Base Bldg Design - 50%	Restaurant	2014	2053	3.55	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.55	0.75	0.00	0.00
VA	300	302	High Performance Building/Int Design - Tier 3 50% - Restaurant	Restaurant	2014	2053	1.75	0.26	1.80	1.80	51%	0.49	0.49	65%	0.04	0.04	0	0	2.37			1.80	0.49
VA	400	400	Base Bldg Design - 70%	Restaurant	2014	2053	0.39	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.08	0.00	0.00
VA	400	402	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Restaurant	Restaurant	2014	2053	0.11	0.01	0.28	0.28	71%	0.08	0.08	91%	0.04	0.04	0	0	2.11			0.28	0.08
NC	100	100	Base Bldg Design - 15%	Restaurant	2014	2053	0.52	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.52	0.11	0.00	0.00
NC	100	102	High Performance Building/Int Design - Tier 1 15% - Restaurant	Restaurant	2014	2053	0.44	0.09	0.08	0.08	15%	0.02	0.02	20%	0.04	0.04	0	0	2.12			0.08	0.02
NC	200	200	Base Bldg Design - 30%	Restaurant	2014	2053	0.42	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.42	0.09	0.00	0.00
NC	200	202	High Performance Building/Int Design - Tier 2 30% - Restaurant	Restaurant	2014	2053	0.29	0.05	0.13	0.13	30%	0.03	0.03	39%	0.03	0.03	0	0	2.97			0.13	0.03
NC	300	300	Base Bldg Design - 50%	Restaurant	2014	2053	0.09	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.02	0.00	0.00
NC	300	302	High Performance Building/Int Design - Tier 3 50% - Restaurant	Restaurant	2014	2053	0.05	0.01	0.05	0.05	51%	0.01	0.01	65%	0.03	0.03	0	0	2.83			0.05	0.01
NC	400	400	Base Bldg Design - 70%	Restaurant	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	400	402	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Restaurant	Restaurant	2014	2053	0.00	0.00	0.01	0.01	71%	0.00	0.00	91%	0.04	0.04	0	0	2.52			0.01	0.00
VA	100	100	Base Bldg Design - 15%	Retail	2014	2053	40.98	9.62	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	40.98	9.62	0.00	0.00
VA	100	103	High Performance Building/Int Design - Tier 1 15% - Retail	Retail	2014	2053	34.72	7.74	6.26	6.26	15%	1.88	1.88	20%	0.09	0.09	0	0	1.03			6.26	1.88
VA	200	200	Base Bldg Design - 30%	Retail	2014	2053	32.78	7.69	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	32.78	7.69	0.00	0.00
VA	200	203	High Performance Building/Int Design - Tier 2 30% - Retail	Retail	2014	2053	22.77	4.69	10.01	10.01	31%	3.00	3.00	39%	0.06	0.06	0	0	1.44			10.01	3.00
VA	300	300	Base Bldg Design - 50%	Retail	2014	2053	7.38	1.73	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.38	1.73	0.00	0.00
VA	300	303	High Performance Building/Int Design - Tier 3 50% - Retail	Retail	2014	2053	3.62	0.61	3.75	3.75	51%	1.13	1.13	65%	0.07	0.07	0	0	1.37			3.75	1.13
VA	400	400	Base Bldg Design - 70%	Retail	2014	2053	0.82	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.82	0.19	0.00	0.00
VA	400	403	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Retail	Retail	2014	2053	0.24	0.02	0.58	0.58	71%	0.18	0.18	91%	0.07	0.07	0	0	1.22			0.58	0.18
NC	100	100	Base Bldg Design - 15%	Retail	2014	2053	1.09	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.09	0.25	0.00	0.00
NC	100	103	High Performance Building/Int Design - Tier 1 15% - Retail	Retail	2014	2053	0.92	0.21	0.17	0.17	15%	0.05	0.05	20%	0.07	0.07	0	0	1.23			0.17	0.05
NC	200	200	Base Bldg Design - 30%	Retail	2014	2053	0.87	0.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.87	0.20	0.00	0.00
NC	200	203	High Performance Building/Int Design - Tier 2 30% - Retail	Retail	2014	2053	0.60	0.12	0.27	0.27	31%	0.08	0.08	39%	0.05	0.05	0	0	1.72			0.27	0.08
NC	300	300	Base Bldg Design - 50%	Retail	2014	2053	0.20	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.05	0.00	0.00
NC	300	303	High Performance Building/Int Design - Tier 3 50% - Retail	Retail	2014	2053	0.10	0.02	0.10	0.10	51%	0.03	0.03	65%	0.06	0.06	0	0	1.64			0.10	0.03
NC	400	400	Base Bldg Design - 70%	Retail	2014	2053	0.02	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.01	0.00	0.00
NC	400	403	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Retail	Retail	2014	2053	0.01	0.00	0.02	0.02	71%	0.00	0.00	91%	0.06	0.06	0	0	1.46			0.02	0.00
VA	100	100	Base Bldg Design - 15%	Grocery	2014	2053	8.82	1.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.82	1.49	0.00	0.00
VA	100	104	High Performance Building/Int Design - Tier 1 15% - Grocery	Grocery	2014	2053	7.49	1.20	1.33	1.33	15%	0.29	0.29	20%	0.03	0.03	0	0	2.67			1.33	0.29
VA	200	200	Base Bldg Design - 30%	Grocery	2014	2053	7.06	1.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.06	1.19	0.00	0.00
VA	200	204	High Performance Building/Int Design - Tier 2 30% - Grocery	Grocery	2014	2053	4.93	0.73	2.13	2.13	30%	0.46	0.46	39%	0.02	0.02	0	0	3.73			2.13	0.46
VA	300	300	Base Bldg Design - 50%	Grocery	2014	2053	1.59	0.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.59	0.27	0.00	0.00
VA	300	304	High Performance Building/Int Design - Tier 3 50% - Grocery	Grocery	2014	2053	0.79	0.09	0.80	0.80	50%	0.17	0.17	65%	0.02	0.02	0	0	3.55			0.80	0.17
VA	400	400	Base Bldg Design - 70%	Grocery	2014	2053	0.18	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.03	0.00	0.00
VA	400	404	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Grocery	Grocery	2014	2053	0.05	0.00	0.12	0.12	70%	0.03	0.03	91%	0.03	0.03	0	0	3.17			0.12	0.03
NC	100	100	Base Bldg Design - 15%	Grocery	2014	2053	0.23	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.23	0.04	0.00	0.00
NC	100	104	High Performance Building/Int Design - Tier 1 15% - Grocery	Grocery	2014	2053	0.20	0.03	0.04	0.04	15%	0.01	0.01	20%	0.03	0.03	0	0	3.18			0.04	0.01
NC	200	200	Base Bldg Design - 30%	Grocery	2014	2053	0.19	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.03	0.00	0.00
NC	200	204	High Performance Building/Int Design - Tier 2 30% - Grocery	Grocery	2014	2053	0.13	0.02	0.06	0.06	30%	0.01	0.01	39%	0.02	0.02	0	0	4.45			0.06	0.01
NC	300	300	Base Bldg Design - 50%	Grocery	2014	2053	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
NC	300	304	High Performance Building/Int Design - Tier 3 50% - Grocery	Grocery	2014	2053	0.02	0.00	0.02	0.02	50%	0.00	0.00	65%	0.02	0.02	0	0	4.24			0.02	0.00
NC	400	400	Base Bldg Design - 70%	Grocery	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	400	404	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Grocery	Grocery	2014	2053	0.00	0.00	0.00	0.00	70%	0.00	0.00	91%	0.02	0.02	0	0	3.77			0.00	0.00
VA	100	100	Base Bldg Design - 15%	Warehouse	2014	2053	16.15	3.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.15	3.16	0.00	0.00
VA	100	105	High Performance Building/Int Design - Tier 1 15% - Warehouse	Warehouse	2014	2053	13.70	2.54	2.45	2.45	15%	0.62	0.62	20%	0.10	0.10	0	0	0.84			0.00	0.00
VA	200	200	Base Bldg Design - 30%	Warehouse	2014	2053	12.92	2.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.92	2.53	0.00	0.00
VA	200	205	High Performance Building/Int Design - Tier 2 30% - Warehouse	Warehouse	2014	2053	8.99	1.54	3.93	3.93	30%	0.98	0.98	39%	0.07	0.07	0	0	1.17			3.93	0.98
VA	300	300	Base Bldg Design - 50%	Warehouse	2014	2053	2.91	0.57	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.91	0.57	0.00	0.00
VA	300	305	High Performance Building/Int Design - Tier 3 50% - Warehouse	Warehouse	2014	2053	1.43	0.20	1.47	1.47	51%	0.37	0.37	65%	0.08	0.08	0	0	1.12			1.47	0.37
VA	400	400	Base Bldg Design - 70%	Warehouse	2014	2053	0.32	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.06	0.00	0.00
VA	400	405	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Warehouse	Warehouse	2014	2053	0.09	0.01	0.23	0.23	71%	0.06	0.06	91%	0.09	0.09	0	0	1.00			0.00	0.00
NC	100	100	Base Bldg Design - 15%	Warehouse	2014	2053	0.40	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.40	0.08	0.00	0.00
NC	100	105	High Performance Building/Int Design - Tier 1 15% - Warehouse	Warehouse	2014	2053	0.34	0.06	0.06	0.06	15%	0.02	0.02	20%	0.09	0.09	0	0	1.00			0.00	0.00

Commercial Electric New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020 Year 2014

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
NC	200	200	Base Bldg Design - 30%	Warehouse	2014	2053	0.32	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.06	0.00	0.00
NC	200	205	High Performance Building/Int Design - Tier 2 30% - Warehouse	Warehouse	2014	2053	0.22	0.04	0.10	0.10	30%	0.02	0.02	39%	0.06	0.06	0	0	1.40			0.10	0.02
NC	300	300	Base Bldg Design - 50%	Warehouse	2014	2053	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
NC	300	305	High Performance Building/Int Design - Tier 3 50% - Warehouse	Warehouse	2014	2053	0.04	0.00	0.04	0.04	51%	0.01	0.01	65%	0.07	0.07	0	0	1.33			0.04	0.01
NC	400	400	Base Bldg Design - 70%	Warehouse	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	400	405	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Warehouse	Warehouse	2014	2053	0.00	0.00	0.01	0.01	71%	0.00	0.00	91%	0.07	0.07	0	0	1.19			0.01	0.00
VA	100	100	Base Bldg Design - 15%	School	2014	2053	10.20	1.55	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.20	1.55	0.00	0.00
VA	100	106	High Performance Building/Int Design - Tier 1 15% - School	School	2014	2053	8.64	1.25	1.56	1.56	15%	0.30	0.30	20%	0.12	0.12	1	1	0.69			0.00	0.00
VA	200	200	Base Bldg Design - 30%	School	2014	2053	8.16	1.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.16	1.24	0.00	0.00
VA	200	206	High Performance Building/Int Design - Tier 2 30% - School	School	2014	2053	5.67	0.76	2.49	2.49	31%	0.48	0.48	39%	0.09	0.09	0	0	0.97			0.00	0.00
VA	300	300	Base Bldg Design - 50%	School	2014	2053	1.84	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.84	0.28	0.00	0.00
VA	300	306	High Performance Building/Int Design - Tier 3 50% - School	School	2014	2053	0.90	0.10	0.93	0.93	51%	0.18	0.18	65%	0.09	0.09	0	0	0.92			0.00	0.00
VA	400	400	Base Bldg Design - 70%	School	2014	2053	0.20	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.03	0.00	0.00
VA	400	406	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - School	School	2014	2053	0.06	0.00	0.15	0.15	71%	0.03	0.03	91%	0.10	0.10	1	1	0.82			0.00	0.00
NC	100	100	Base Bldg Design - 15%	School	2014	2053	0.92	0.14	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.92	0.14	0.00	0.00
NC	100	106	High Performance Building/Int Design - Tier 1 15% - School	School	2014	2053	0.78	0.11	0.14	0.14	15%	0.03	0.03	20%	0.10	0.10	1	1	0.82			0.00	0.00
NC	200	200	Base Bldg Design - 30%	School	2014	2053	0.73	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.73	0.11	0.00	0.00
NC	200	206	High Performance Building/Int Design - Tier 2 30% - School	School	2014	2053	0.51	0.07	0.22	0.22	31%	0.04	0.04	39%	0.07	0.07	0	0	1.15			0.22	0.04
NC	300	300	Base Bldg Design - 50%	School	2014	2053	0.16	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.03	0.00	0.00
NC	300	306	High Performance Building/Int Design - Tier 3 50% - School	School	2014	2053	0.08	0.01	0.08	0.08	51%	0.02	0.02	65%	0.08	0.08	0	0	1.10			0.08	0.02
NC	400	400	Base Bldg Design - 70%	School	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	400	406	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - School	School	2014	2053	0.01	0.00	0.01	0.01	71%	0.00	0.00	91%	0.09	0.09	0	0	0.98			0.00	0.00
VA	100	100	Base Bldg Design - 15%	Health	2014	2053	13.16	2.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.16	2.46	0.00	0.00
VA	100	107	High Performance Building/Int Design - Tier 1 15% - Health	Health	2014	2053	11.17	1.98	1.99	1.99	15%	0.48	0.48	20%	0.12	0.12	1	1	0.70			0.00	0.00
VA	200	200	Base Bldg Design - 30%	Health	2014	2053	10.53	1.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	10.53	1.97	0.00	0.00
VA	200	207	High Performance Building/Int Design - Tier 2 30% - Health	Health	2014	2053	7.34	1.20	3.19	3.19	30%	0.77	0.77	39%	0.09	0.09	0	0	0.97			0.00	0.00
VA	300	300	Base Bldg Design - 50%	Health	2014	2053	2.37	0.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.37	0.44	0.00	0.00
VA	300	307	High Performance Building/Int Design - Tier 3 50% - Health	Health	2014	2053	1.17	0.15	1.19	1.19	50%	0.29	0.29	65%	0.09	0.09	0	0	0.93			0.00	0.00
VA	400	400	Base Bldg Design - 70%	Health	2014	2053	0.26	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.26	0.05	0.00	0.00
VA	400	407	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Health	Health	2014	2053	0.08	0.00	0.19	0.19	71%	0.04	0.04	91%	0.10	0.10	0	0	0.83			0.00	0.00
NC	100	100	Base Bldg Design - 15%	Health	2014	2053	0.35	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.35	0.07	0.00	0.00
NC	100	107	High Performance Building/Int Design - Tier 1 15% - Health	Health	2014	2053	0.30	0.05	0.05	0.05	15%	0.01	0.01	20%	0.10	0.10	0	0	0.83			0.00	0.00
NC	200	200	Base Bldg Design - 30%	Health	2014	2053	0.28	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.05	0.00	0.00
NC	200	207	High Performance Building/Int Design - Tier 2 30% - Health	Health	2014	2053	0.19	0.03	0.08	0.08	30%	0.02	0.02	39%	0.07	0.07	0	0	1.16			0.08	0.02
NC	300	300	Base Bldg Design - 50%	Health	2014	2053	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00	0.00
NC	300	307	High Performance Building/Int Design - Tier 3 50% - Health	Health	2014	2053	0.03	0.00	0.03	0.03	50%	0.01	0.01	65%	0.08	0.08	0	0	1.11			0.03	0.01
NC	400	400	Base Bldg Design - 70%	Health	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	400	407	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Health	Health	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.09	0.09	0	0	0.99			0.00	0.00
VA	100	100	Base Bldg Design - 15%	Lodging	2014	2053	17.04	3.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.04	3.30	0.00	0.00
VA	100	108	High Performance Building/Int Design - Tier 1 15% - Lodging	Lodging	2014	2053	14.46	2.66	2.58	2.58	15%	0.64	0.64	20%	0.09	0.09	0	0	0.93			0.00	0.00
VA	200	200	Base Bldg Design - 30%	Lodging	2014	2053	13.63	2.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.63	2.64	0.00	0.00
VA	200	208	High Performance Building/Int Design - Tier 2 30% - Lodging	Lodging	2014	2053	9.51	1.61	4.12	4.12	30%	1.03	1.03	39%	0.07	0.07	0	0	1.31			4.12	1.03
VA	300	300	Base Bldg Design - 50%	Lodging	2014	2053	3.07	0.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.07	0.59	0.00	0.00
VA	300	308	High Performance Building/Int Design - Tier 3 50% - Lodging	Lodging	2014	2053	1.52	0.21	1.55	1.55	50%	0.39	0.39	65%	0.07	0.07	0	0	1.25			1.55	0.39
VA	400	400	Base Bldg Design - 70%	Lodging	2014	2053	0.34	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.34	0.07	0.00	0.00
VA	400	408	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Lodging	Lodging	2014	2053	0.10	0.01	0.24	0.24	71%	0.06	0.06	91%	0.08	0.08	0	0	1.11			0.24	0.06
NC	100	100	Base Bldg Design - 15%	Lodging	2014	2053	0.45	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.09	0.00	0.00
NC	100	108	High Performance Building/Int Design - Tier 1 15% - Lodging	Lodging	2014	2053	0.38	0.07	0.07	0.07	15%	0.02	0.02	20%	0.08	0.08	0	0	1.11			0.07	0.02
NC	200	200	Base Bldg Design - 30%	Lodging	2014	2053	0.36	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.36	0.07	0.00	0.00
NC	200	208	High Performance Building/Int Design - Tier 2 30% - Lodging	Lodging	2014	2053	0.25	0.04	0.11	0.11	30%	0.03	0.03	39%	0.06	0.06	0	0	1.56			0.11	0.03
NC	300	300	Base Bldg Design - 50%	Lodging	2014	2053	0.08	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.02	0.00	0.00
NC	300	308	High Performance Building/Int Design - Tier 3 50% - Lodging	Lodging	2014	2053	0.04	0.01	0.04	0.04	50%	0.01	0.01	65%	0.06	0.06	0	0	1.49			0.04	0.01
NC	400	400	Base Bldg Design - 70%	Lodging	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	400	408	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Lodging	Lodging	2014	2053	0.00	0.00	0.01	0.01	71%	0.00	0.00	91%	0.07	0.07	0	0	1.32			0.01	0.00
VA	100	100	Base Bldg Design - 15%	Data Centers	2014	2053	7.21	1.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.21	1.26	0.00	0.00
VA	100	109	High Performance Building/Int Design - Tier 1 15% - Data Centers	Data Centers	2014	2053	6.13	1.01	1.09	1.09	15%	0.24	0.24	20%	0.01	0.01	0	0	6.84			1.09	0.24
VA	200	200	Base Bldg Design - 30%	Data Centers	2014	2053	5.77	1.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.77	1.00	0.00	0.00
VA	200	209	High Performance Building/Int Design - Tier 2 30% - Data Centers	Data Centers	2014	2053	4.03	0.61	1.74	1.74	30%	0.39	0.39	39%	0.01	0.01	0	0	9.58			1.74	0.39
VA	300	300	Base Bldg Design - 50%	Data Centers	2014	2053	1.30	0.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.30	0.23	0.00	0.00
VA	300	309	High Performance Building/Int Design - Tier 3 50% - Data Centers	Data Centers	2014	2053	0.65	0.08	0.65	0.65	50%	0.15	0.15	65%	0.01	0.01	0	0	9.12			0.65	0.15
VA	400	400	Base Bldg Design - 70%	Data Centers	2014	2053	0.14	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.14	0.03	0.00	0.00
VA	400	409	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Data Centers	Data Centers	2014	2053	0.04	0.00	0.10	0.10	70%	0.02	0.02	91%	0.01	0.01	0	0	8.13			0.10	0.02
NC	100	100	Base Bldg Design - 15%	Data Centers	2014	2053	0.16	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.03	0.00	0.00
NC	100	109	High Performance Building/Int Design - Tier 1 15% - Data Centers	Data Centers	2014	2053	0.14	0.02	0.02	0.02	15%	0.01	0.01	20%	0.01	0.01	0	0	8.15			0.02	0.01
NC	200	200	Base Bldg Design - 30%	Data Centers	2014	2053	0.13	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.02	0.00	0.00
NC	200	209	High Performance Building/Int Design - Tier 2 30% - Data Centers	Data Centers	2014	2053	0.09	0.01	0.04	0.04	30%	0.01	0.01	39%	0.01	0.01	0	0	11.42			0.04	0.01
NC	300	300	Base Bldg Design - 50%	Data Centers	2014	2053	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
NC	300	309	High Performance Building/Int Design - Tier 3 50% - Data Centers	Data Centers	2014	2053	0.01	0.00	0.01	0.01	50%	0.00	0.00	65%	0.01	0.01	0	0	10.87			0.01	0.00
NC	400	400	Base Bldg Design - 70%	Data Centers	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
NC	400	409	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Data Centers	Data Centers	2014	2053	0.00	0.00	0.00	0.00	70%	0.00	0.00	91%	0.01	0.01	0	0	9.69			0.00	0.00
VA	100	100	Base Bldg Design - 15%	Religious Worship	2014	2053	9.51	1.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.51	1.87	0.00	0.00
VA	100	111	High Performance Building/Int Design - Tier 1 15% - Religious Worship	Religious Worship	2014	2053	8.06	1.50	1.45	1.45	15%	0.36	0.36	20%	0.17	0.17	1	1	0.52			0.00	0.00
VA	200	200	Base Bldg Design - 30%	Religious Worship	2014	2053	7.61	1.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.61	1.49	0.00	0.00
VA	200	211	High Performance Building/Int Design - Tier 2 30% - Religious Worship	Religious Worship	2014	2053	5.30	0.91	2.31	2.31	30%	0.58	0.58	39%	0.12	0.12	0	0	0.73			0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Electric New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS
Vintage

Year 2020 Year 2014

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	SUPPLY Base GWH	SUPPLY Base MW	SUPPLY Economic GWH	SUPPLY Economic MW
VA	300	300	Base Bldg Design - 50%	Religious Worship	2014	2053	1.71	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.71	0.34	0.00	0.00
VA	300	311	High Performance Building/Int Design - Tier 3 50% - Religious Worship	Religious Worship	2014	2053	0.84	0.12	0.87	0.87	51%	0.22	0.22	65%	0.13	0.13	0	0	0.70			0.00	0.00
VA	400	400	Base Bldg Design - 70%	Religious Worship	2014	2053	0.19	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.04	0.00	0.00
VA	400	411	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Religious Worst	Religious Worship	2014	2053	0.06	0.00	0.13	0.13	71%	0.03	0.03	91%	0.14	0.14	1	1	0.62			0.00	0.00
NC	100	100	Base Bldg Design - 15%	Religious Worship	2014	2053	0.25	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.25	0.05	0.00	0.00
NC	100	111	High Performance Building/Int Design - Tier 1 15% - Religious Worship	Religious Worship	2014	2053	0.21	0.04	0.04	0.04	15%	0.01	0.01	20%	0.14	0.14	1	1	0.62			0.00	0.00
NC	200	200	Base Bldg Design - 30%	Religious Worship	2014	2053	0.20	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.04	0.00	0.00
NC	200	211	High Performance Building/Int Design - Tier 2 30% - Religious Worship	Religious Worship	2014	2053	0.14	0.02	0.06	0.06	30%	0.02	0.02	39%	0.10	0.10	0	0	0.87			0.00	0.00
NC	300	300	Base Bldg Design - 50%	Religious Worship	2014	2053	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
NC	300	311	High Performance Building/Int Design - Tier 3 50% - Religious Worship	Religious Worship	2014	2053	0.02	0.00	0.02	0.02	51%	0.01	0.01	65%	0.11	0.11	0	0	0.83			0.00	0.00
NC	400	400	Base Bldg Design - 70%	Religious Worship	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
NC	400	411	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Religious Worst	Religious Worship	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.12	0.12	0	0	0.74			0.00	0.00
VA	100	100	Base Bldg Design - 15%	Misc	2014	2053	39.46	7.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	39.46	7.74	0.00	0.00
VA	100	112	High Performance Building/Int Design - Tier 1 15% - Miscellaneous	Misc	2014	2053	33.46	6.23	6.00	6.00	15%	1.51	1.51	20%	0.09	0.09	0	0	0.93			0.00	0.00
VA	200	200	Base Bldg Design - 30%	Misc	2014	2053	31.57	6.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	31.57	6.19	0.00	0.00
VA	200	212	High Performance Building/Int Design - Tier 2 30% - Miscellaneous	Misc	2014	2053	21.97	3.78	9.59	9.59	30%	2.42	2.42	39%	0.07	0.07	0	0	1.30			9.59	2.42
VA	300	300	Base Bldg Design - 50%	Misc	2014	2053	7.10	1.39	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.10	1.39	0.00	0.00
VA	300	312	High Performance Building/Int Design - Tier 3 50% - Miscellaneous	Misc	2014	2053	3.50	0.49	3.60	3.60	51%	0.91	0.91	65%	0.07	0.07	0	0	1.23			3.60	0.91
VA	400	400	Base Bldg Design - 70%	Misc	2014	2053	0.79	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.79	0.15	0.00	0.00
VA	400	412	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Miscellaneous	Misc	2014	2053	0.23	0.01	0.56	0.56	71%	0.14	0.14	91%	0.08	0.08	0	0	1.10			0.56	0.14
NC	100	100	Base Bldg Design - 15%	Misc	2014	2053	1.10	0.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.10	0.22	0.00	0.00
NC	100	112	High Performance Building/Int Design - Tier 1 15% - Miscellaneous	Misc	2014	2053	0.93	0.17	0.17	0.17	15%	0.04	0.04	20%	0.08	0.08	0	0	1.10			0.17	0.04
NC	200	200	Base Bldg Design - 30%	Misc	2014	2053	0.88	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.88	0.17	0.00	0.00
NC	200	212	High Performance Building/Int Design - Tier 2 30% - Miscellaneous	Misc	2014	2053	0.61	0.11	0.27	0.27	30%	0.07	0.07	39%	0.06	0.06	0	0	1.55			0.27	0.07
NC	300	300	Base Bldg Design - 50%	Misc	2014	2053	0.20	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.04	0.00	0.00
NC	300	312	High Performance Building/Int Design - Tier 3 50% - Miscellaneous	Misc	2014	2053	0.10	0.01	0.10	0.10	51%	0.03	0.03	65%	0.06	0.06	0	0	1.47			0.10	0.03
NC	400	400	Base Bldg Design - 70%	Misc	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
NC	400	412	High Performance Building/Int Design - Tier 4 Near Zero Energy (60-75%) - Miscellaneous	Misc	2014	2053	0.01	0.00	0.02	0.02	71%	0.00	0.00	91%	0.07	0.07	0	0	1.31			0.02	0.00

APPENDIX H

Base Avoided Costs

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Office	2020	2054	151.74	28.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	151.74	28.25	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Office	2020	2054	150.56	28.14	1.18	1.18	1%	0.11	0.11	0%	0.01	0.01	0	0	6.72			1.18
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	2020	2054	139.27	26.46	11.29	12.47	8%	1.68	1.79	6%	0.01	0.01	0	0	6.12			11.29
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Office	2020	2054	125.08	23.81	14.19	26.66	18%	2.64	4.43	16%	0.02	0.02	0	0	3.41			14.19
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	2020	2054	113.50	21.66	11.58	38.24	25%	2.16	6.59	23%	0.05	0.03	0	0	1.19			11.58
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Office	2020	2054	103.97	21.22	9.53	47.77	31%	0.44	7.03	25%	0.05	0.03	1	0	1.06			9.53
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Office	2020	2054	87.22	18.10	16.75	64.52	43%	3.12	10.15	36%	0.24	0.08	1	1	0.32			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Office	2020	2054	79.77	16.71	7.45	71.97	47%	1.39	11.54	41%	0.20	0.10	1	1	0.38			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Office	2020	2054	2.57	0.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.57	0.48	0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Office	2020	2054	2.55	0.48	0.02	0.02	1%	0.00	0.00	0%	0.01	0.01	0	0	3.90			0.02
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Office	2020	2054	2.35	0.45	0.19	0.21	8%	0.03	0.03	6%	0.02	0.02	0	0	3.56			0.19
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Office	2020	2054	2.11	0.40	0.24	0.46	18%	0.05	0.08	16%	0.02	0.02	0	0	2.69			0.24
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Office	2020	2054	1.84	0.35	0.27	0.72	28%	0.05	0.13	26%	0.05	0.03	0	0	1.29			0.27
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Office	2020	2054	1.75	0.34	0.09	0.81	32%	0.02	0.14	30%	0.18	0.05	1	0	0.41			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Office	2020	2054	1.60	0.33	0.15	0.96	37%	0.01	0.15	31%	0.10	0.06	2	0	0.54			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Office	2020	2054	1.47	0.30	0.14	1.10	43%	0.03	0.17	37%	0.25	0.08	1	1	0.29			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Office	2014	2054	5.57	1.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.57	1.04	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Office	2014	2054	5.30	1.01	0.27	0.27	5%	0.02	0.02	2%	0.00	0.00	0	0	18.89			0.27
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Office	2014	2054	4.90	0.95	0.40	0.66	12%	0.06	0.08	8%	0.03	0.02	0	0	2.75			0.40
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Office	2014	2054	4.39	0.86	0.51	1.17	21%	0.09	0.18	17%	0.08	0.04	0	0	0.81			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	2014	2054	3.75	0.83	0.64	1.81	33%	0.03	0.21	20%	0.10	0.06	2	1	0.54			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Office	2020	2054	51.51	9.59	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	51.51	9.59	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Office	2020	2054	12.41	2.31	39.10	39.10	76%	7.28	7.28	76%	0.00	0.00	0	0	16.88			39.10
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Office	2020	2054	18.54	3.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.54	3.45	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Office	2020	2054	4.83	0.90	13.72	13.72	74%	2.55	2.55	74%	0.00	0.00	0	0	14.15			13.72
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Office	2020	2054	13.65	2.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.65	2.54	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Office	2020	2054	4.73	0.88	8.92	8.92	65%	1.66	1.66	65%	0.01	0.01	0	0	10.19			8.92
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Office	2020	2054	3.37	0.63	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.37	0.63	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Office	2020	2054	2.43	0.45	0.93	0.93	28%	0.17	0.17	28%	0.05	0.05	0	0	1.22			0.93
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Office	2020	2054	4.30	0.80	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.30	0.80	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Office	2020	2054	3.18	0.59	1.12	1.12	26%	0.21	0.21	26%	0.04	0.04	0	0	1.62			1.12
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Office	2014	2054	1.80	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.80	0.33	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Office	2014	2054	1.01	0.19	0.79	0.79	44%	0.15	0.15	44%	0.02	0.02	0	0	2.61			0.79
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Office	2014	2054	12.31	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.31	0.17	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Office	2014	2054	9.85	0.06	2.46	2.46	20%	0.11	0.11	66%	0.05	0.05	1	1	1.63			2.46
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Office	2014	2054	4.74	-0.01	5.11	7.57	61%	0.07	0.18	108%	0.09	0.08	7	3	0.70			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Office	2014	2054	3.35	-0.03	1.39	8.96	73%	0.02	0.20	118%	0.59	0.16	48	7	0.11			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Office	2014	2054	19.03	13.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.03	13.31	0.00
Opt-Out/Ex	2000	2010	Ceiling/roof Insulation - Chiller	Office	2014	2054	18.94	13.25	0.08	0.08	0%	0.06	0.06	0%	0.01	0.01	0	0	19.88			0.08
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	2014	2054	17.32	12.12	1.62	1.70	9%	1.13	1.19	9%	0.03	0.03	0	0	4.52			1.62
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Office	2014	2054	17.29	12.10	0.03	1.73	9%	0.02	1.21	9%	0.04	0.03	0	0	2.96			0.03
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Office	2014	2054	17.18	12.06	0.11	1.85	10%	0.04	1.25	9%	0.03	0.03	0	0	2.71			0.11
Opt-Out/Ex	2000	2003	EMS - Chiller	Office	2014	2054	15.98	11.85	1.20	3.05	16%	0.21	1.46	11%	0.05	0.03	0	0	1.55			1.20
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Office	2014	2054	14.95	11.67	1.03	4.08	21%	0.18	1.64	12%	0.05	0.04	0	0	1.17			1.03
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Office	2014	2054	14.94	11.67	0.00	4.08	21%	0.00	1.65	12%	0.09	0.04	0	0	1.06			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Office	2014	2054	12.10	9.68	2.84	6.92	36%	1.99	3.63	27%	0.15	0.08	0	0	0.79			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Office	2014	2054	12.07	9.65	0.04	6.96	37%	0.03	3.66	27%	0.22	0.09	0	0	0.43			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Office	2014	2054	12.03	9.63	0.04	7.00	37%	0.03	3.68	28%	1.86	0.10	3	0	0.05			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Office	2014	2054	86.33	60.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	86.33	60.40	0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Office	2014	2054	66.48	46.51	19.86	19.86	23%	13.89	13.89	23%	0.02	0.02	0	0	4.76			19.86
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Office	2014	2054	63.48	43.37	2.99	22.85	26%	3.14	17.03	28%	0.05	0.03	0	0	1.70			2.99
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Office	2014	2054	62.40	43.18	1.08	23.93	28%	0.19	17.22	29%	0.06	0.03	0	0	0.98			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Office	2014	2054	61.11	42.27	1.29	25.22	29%	0.90	18.12	30%	0.10	0.03	0	0	0.95			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	Office	2014	2054	54.39	41.10	6.72	31.94	37%	1.17	19.30	32%	0.07	0.04	0	0	0.86			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Office	2014	2054	51.08	38.79	3.31	35.25	41%	2.31	21.61	36%	0.19	0.05	0	0	0.64			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Office	2014	2054	50.00	38.60	1.09	36.33	42%	0.19	21.80	36%	0.10	0.06	1	0	0.59			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Office	2014	2054	49.57	38.30	0.43	36.76	43%	0.30	22.10	37%	0.25	0.06	0	0	0.38			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Office	2014	2054	49.56	38.30	0.01	36.77	43%	0.00	22.10	37%	0.20	0.06	1	0	0.32			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Office	2014	2054	49.24	38.07	0.32	37.09	43%	0.22	22.33	37%	2.07	0.08	3	0	0.05			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Office	2014	2054	58.94	41.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	58.94	41.24	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014	2054	51.65	36.14	7.29	7.29	12%	5.10	5.10	12%	0.02	0.02	0	0	6.66			7.29
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Office	2014	2054	9.44	6.61	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.44	6.61	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Office	2014	2054	46.72	14.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	46.72	14.10	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Office	2014	2054	45.96	13.88	0.76	0.76	2%	0.23	0.23	2%	0.02	0.02	0	0	4.73			0.76
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Office	2014	2054	34.57	13.02	11.39	12.15	26%	0.86	1.09	8%	0.01	0.02	0	0	4.43			11.39
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Office	2014	2054	32.69	11.94	1.88	14.03	30%	1.08	2.17	15%	0.64	0.10	1	1	0.17			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Office	2014	2054	8.09	2.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.09	2.44	0.00
Opt-Out/Ex	3100	3102	Variable Speed Drive Control, 15 HP	Office	2014	2054	6.09	2.29	2.01	2.01	25%	0.15	0.15	6%	0.00	0.00	0	0	16.30			2.01
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Office	2014	2054	6.05	2.28	0.04	2.04	25%	0.01	0.16	7%	0.01	0.00	0	0	7.84			0.04
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Office	2014	2054	5.65	2.17	0.40	2.44	30%	0.11	0.27	11%	0.02	0.01	0	0	3.47			0.40
Opt-Out/Ex	3100	3103	Air Handler Optimization, 15 HP	Office	2014	2054	5.11	2.13	0.54	2.98	37%	0.04	0.31	13%	0.02	0.01	0	0	2.65			0.54
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	Office	2014	2054	4.99	2.06	0.12	3.10	38%	0.07	0.38	16%	0.25	0.02	0	0	0.47			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	Office	2014	2054	4.72	1.91	0.27	3.37	42%	0.16	0.54	22%	0.77	0.08	1	0	0.14			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Office	2014	2054	5.10	1.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.10	1.54	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Office	2014	2054	4.62	1.50	0.49	0.49	10%	0.04	0.04	2%	0.01	0.01	0	0	3.79			0.49
Opt-Out/Ex	3200	3202	Variable Speed Drive Control, 40 HP	Office	2014	2054	3.47	1.42	1.14	1.63	32%	0.09	0.12	8%	0.02	0.02	0	0	2.93			1.14
Opt-Out/Ex	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Office	2014	2054	3.46	1.41	0.02	1.65	32%	0.00	0.13	8%	0.10	0.02	0	0	0.88			0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Office	2014	2054	3.27	1.31	0.19	1.83	36%	0.11	0.24	15%	0.70	0.09	1	1	0.15			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Office	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Office	2014	2054	13.71	1.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.71	1.92	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	Office	2014	2054	13.58	1.90	0.13	0.13	1%	0.02	0.02	1%	0.00	0.00	0	0	53.19			0.13
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	Office	2014	2054	13.56	1.90	0.02	0.15	1%	0.00	0.02	1%	0.00	0.00	0	0	27.91			0.02
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Office	2014	2054	13.31	1.87	0.25	0.40	3%	0.03	0.06	3%	0.00	0.00	0	0	25.57			0.25
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	Office	2014	2054	13.30	1.86	0.01	0.41	3%	0.00	0.06	3%	0.01	0.00	0	0	11.16			0.01
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Office	2014	2054	13.22	1.85	0.08	0.49	4%	0.01	0.07	4%	0.01	0.00	0	0	9.42			0.08
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Office	2014	2054	13.19	1.85	0.03	0.52	4%	0.00	0.07	4%	0.01	0.00	0	0	8.98			0.03
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Office	2014	2054	13.14	1.84	0.05	0.57	4%	0.01	0.08	4%	0.02	0.00	0	0	3.33			0.05
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Office	2014	2054	13.14	1.84	0.00	0.57	4%	0.00	0.08	4%	0.27	0.00	2	0	0.23			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Office	2014	2054	13.14	1.84	0.00	0.57	4%	0.00	0.08	4%	0.31	0.01	2	0	0.19			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Office	2014	2054	13.13	1.84	0.01	0.58	4%	0.00	0.08	4%	6.66	0.11	47	1	0.01			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Office	2014	2054	5.60	0.78	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.60	0.78	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Office	2014	2054	3.02	0.60	2.58	2.58	46%	0.18	0.18	23%	0.01	0.01	0	0	4.80			2.58
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Office	2014	2054	2.35	0.51	0.67	3.25	58%	0.09	0.27	35%	0.02	0.01	0	0	2.37			0.67
Opt-Out/Ex	5100	5100	Base Laptop PC	Office	2014	2054	0.51	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.51	0.07	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Office	2014	2054	0.41	0.06	0.10	0.10	19%	0.01	0.01	19%	0.01	0.01	0	0	6.47			0.10
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Office	2014	2054	0.40	0.06	0.01	0.10	21%	0.00	0.01	21%	0.99	0.09	7	1	0.05			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Office	2014	2054	1.19	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.19	0.16	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Office	2014	2054	0.68	0.09	0.51	0.51	43%	0.07	0.07	43%	0.00	0.00	0	0	67.43			0.51
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Office	2014	2054	0.59	0.09	0.09	0.60	50%	0.01	0.08	46%	0.01	0.00	0	0	5.72			0.09
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Office	2014	2054	0.55	0.08	0.05	0.64	54%	0.01	0.08	50%	0.11	0.01	1	0	0.48			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Office	2014	2054	1.06	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.06	0.15	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Office	2014	2054	0.92	0.13	0.14	0.14	13%	0.02	0.02	13%	0.01	0.01	0	0	8.01			0.14
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Office	2014	2054	0.86	0.12	0.07	0.21	20%	0.00	0.02	16%	0.06	0.03	1	0	0.78			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Office	2014	2054	0.79	0.12	0.07	0.28	26%	0.00	0.03	18%	0.18	0.06	5	1	0.26			0.00
Opt-Out/Ex	5400	5400	Base Copier	Office	2014	2054	1.95	0.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.95	0.27	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Office	2014	2054	1.75	0.24	0.19	0.19	10%	0.03	0.03	10%	0.00	0.00	0	0	40.67			0.19
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Office	2014	2054	1.68	0.24	0.08	0.27	14%	0.01	0.03	12%	0.07	0.02	1	0	0.74			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Office	2014	2054	0.33	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.33	0.05	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Office	2014	2054	0.25	0.03	0.08	0.08	25%	0.01	0.01	25%	0.01	0.01	0	0	11.01			0.08
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Office	2014	2054	0.20	0.03	0.05	0.13	39%	0.00	0.01	32%	0.21	0.08	3	1	0.25			0.00
Opt-Out/Ex	5600	5600	Base Printer	Office	2014	2054	1.93	0.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.93	0.27	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Office	2014	2054	1.26	0.17	0.67	0.67	35%	0.09	0.09	35%	0.00	0.00	0	0	50.63			0.67
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Office	2014	2054	1.03	0.16	0.23	0.90	47%	0.02	0.11	41%	0.04	0.01	1	0	1.15			0.23
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Office	2014	2054	12.60	1.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.60	1.75	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Office	2014	2054	11.34	1.57	1.26	1.26	10%	0.17	0.17	10%	0.00	0.00	0	0	180.48			1.26
Opt-Out/Ex	5700	5702	Data Center Best Practices	Office	2014	2054	9.90	1.37	1.44	2.70	21%	0.20	0.38	21%	0.00	0.00	0	0	73.48			1.44
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Office	2014	2054	9.34	1.30	0.55	3.26	26%	0.08	0.45	26%	0.00	0.00	0	0	38.11			0.55
Opt-Out/Ex	6000	6000	Base Water Heating	Office	2014	2054	11.55	1.56	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.55	1.56	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Office	2014	2054	10.96	1.48	0.60	0.60	5%	0.08	0.08	5%	0.01	0.01	0	0	4.76			0.60
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Office	2014	2054	10.74	1.45	0.22	0.82	7%	0.03	0.11	7%	0.03	0.02	0	0	2.55			0.22
Opt-Out/Ex	6000	6004	Tankless Water Heater	Office	2014	2054	9.93	1.34	0.81	1.62	14%	0.11	0.22	14%	0.04	0.03	0	0	1.82			0.81
Opt-Out/Ex	6000	6008	Solar Water Heater	Office	2014	2054	4.65	0.63	5.28	6.91	60%	0.71	0.93	60%	0.05	0.05	0	0	1.56			5.28
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Office	2014	2054	4.59	0.62	0.05	6.96	60%	0.01	0.94	60%	0.11	0.05	1	0	0.66			0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Office	2014	2054	4.30	0.58	0.30	7.26	63%	0.04	0.98	63%	0.11	0.05	1	0	0.58			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Office	2014	2054	4.17	0.56	0.13	7.39	64%	0.02	1.00	64%	0.33	0.05	2	0	0.22			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Office	2014	2054	2.10	0.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.10	0.31	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Office	2014	2054	1.77	0.28	0.34	0.34	16%	0.02	0.02	8%	0.03	0.03	0	0	1.98			0.34
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Office	2014	2054	1.58	0.27	0.19	0.52	25%	0.01	0.04	12%	0.05	0.03	1	0	1.09			0.19
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Office	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Office	2014	2054	0.03	0.01	0.03	0.03	46%	0.00	0.00	23%	0.44	0.44	6	6	0.12			0.00
Opt-Out/Ex	7200	7200	Base Oven	Office	2014	2054	0.62	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.62	0.09	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Office	2014	2054	0.39	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.06	0.00
Opt-Out/Ex	7400	7400	Base Steamer	Office	2014	2054	0.81	0.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.81	0.12	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Office	2014	2054	8.56	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.56	0.00	0.00
Opt-Out/Ex	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2014	2054	8.08	0.00	0.48	0.48	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	3.73			0.48
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Office	2014	2054	8.65	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.65	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Office	2014	2054	74.29	10.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	74.29	10.81	0.00
Opt-Out/Ex	9500	9501	Xmisc	Office	2014	2054	74.29	10.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Retail	2020	2054	17.68	3.20	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.68	3.20	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Retail	2020	2054	17.64	3.20	0.04	0.04	0%	0.00	0.00	0%	0.01	0.01	0	0	4.53			0.04
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Retail	2020	2054	16.30	3.00	1.34	1.38	8%	0.19	0.20	6%	0.02	0.02	0	0	4.08			1.34
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Retail	2020	2054	14.61	2.70	1.70	3.07	17%	0.31	0.50	16%	0.03	0.02	0	0	2.41			1.70
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Retail	2020	2054	14.25	2.63	0.36	3.43	19%	0.07	0.57	18%	0.27	0.05	1	0	0.22			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Retail	2020	2054	14.04	2.62	0.21	3.64	21%	0.01	0.58	18%	0.09	0.05	2	0	0.64			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Retail	2020	2054	11.78	2.21	2.26	5.90	33%	0.41	0.99	31%	0.28	0.14	2	1	0.26			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Retail	2020	2054	10.77	2.03	1.01	6.91	39%	0.18	1.17	36%	0.23	0.15	1	1	0.31			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Retail	2020	2054	3.53	0.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.53	0.64	0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	SUPPLY Economic GWH
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Retail	2020	2054	3.52	0.64	0.01	0.01	0%	0.00	0.00	0%	0.02	0.02	0	0	2.65			0.01
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Retail	2020	2054	3.26	0.60	0.27	0.28	8%	0.04	0.04	6%	0.03	0.03	0	0	2.39			0.27
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Retail	2020	2054	2.92	0.54	0.34	0.61	17%	0.06	0.10	16%	0.03	0.03	0	0	1.90			0.34
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Retail	2020	2054	2.55	0.47	0.37	0.99	28%	0.07	0.17	26%	0.07	0.04	0	0	0.91			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Retail	2020	2054	2.42	0.45	0.12	1.11	31%	0.02	0.19	30%	0.25	0.07	1	0	0.29			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Retail	2020	2054	2.22	0.41	0.21	1.32	37%	0.04	0.23	36%	0.31	0.11	2	1	0.23			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Retail	2020	2054	2.18	0.41	0.03	1.35	38%	0.00	0.23	36%	0.20	0.11	5	1	0.28			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Retail	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Retail	2014	2054	0.03	0.00	0.00	0.00	1%	0.00	0.00	1%	0.01	0.01	0	0	8.19			0.00
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Retail	2014	2054	0.03	0.00	0.00	0.00	9%	0.00	0.00	7%	0.06	0.05	0	0	1.22			0.00
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Retail	2014	2054	0.02	0.00	0.00	0.01	18%	0.00	0.00	16%	0.10	0.08	1	0	0.59			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Retail	2014	2054	0.02	0.00	0.00	0.01	21%	0.00	0.00	17%	0.12	0.08	3	1	0.47			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Retail	2020	2054	6.70	1.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.70	1.21	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Retail	2020	2054	1.17	0.21	5.52	5.52	82%	1.00	1.00	82%	0.01	0.01	0	0	9.44			5.52
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Retail	2020	2054	2.41	0.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.41	0.44	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Retail	2020	2054	0.46	0.08	1.95	1.95	81%	0.35	0.35	81%	0.01	0.01	0	0	7.97			1.95
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Retail	2020	2054	1.77	0.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.77	0.32	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Retail	2020	2054	0.46	0.08	1.31	1.31	74%	0.24	0.24	74%	0.01	0.01	0	0	5.92			1.31
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Retail	2020	2054	1.96	0.35	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.96	0.35	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Retail	2020	2054	1.42	0.26	0.54	0.54	28%	0.10	0.10	28%	0.06	0.06	0	0	0.94			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Retail	2020	2054	2.51	0.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.51	0.45	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Retail	2020	2054	1.85	0.34	0.65	0.65	26%	0.12	0.12	26%	0.05	0.05	0	0	1.25			0.65
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Retail	2014	2054	0.22	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.22	0.04	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Retail	2014	2054	0.10	0.02	0.13	0.13	56%	0.02	0.02	56%	0.04	0.04	0	0	1.45			0.13
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Retail	2014	2054	3.60	0.24	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.60	0.24	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Retail	2014	2054	2.79	0.08	0.81	0.81	23%	0.16	0.16	66%	0.06	0.06	0	0	1.53			0.81
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Retail	2014	2054	1.34	-0.01	1.45	2.26	63%	0.09	0.25	106%	0.13	0.10	2	1	0.53			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Retail	2014	2054	0.95	-0.04	0.39	2.65	74%	0.02	0.27	116%	0.86	0.22	14	2	0.08			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Retail	2014	2054	0.48	0.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.48	0.40	0.00
Opt-Out/Ex	2000	2010	Ceiling/roof Insulation - Chiller	Retail	2014	2054	0.47	0.39	0.00	0.00	1%	0.00	0.00	1%	0.03	0.03	0	0	4.91			0.00
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Retail	2014	2054	0.43	0.36	0.04	0.04	9%	0.03	0.04	9%	0.04	0.04	0	0	3.01			0.04
Opt-Out/Ex	2000	2003	EMS - Chiller	Retail	2014	2054	0.40	0.35	0.04	0.08	17%	0.01	0.04	11%	0.08	0.06	0	0	0.94			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Retail	2014	2054	0.32	0.29	0.08	0.16	33%	0.06	0.11	27%	0.23	0.14	0	0	0.56			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Retail	2014	2054	16.88	13.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.88	13.95	0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Retail	2014	2054	13.00	10.74	3.88	3.88	23%	3.21	3.21	23%	0.04	0.04	0	0	3.17			3.88
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Retail	2014	2054	12.09	9.68	0.91	4.79	28%	1.06	4.27	31%	0.08	0.05	0	0	1.13			0.91
Opt-Out/Ex	2100	2107	Cool Roof - DX	Retail	2014	2054	11.56	9.24	0.54	5.33	32%	0.44	4.71	34%	0.12	0.05	0	0	0.87			0.00
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Retail	2014	2054	11.37	9.20	0.19	5.52	33%	0.04	4.76	34%	0.10	0.06	0	0	0.56			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	Retail	2014	2054	10.40	8.99	0.97	6.49	38%	0.21	4.96	36%	0.13	0.07	1	0	0.50			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Retail	2014	2054	9.77	8.47	0.63	7.12	42%	0.52	5.49	39%	0.31	0.09	0	0	0.42			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Retail	2014	2054	9.50	8.41	0.27	7.39	44%	0.06	5.54	40%	0.17	0.09	1	0	0.35			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Retail	2014	2054	9.46	8.38	0.03	7.42	44%	0.03	5.57	40%	0.38	0.09	0	0	0.27			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Retail	2014	2054	9.46	8.38	0.00	7.43	44%	0.00	5.57	40%	0.29	0.09	1	0	0.23			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Retail	2014	2054	9.39	8.32	0.07	7.50	44%	0.06	5.63	40%	3.43	0.12	4	0	0.03			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Retail	2014	2054	6.27	5.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.27	5.18	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	2014	2054	5.50	4.54	0.78	0.78	12%	0.64	0.64	12%	0.03	0.03	0	0	4.44			0.78
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Retail	2014	2054	1.11	0.91	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.11	0.91	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Retail	2014	2054	11.44	3.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.44	3.21	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Retail	2014	2054	11.26	3.15	0.18	0.18	2%	0.05	0.05	2%	0.02	0.02	0	0	3.79			0.18
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Retail	2014	2054	7.88	2.92	3.38	3.56	31%	0.24	0.29	9%	0.02	0.02	0	0	3.59			3.38
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Retail	2014	2054	7.06	2.48	0.83	4.38	38%	0.44	0.73	23%	1.16	0.23	2	1	0.09			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Retail	2014	2054	0.40	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.40	0.11	0.00
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Retail	2014	2054	0.34	0.10	0.06	0.06	14%	0.01	0.01	13%	0.03	0.03	0	0	2.72			0.06
Opt-Out/Ex	3100	3103	Air Handler Optimization, 15 HP	Retail	2014	2054	0.31	0.09	0.03	0.09	23%	0.00	0.02	15%	0.03	0.03	0	0	2.08			0.03
Opt-Out/Ex	3100	3102	Variable Speed Drive Control, 15 HP	Retail	2014	2054	0.22	0.09	0.09	0.18	46%	0.01	0.02	21%	0.07	0.05	1	0	0.97			0.00
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Retail	2014	2054	0.21	0.09	0.00	0.18	46%	0.00	0.02	21%	0.21	0.05	1	0	0.43			0.00
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	Retail	2014	2054	0.20	0.08	0.01	0.20	50%	0.01	0.03	28%	0.46	0.08	1	0	0.25			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	Retail	2014	2054	0.18	0.07	0.02	0.22	55%	0.01	0.04	38%	1.59	0.22	3	1	0.06			0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Retail	2014	2054	0.40	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.40	0.11	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Retail	2014	2054	0.36	0.11	0.04	0.04	10%	0.00	0.00	3%	0.02	0.02	0	0	2.44			0.04
Opt-Out/Ex	3200	3202	Variable Speed Drive Control, 40 HP	Retail	2014	2054	0.25	0.10	0.11	0.15	37%	0.01	0.01	9%	0.06	0.05	1	1	1.16			0.11
Opt-Out/Ex	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Retail	2014	2054	0.25	0.10	0.00	0.15	37%	0.00	0.01	9%	0.28	0.05	1	1	0.32			0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Retail	2014	2054	0.22	0.09	0.03	0.17	44%	0.01	0.02	22%	1.27	0.23	2	2	0.08			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Retail	2014	2054	9.21	1.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.21	1.40	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	Retail	2014	2054	9.03	1.37	0.18	0.18	2%	0.03	0.03	2%	0.01	0.01	0	0	5.83			0.18
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	Retail	2014	2054	9.00	1.37	0.04	0.21	2%	0.01	0.03	2%	0.04	0.01	0	0	1.72			0.04
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Retail	2014	2054	8.80	1.34	0.19	0.41	4%	0.03	0.06	4%	0.04	0.02	0	0	1.50			0.19
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	Retail	2014	2054	8.79	1.34	0.02	0.42	5%	0.00	0.06	5%	0.09	0.03	1	0	0.69			0.00
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Retail	2014	2054	8.64	1.31	0.15	0.57	6%	0.02	0.09	6%	0.11	0.05	1	0	0.59			0.00
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Retail	2014	2054	8.62	1.31	0.02	0.59	6%	0.00	0.09	6%	0.12	0.05	1	0	0.54			0.00
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Retail	2014	2054	8.58	1.30	0.04	0.63	7%	0.01	0.10	7%	0.28	0.06	2	0	0.23			0.00
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Retail	2014	2054	8.56	1.30	0.02	0.65	7%	0.00	0.10	7%	0.32	0.07	2	0	0.20			0.00

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Retail	2014	2054	8.49	1.29	0.07	0.72	8%	0.01	0.11	8%	0.32	0.10	2	1	0.19			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Retail	2014	2054	8.48	1.29	0.01	0.73	8%	0.00	0.11	8%	1.94	0.12	13	1	0.03			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Retail	2014	2054	0.43	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.43	0.08	0.00
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Retail	2014	2054	0.36	0.06	0.06	0.06	15%	0.01	0.01	15%	0.01	0.01	0	0	3.72			0.06
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Retail	2014	2054	0.20	0.05	0.16	0.23	53%	0.01	0.03	35%	0.02	0.02	0	0	2.93			0.16
Opt-Out/Ex	5100	5100	Base Laptop PC	Retail	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Retail	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	4.83			0.00
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Retail	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.38	0.12	8	1	0.04			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Retail	2014	2054	0.14	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.14	0.02	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Retail	2014	2054	0.06	0.01	0.08	0.08	56%	0.01	0.01	56%	0.00	0.00	0	0	38.40			0.08
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Retail	2014	2054	0.05	0.01	0.01	0.09	63%	0.00	0.01	60%	0.02	0.00	0	0	2.95			0.01
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Retail	2014	2054	0.05	0.01	0.00	0.09	66%	0.00	0.02	63%	0.21	0.01	1	0	0.26			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Retail	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Retail	2014	2054	0.05	0.01	0.01	0.01	14%	0.00	0.00	14%	0.01	0.01	0	0	5.92			0.01
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Retail	2014	2054	0.05	0.01	0.00	0.01	17%	0.00	0.00	16%	0.09	0.02	1	0	0.58			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Retail	2014	2054	0.05	0.01	0.00	0.01	24%	0.00	0.00	17%	0.25	0.08	5	1	0.19			0.00
Opt-Out/Ex	5400	5400	Base Copier	Retail	2014	2054	0.21	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.21	0.04	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Retail	2014	2054	0.18	0.03	0.03	0.03	14%	0.01	0.01	14%	0.00	0.00	0	0	28.81			0.03
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Retail	2014	2054	0.17	0.03	0.01	0.04	18%	0.00	0.01	16%	0.11	0.03	1	0	0.50			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Retail	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Retail	2014	2054	0.02	0.00	0.01	0.01	25%	0.00	0.00	25%	0.01	0.01	0	0	8.20			0.01
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Retail	2014	2054	0.02	0.00	0.00	0.01	36%	0.00	0.00	30%	0.28	0.09	3	1	0.19			0.00
Opt-Out/Ex	5600	5600	Base Printer	Retail	2014	2054	0.09	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.02	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Retail	2014	2054	0.06	0.01	0.03	0.03	35%	0.01	0.01	35%	0.00	0.00	0	0	37.69			0.03
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Retail	2014	2054	0.05	0.01	0.01	0.04	44%	0.00	0.01	39%	0.06	0.01	1	0	0.87			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Retail	2014	2054	0.37	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.37	0.07	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Retail	2014	2054	0.33	0.06	0.04	0.04	10%	0.01	0.01	10%	0.00	0.00	0	0	135.09			0.04
Opt-Out/Ex	5700	5702	Data Center Best Practices	Retail	2014	2054	0.29	0.05	0.04	0.08	21%	0.01	0.01	21%	0.00	0.00	0	0	55.00			0.04
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Retail	2014	2054	0.28	0.05	0.02	0.10	26%	0.00	0.02	26%	0.00	0.00	0	0	28.52			0.02
Opt-Out/Ex	6000	6000	Base Water Heating	Retail	2014	2054	1.76	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.76	0.28	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Retail	2014	2054	1.67	0.27	0.09	0.09	5%	0.01	0.01	5%	0.02	0.02	0	0	3.20			0.09
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Retail	2014	2054	1.63	0.26	0.03	0.12	7%	0.01	0.02	7%	0.04	0.03	0	0	1.72			0.03
Opt-Out/Ex	6000	6004	Tankless Water Heater	Retail	2014	2054	1.51	0.24	0.12	0.25	14%	0.02	0.04	14%	0.07	0.05	0	0	1.23			0.12
Opt-Out/Ex	6000	6008	Solar Water Heater	Retail	2014	2054	1.47	0.24	0.04	0.29	16%	0.01	0.05	16%	0.08	0.05	0	0	1.05			0.04
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Retail	2014	2054	1.44	0.23	0.02	0.31	18%	0.00	0.05	18%	0.08	0.05	0	0	0.92			0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Retail	2014	2054	1.40	0.22	0.05	0.36	20%	0.01	0.06	20%	0.09	0.06	1	0	0.72			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Retail	2014	2054	1.38	0.22	0.02	0.38	22%	0.00	0.06	22%	0.13	0.06	1	0	0.57			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Retail	2014	2054	0.44	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.08	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Retail	2014	2054	0.37	0.07	0.07	0.07	16%	0.01	0.01	8%	0.03	0.03	0	0	2.00			0.07
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Retail	2014	2054	0.33	0.07	0.04	0.11	25%	0.00	0.01	12%	0.05	0.03	1	0	1.09			0.04
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Retail	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Retail	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	23%	0.44	0.44	5	5	0.12			0.00
Opt-Out/Ex	7200	7200	Base Oven	Retail	2014	2054	0.28	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.05	0.00
Opt-Out/Ex	7200	7201	Convection Oven	Retail	2014	2054	0.21	0.04	0.06	0.06	23%	0.01	0.01	23%	0.13	0.13	1	1	0.53			0.00
Opt-Out/Ex	7300	7300	Base Fryer	Retail	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00
Opt-Out/Ex	7300	7301	Efficient Fryer	Retail	2014	2054	0.05	0.01	0.00	0.00	6%	0.00	0.00	6%	0.43	0.43	2	2	0.16			0.00
Opt-Out/Ex	7400	7400	Base Steamer	Retail	2014	2054	0.20	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.20	0.04	0.00
Opt-Out/Ex	7400	7401	Efficient Steamer	Retail	2014	2054	0.07	0.01	0.13	0.13	64%	0.02	0.02	64%	0.05	0.05	0	0	1.35			0.13
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Retail	2014	2054	0.31	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.31	0.00	0.00
Opt-Out/Ex	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	2014	2054	0.29	0.00	0.02	0.02	6%	0.00	0.00	0%	0.04	0.04	N/A	N/A	1.66			0.02
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Retail	2014	2054	1.14	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.14	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Retail	2014	2054	27.46	4.91	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	27.46	4.91	0.00
Opt-Out/Ex	9500	9501	Xmisc	Retail	2014	2054	27.46	4.91	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Grocery	2020	2054	0.33	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.33	0.05	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Grocery	2020	2054	0.33	0.05	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	4.92			0.00
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Grocery	2020	2054	0.31	0.05	0.03	0.03	8%	0.00	0.00	6%	0.02	0.02	0	0	4.31			0.03
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Grocery	2020	2054	0.28	0.04	0.03	0.06	17%	0.00	0.01	15%	0.04	0.03	0	0	1.38			0.03
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Grocery	2020	2054	0.25	0.04	0.03	0.08	25%	0.00	0.01	23%	0.11	0.06	1	0	0.49			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Grocery	2020	2054	0.25	0.04	0.00	0.09	26%	0.00	0.01	24%	0.11	0.06	3	0	0.50			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Grocery	2020	2054	0.21	0.03	0.04	0.13	38%	0.01	0.02	35%	0.48	0.19	3	1	0.13			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Grocery	2020	2054	0.19	0.03	0.02	0.14	43%	0.00	0.02	41%	0.40	0.22	3	2	0.15			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	0.01	0.01	0	0	4.11			0.00
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	8%	0.00	0.00	6%	0.02	0.02	0	0	3.60			0.00
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	17%	0.00	0.00	15%	0.05	0.04	0	0	1.09			0.00
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	27%	0.00	0.00	26%	0.11	0.06	1	0	0.52			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	29%	0.00	0.00	26%	0.20	0.07	6	0	0.27			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	32%	0.00	0.00	29%	0.40	0.10	3	1	0.15			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Grocery	2020	2054	0.00	0.00	0.00	0.00	38%	0.00	0.00	35%	0.51	0.17	3	1	0.12			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Grocery	2020	2054	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Grocery	2020	2054	0.04	0.01	0.06	0.06	62%	0.01	0.01	62%	0.01	0.01	0	0	10.39			0.06
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Grocery	2020	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Grocery	2020	2054	0.01	0.00	0.02	0.02	60%	0.00	0.00	60%	0.01	0.01	0	0	8.59			0.02

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Grocery	2020	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Grocery	2020	2054	0.01	0.00	0.01	0.01	50%	0.00	0.00	50%	0.01	0.01	0	0	5.82			0.01
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	28%	0.00	0.00	28%	0.12	0.12	1	1	0.48			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Grocery	2020	2054	0.01	0.00	0.00	0.00	26%	0.00	0.00	26%	0.09	0.09	1	1	0.64			0.00
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Grocery	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Grocery	2014	2054	0.02	0.00	0.00	0.00	8%	0.00	0.00	6%	0.01	0.01	0	0	9.93			0.00
Opt-Out/Ex	1800	1801	T5 (240W) (base metal halide)	Grocery	2014	2054	0.01	0.00	0.01	0.01	39%	0.00	0.00	37%	0.02	0.01	0	0	4.91			0.01
Opt-Out/Ex	1800	1806	Occupancy Sensor, High Bay T5	Grocery	2014	2054	0.01	0.00	0.00	0.01	41%	0.00	0.00	38%	0.04	0.02	1	0	1.40			0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Grocery	2014	2054	0.00	0.00	0.00	0.00	2%	0.00	0.00	2%	0.03	0.03	0	0	1.75			0.00
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Grocery	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Grocery	2014	2054	0.00	0.00	0.00	0.00	20%	0.00	0.00	66%	0.11	0.11	1	1	0.69			0.00
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Grocery	2014	2054	0.00	0.00	0.00	0.00	62%	0.00	0.00	107%	0.23	0.19	10	5	0.28			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Grocery	2014	2054	0.00	0.00	0.00	0.00	73%	0.00	0.00	117%	1.49	0.39	69	10	0.04			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Grocery	2014	2054	0.01	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.01	0.00
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Grocery	2014	2054	0.01	0.01	0.00	0.00	9%	0.00	0.00	9%	0.04	0.04	0	0	2.76			0.00
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Grocery	2014	2054	0.01	0.01	0.00	0.00	11%	0.00	0.00	11%	0.07	0.05	0	0	1.76			0.00
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Grocery	2014	2054	0.01	0.01	0.00	0.00	20%	0.00	0.00	16%	0.05	0.05	0	0	1.54			0.00
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Grocery	2014	2054	0.01	0.00	0.00	0.00	26%	0.00	0.00	21%	0.10	0.06	0	0	0.94			0.00
Opt-Out/Ex	2000	2003	EMS - Chiller	Grocery	2014	2054	0.01	0.00	0.00	0.00	33%	0.00	0.00	23%	0.09	0.07	1	0	0.78			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Grocery	2014	2054	0.01	0.00	0.00	0.00	38%	0.00	0.00	28%	0.15	0.08	0	0	0.62			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Grocery	2014	2054	0.00	0.00	0.00	0.00	50%	0.00	0.00	40%	0.30	0.13	0	0	0.38			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Grocery	2014	2054	0.00	0.00	0.00	0.00	51%	0.00	0.00	41%	4.68	0.20	7	0	0.02			0.00
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Grocery	2014	2054	0.00	0.00	0.00	0.00	51%	0.00	0.00	41%	50270.28	0.20	316,012	0	0.00			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Grocery	2014	2054	0.29	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.29	0.19	0.00
Opt-Out/Ex	2100	2113	Ceiling/roof Insulation - DX	Grocery	2014	2054	0.29	0.19	0.00	0.00	0%	0.00	0.00	0%	0.04	0.04	0	0	3.34			0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Grocery	2014	2054	0.22	0.14	0.07	0.07	23%	0.04	0.04	23%	0.04	0.04	0	0	2.89			0.07
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Grocery	2014	2054	0.21	0.13	0.02	0.08	28%	0.01	0.05	28%	0.10	0.05	0	0	0.91			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Grocery	2014	2054	0.19	0.12	0.02	0.10	34%	0.01	0.06	34%	0.14	0.06	0	0	0.67			0.00
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Grocery	2014	2054	0.19	0.12	0.00	0.10	35%	0.00	0.06	34%	0.12	0.07	1	0	0.46			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Grocery	2014	2054	0.18	0.12	0.00	0.10	36%	0.00	0.06	34%	0.14	0.07	1	0	0.41			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Grocery	2014	2054	0.17	0.12	0.01	0.12	40%	0.01	0.07	38%	0.29	0.09	0	0	0.39			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Grocery	2014	2054	0.17	0.12	0.00	0.12	40%	0.00	0.07	38%	0.84	0.09	5	0	0.07			0.00
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Grocery	2014	2054	0.17	0.11	0.00	0.12	41%	0.00	0.07	39%	1.63	0.11	2	0	0.05			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	Grocery	2014	2054	0.17	0.11	0.00	0.12	41%	0.00	0.07	39%	2.04	0.11	13	0	0.03			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Grocery	2014	2054	0.17	0.11	0.00	0.12	42%	0.00	0.08	40%	3.93	0.20	6	0	0.02			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Grocery	2014	2054	0.03	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.02	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	2014	2054	0.02	0.01	0.00	0.00	12%	0.00	0.00	12%	0.03	0.03	0	0	3.31			0.00
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Grocery	2014	2054	0.01	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.01	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Grocery	2014	2054	0.28	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.06	0.00
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Grocery	2014	2054	0.19	0.06	0.09	0.09	31%	0.00	0.00	7%	0.03	0.03	1	1	1.84			0.09
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Grocery	2014	2054	0.19	0.05	0.00	0.09	32%	0.00	0.01	9%	0.07	0.04	0	1	1.22			0.00
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Grocery	2014	2054	0.16	0.04	0.03	0.12	42%	0.01	0.02	28%	1.37	0.34	3	2	0.07			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Grocery	2014	2054	0.28	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.06	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Grocery	2014	2054	0.25	0.06	0.03	0.03	10%	0.00	0.00	3%	0.02	0.02	0	0	2.22			0.03
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Grocery	2014	2054	0.21	0.04	0.04	0.06	23%	0.02	0.02	28%	1.04	0.58	2	2	0.09			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Grocery	2014	2054	1.40	0.22	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.40	0.22	0.00
Opt-Out/Ex	4000	4007	Efficient compressor motor	Grocery	2014	2054	1.39	0.22	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	3.94			0.00
Opt-Out/Ex	4000	4011	Demand Hot Gas Defrost	Grocery	2014	2054	1.36	0.22	0.03	0.04	3%	0.01	0.01	3%	0.02	0.02	0	0	3.64			0.03
Opt-Out/Ex	4000	4009	Floating head pressure controls	Grocery	2014	2054	1.36	0.22	0.00	0.04	3%	0.00	0.01	3%	0.02	0.02	0	0	3.35			0.00
Opt-Out/Ex	4000	4006	Electronically commutated evaporator fan motor	Grocery	2014	2054	1.26	0.21	0.10	0.14	10%	0.01	0.01	6%	0.02	0.02	0	0	3.02			0.10
Opt-Out/Ex	4000	4013	Anti-sweat (humidistat) controls	Grocery	2014	2054	1.24	0.21	0.02	0.16	11%	0.00	0.02	7%	0.04	0.02	1	0	1.48			0.02
Opt-Out/Ex	4000	4002	Strip curtains for walk-ins (built-up)	Grocery	2014	2054	1.19	0.20	0.05	0.20	15%	0.01	0.02	10%	0.04	0.03	0	0	1.37			0.05
Opt-Out/Ex	4000	4014	Freezer-Cooler Replacement Gaskets	Grocery	2014	2054	1.15	0.19	0.04	0.25	18%	0.01	0.03	13%	0.06	0.03	0	0	0.96			0.00
Opt-Out/Ex	4000	4018	Oversized Air Cooled Condenser	Grocery	2014	2054	1.10	0.19	0.05	0.29	21%	0.01	0.04	17%	0.08	0.04	0	0	0.93			0.00
Opt-Out/Ex	4000	4001	High-efficiency fan motors	Grocery	2014	2054	1.06	0.18	0.04	0.33	24%	0.01	0.04	20%	0.11	0.05	1	0	0.74			0.00
Opt-Out/Ex	4000	4004	Night covers for display cases	Grocery	2014	2054	1.00	0.18	0.06	0.39	28%	0.00	0.04	20%	0.07	0.05	N/A	0	0.65			0.00
Opt-Out/Ex	4000	4008	Compressor VSD retrofit	Grocery	2014	2054	0.94	0.18	0.06	0.46	33%	0.01	0.05	22%	0.10	0.06	1	1	0.61			0.00
Opt-Out/Ex	4000	4010	Refrigeration Commissioning	Grocery	2014	2054	0.94	0.18	0.00	0.46	33%	0.00	0.05	22%	0.18	0.06	1	1	0.29			0.00
Opt-Out/Ex	4000	4005	Evaporator fan controller for MT walk-ins	Grocery	2014	2054	0.93	0.17	0.00	0.46	33%	0.00	0.05	22%	0.25	0.06	3	1	0.27			0.00
Opt-Out/Ex	4000	4017	Multiplex Compressor System	Grocery	2014	2054	0.92	0.17	0.02	0.48	34%	0.00	0.05	23%	0.27	0.07	2	1	0.26			0.00
Opt-Out/Ex	4000	4016	LED Display Lighting	Grocery	2014	2054	0.84	0.16	0.07	0.55	40%	0.01	0.06	29%	0.45	0.12	3	1	0.13			0.00
Opt-Out/Ex	4000	4015	High R-Value Glass Doors	Grocery	2014	2054	0.83	0.16	0.01	0.57	40%	0.00	0.07	30%	2.02	0.16	13	1	0.03			0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Grocery	2014	2054	0.16	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.03	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	Grocery	2014	2054	0.16	0.02	0.00	0.00	3%	0.00	0.00	3%	0.00	0.00	0	0	173.50			0.00
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Grocery	2014	2054	0.15	0.02	0.00	0.01	4%	0.00	0.00	4%	0.01	0.00	0	0	3.98			0.00
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	Grocery	2014	2054	0.14	0.02	0.01	0.01	9%	0.00	0.00	9%	0.03	0.02	0	0	2.43			0.01
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	Grocery	2014	2054	0.14	0.02	0.00	0.02	11%	0.00	0.00	11%	0.07	0.03	0	0	0.93			0.00
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Grocery	2014	2054	0.14	0.02	0.00	0.02	11%	0.00	0.00	11%	0.09	0.03	1	0	0.72			0.00
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Grocery	2014	2054	0.14	0.02	0.00	0.02	11%	0.00	0.00	11%	0.09	0.03	1	0	0.69			0.00
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Grocery	2014	2054	0.14	0.02	0.00	0.02	11%	0.00	0.00	11%	0.24	0.03	1	0	0.27			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS Year 2014 SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Grocery	2014	2054	0.14	0.02	0.00	0.02	11%	0.00	0.00	11%	0.29	0.03	2	0	0.22			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Grocery	2014	2054	0.14	0.02	0.00	0.02	12%	0.00	0.00	12%	0.34	0.04	2	0	0.18			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Grocery	2014	2054	0.14	0.02	0.00	0.02	13%	0.00	0.00	13%	0.65	0.11	4	1	0.08			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Grocery	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	45%	0.00	0.00	23%	0.03	0.03	0	0	1.92			0.00
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Grocery	2014	2054	0.00	0.00	0.00	0.00	63%	0.00	0.00	41%	0.06	0.04	0	0	0.96			0.00
Opt-Out/Ex	5100	5100	Base Laptop PC	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Grocery	2014	2054	0.00	0.00	0.00	0.00	19%	0.00	0.00	19%	0.02	0.02	0	0	2.68			0.00
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	2.48	0.22	14	1	0.02			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Grocery	2014	2054	0.00	0.00	0.00	0.00	56%	0.00	0.00	56%	0.00	0.00	0	0	21.32			0.00
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Grocery	2014	2054	0.00	0.00	0.00	0.00	73%	0.00	0.00	65%	0.05	0.01	1	0	1.00			0.00
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Grocery	2014	2054	0.00	0.00	0.00	0.00	76%	0.00	0.00	67%	0.52	0.03	3	0	0.11			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Grocery	2014	2054	0.00	0.00	0.00	0.00	20%	0.00	0.00	20%	0.02	0.02	0	0	3.05			0.00
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Grocery	2014	2054	0.00	0.00	0.00	0.00	31%	0.00	0.00	26%	0.19	0.08	2	1	0.26			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Grocery	2014	2054	0.00	0.00	0.00	0.00	36%	0.00	0.00	27%	0.53	0.15	12	1	0.09			0.00
Opt-Out/Ex	5400	5400	Base Copier	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Grocery	2014	2054	0.00	0.00	0.00	0.00	20%	0.00	0.00	20%	0.00	0.00	0	0	14.87			0.00
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	31%	0.00	0.00	26%	0.24	0.09	3	1	0.23			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Grocery	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	4.55			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	36%	0.64	0.30	7	2	0.08			0.00
Opt-Out/Ex	5600	5600	Base Printer	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Grocery	2014	2054	0.00	0.00	0.00	0.00	35%	0.00	0.00	35%	0.00	0.00	0	0	20.93			0.00
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Grocery	2014	2054	0.00	0.00	0.00	0.00	53%	0.00	0.00	44%	0.14	0.05	2	0	0.38			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Grocery	2014	2054	0.00	0.00	0.00	0.00	10%	0.00	0.00	10%	0.00	0.00	0	0	75.03			0.00
Opt-Out/Ex	5700	5702	Data Center Best Practices	Grocery	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	0.00	0.00	0	0	30.54			0.00
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Grocery	2014	2054	0.00	0.00	0.00	0.00	26%	0.00	0.00	26%	0.00	0.00	0	0	15.84			0.00
Opt-Out/Ex	6000	6000	Base Water Heating	Grocery	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Grocery	2014	2054	0.03	0.00	0.00	0.00	5%	0.00	0.00	5%	0.03	0.03	0	0	2.23			0.00
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Grocery	2014	2054	0.03	0.00	0.00	0.00	7%	0.00	0.00	7%	0.06	0.04	0	0	1.20			0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Grocery	2014	2054	0.01	0.00	0.01	0.02	55%	0.00	0.00	55%	0.07	0.07	0	0	0.92			0.00
Opt-Out/Ex	6000	6004	Tankless Water Heater	Grocery	2014	2054	0.01	0.00	0.00	0.02	59%	0.00	0.00	59%	0.19	0.07	1	0	0.41			0.00
Opt-Out/Ex	6000	6008	Solar Water Heater	Grocery	2014	2054	0.01	0.00	0.00	0.02	65%	0.00	0.00	65%	0.23	0.09	1	1	0.35			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Grocery	2014	2054	0.01	0.00	0.00	0.02	66%	0.00	0.00	66%	0.26	0.09	2	1	0.28			0.00
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Grocery	2014	2054	0.01	0.00	0.00	0.02	66%	0.00	0.00	66%	0.28	0.09	2	1	0.26			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Grocery	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Grocery	2014	2054	0.03	0.00	0.01	0.01	16%	0.00	0.00	8%	0.03	0.03	0	0	2.01			0.01
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Grocery	2014	2054	0.02	0.00	0.00	0.01	25%	0.00	0.00	12%	0.05	0.03	1	0	1.10			0.00
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Grocery	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	23%	0.43	0.43	5	5	0.12			0.00
Opt-Out/Ex	7200	7200	Base Oven	Grocery	2014	2054	0.04	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.00	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Grocery	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00
Opt-Out/Ex	7400	7400	Base Steamer	Grocery	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00
Opt-Out/Ex	7400	7401	Efficient Steamer	Grocery	2014	2054	0.02	0.00	0.05	0.05	69%	0.01	0.01	69%	0.06	0.06	0	0	1.11			0.05
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Grocery	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	2014	2054	0.00	0.00	0.00	0.00	6%	0.00	0.00	0%	0.04	0.04	N/A	N/A	1.37			0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Grocery	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Grocery	2014	2054	0.36	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.36	0.06	0.00
Opt-Out/Ex	9500	9501	Xmisc	Grocery	2014	2054	0.36	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Warehouse	2020	2054	2.87	0.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.87	0.51	0.00
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Warehouse	2020	2054	2.64	0.47	0.24	0.24	8%	0.04	0.04	8%	0.02	0.02	0	0	2.91			0.24
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Warehouse	2020	2054	2.59	0.46	0.04	0.28	10%	0.00	0.05	9%	0.03	0.02	0	0	1.70			0.04
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	2020	2054	2.27	0.41	0.32	0.60	21%	0.06	0.10	20%	0.05	0.03	0	0	1.34			0.32
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Warehouse	2020	2054	2.10	0.38	0.17	0.77	27%	0.02	0.13	25%	0.05	0.04	0	0	1.33			0.17
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Warehouse	2020	2054	2.04	0.38	0.06	0.83	29%	0.00	0.13	26%	0.09	0.04	2	0	0.61			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Warehouse	2020	2054	1.71	0.32	0.33	1.16	40%	0.06	0.19	37%	0.28	0.11	2	1	0.25			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Warehouse	2020	2054	1.57	0.30	0.15	1.31	46%	0.03	0.21	42%	0.24	0.12	1	1	0.30			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Warehouse	2020	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Warehouse	2020	2054	0.02	0.00	0.00	0.00	10%	0.00	0.00	10%	0.03	0.03	0	0	2.25			0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Warehouse	2020	2054	0.02	0.00	0.00	0.00	12%	0.00	0.00	11%	0.03	0.03	0	0	1.60			0.00
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Warehouse	2020	2054	0.02	0.00	0.00	0.00	18%	0.00	0.00	16%	0.05	0.04	0	0	1.44			0.00
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	2020	2054	0.01	0.00	0.00	0.01	29%	0.00	0.00	27%	0.06	0.05	0	0	0.98			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Warehouse	2020	2054	0.01	0.00	0.00	0.01	32%	0.00	0.00	30%	0.23	0.07	1	0	0.31			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Warehouse	2020	2054	0.01	0.00	0.00	0.01	38%	0.00	0.00	36%	0.29	0.10	2	1	0.24			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Warehouse	2020	2054	0.01	0.00	0.00	0.01	40%	0.00	0.00	36%	0.19	0.10	4	1	0.29			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Warehouse	2014	2054	0.00	0.00	0.00	0.00	10%	0.00	0.00	5%	0.00	0.00	0	0	16.81			0.00
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Warehouse	2014	2054	0.00	0.00	0.00	0.00	17%	0.00	0.00	10%	0.03	0.01	0	0	2.30			0.00
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Warehouse	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	19%	0.10	0.05	1	0	0.59			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Warehouse	2014	2054	0.00	0.00	0.00	0.00	31%	0.00	0.00	20%	0.12	0.06	3	1	0.46			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Warehouse	2020	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Warehouse	2020	2054	0.09	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.02	0.00
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Warehouse	2020	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Warehouse	2020	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Warehouse	2020	2054	0.09	0.02	0.03	0.03	28%	0.01	0.01	28%	0.06	0.06	0	0	0.98			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Warehouse	2020	2054	0.15	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.15	0.03	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Warehouse	2020	2054	0.11	0.02	0.04	0.04	26%	0.01	0.01	26%	0.05	0.05	0	0	1.31			0.04
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Warehouse	2014	2054	1.73	0.31	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.73	0.31	0.00
Opt-Out/Ex	1800	1801	T5 (240W) (base metal halide)	Warehouse	2014	2054	1.15	0.20	0.59	0.59	34%	0.10	0.10	34%	0.01	0.01	0	0	7.34			0.59
Opt-Out/Ex	1800	1806	Occupancy Sensor, High Bay T5	Warehouse	2014	2054	1.11	0.20	0.04	0.62	36%	0.00	0.11	34%	0.03	0.01	1	0	1.90			0.04
Opt-Out/Ex	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Warehouse	2014	2054	1.03	0.19	0.08	0.71	41%	0.01	0.12	38%	0.05	0.02	0	0	1.49			0.08
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Warehouse	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Warehouse	2014	2054	0.00	0.00	0.01	0.01	69%	0.00	0.00	69%	0.05	0.05	0	0	1.15			0.01
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Warehouse	2014	2054	0.64	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.64	0.01	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Warehouse	2014	2054	0.52	0.00	0.13	0.13	20%	0.01	0.01	66%	0.06	0.06	1	1	1.28			0.13
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Warehouse	2014	2054	0.25	0.00	0.27	0.40	61%	0.00	0.01	108%	0.11	0.10	8	4	0.56			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Warehouse	2014	2054	0.18	0.00	0.07	0.47	73%	0.00	0.01	118%	0.74	0.20	61	9	0.09			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Warehouse	2014	2054	1.46	1.38	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.46	1.38	0.00
Opt-Out/Ex	2100	2113	Ceiling/roof Insulation - DX	Warehouse	2014	2054	1.39	1.32	0.07	0.07	5%	0.06	0.06	5%	0.05	0.05	0	0	2.69			0.07
Opt-Out/Ex	2100	2107	Cool Roof - DX	Warehouse	2014	2054	1.29	1.22	0.10	0.17	12%	0.10	0.16	12%	0.12	0.09	0	0	0.92			0.00
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Warehouse	2014	2054	1.27	1.22	0.02	0.19	13%	0.01	0.17	12%	0.15	0.10	1	0	0.39			0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Warehouse	2014	2054	0.97	0.94	0.29	0.48	33%	0.28	0.44	32%	0.48	0.33	0	0	0.27			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Warehouse	2014	2054	0.92	0.88	0.06	0.54	37%	0.06	0.50	36%	3.07	0.62	3	1	0.05			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Warehouse	2014	2054	0.88	0.85	0.04	0.58	40%	0.04	0.54	39%	2.74	0.77	3	1	0.04			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Warehouse	2014	2054	0.85	0.84	0.03	0.60	42%	0.01	0.54	39%	2.02	0.82	7	1	0.03			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Warehouse	2014	2054	0.85	0.84	0.00	0.61	42%	0.00	0.55	39%	5.62	0.83	6	1	0.02			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Warehouse	2014	2054	0.85	0.84	0.00	0.61	42%	0.00	0.55	39%	3.71	0.84	14	1	0.02			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Warehouse	2014	2054	0.79	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.79	0.75	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Warehouse	2014	2054	0.69	0.66	0.10	0.10	12%	0.09	0.09	12%	0.05	0.05	0	0	2.78			0.10
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Warehouse	2014	2054	0.04	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.04	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Warehouse	2014	2054	0.82	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.82	0.25	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Warehouse	2014	2054	0.81	0.25	0.01	0.01	2%	0.00	0.00	2%	0.05	0.05	0	0	2.03			0.01
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Warehouse	2014	2054	0.57	0.23	0.24	0.25	31%	0.02	0.02	9%	0.04	0.04	0	0	1.85			0.24
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Warehouse	2014	2054	0.56	0.23	0.01	0.26	31%	0.00	0.03	11%	1.85	0.09	3	1	0.06			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Warehouse	2014	2054	0.27	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.27	0.08	0.00
Opt-Out/Ex	3200	3202	Variable Speed Drive Control, 40 HP	Warehouse	2014	2054	0.19	0.08	0.08	0.08	29%	0.01	0.01	8%	0.02	0.02	0	0	3.63			0.08
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Warehouse	2014	2054	0.17	0.08	0.02	0.10	36%	0.00	0.01	9%	0.06	0.03	1	0	0.88			0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Warehouse	2014	2054	0.17	0.07	0.00	0.10	37%	0.00	0.01	11%	2.02	0.07	4	1	0.05			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Warehouse	2014	2054	1.96	0.37	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.96	0.37	0.00
Opt-Out/Ex	4000	4018	Oversized Air Cooled Condenser	Warehouse	2014	2054	1.88	0.36	0.08	0.08	4%	0.02	0.02	4%	0.03	0.03	0	0	2.42			0.08
Opt-Out/Ex	4000	4010	Refrigeration Commissioning	Warehouse	2014	2054	1.87	0.35	0.01	0.09	5%	0.00	0.02	5%	0.06	0.03	0	0	0.87			0.00
Opt-Out/Ex	4000	4006	Electronically commutated evaporator fan motor	Warehouse	2014	2054	1.76	0.34	0.11	0.20	10%	0.01	0.03	8%	0.11	0.07	1	1	0.63			0.00
Opt-Out/Ex	4000	4005	Evaporator fan controller for MT walk-ins	Warehouse	2014	2054	1.75	0.34	0.01	0.21	11%	0.00	0.03	8%	0.19	0.08	2	1	0.36			0.00
Opt-Out/Ex	4000	4002	Strip curtains for walk-ins (built-up)	Warehouse	2014	2054	1.68	0.33	0.07	0.28	14%	0.01	0.04	11%	0.19	0.10	1	1	0.30			0.00
Opt-Out/Ex	4000	4001	High-efficiency fan motors	Warehouse	2014	2054	1.63	0.32	0.05	0.33	17%	0.01	0.05	14%	0.47	0.16	2	1	0.17			0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Warehouse	2014	2054	0.52	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.52	0.10	0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Warehouse	2014	2054	0.52	0.10	0.01	0.01	2%	0.00	0.00	2%	0.16	0.16	1	1	0.34			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Warehouse	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Warehouse	2014	2054	0.07	0.02	0.05	0.05	44%	0.00	0.00	23%	0.01	0.01	0	0	3.79			0.05
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Warehouse	2014	2054	0.05	0.01	0.02	0.08	63%	0.00	0.01	41%	0.03	0.02	0	0	1.94			0.02
Opt-Out/Ex	5100	5100	Base Laptop PC	Warehouse	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Warehouse	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	5.37			0.00
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Warehouse	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.24	0.11	7	1	0.04			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Warehouse	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Warehouse	2014	2054	0.01	0.00	0.01	0.01	56%	0.00	0.00	56%	0.00	0.00	0	0	42.66			0.01
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Warehouse	2014	2054	0.01	0.00	0.00	0.02	70%	0.00	0.00	63%	0.02	0.01	0	0	2.33			0.00
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Warehouse	2014	2054	0.01	0.00	0.00	0.02	73%	0.00	0.00	66%	0.23	0.01	1	0	0.24			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Warehouse	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Warehouse	2014	2054	0.02	0.00	0.00	0.00	20%	0.00	0.00	20%	0.01	0.01	0	0	6.08			0.00
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Warehouse	2014	2054	0.02	0.00	0.00	0.00	21%	0.00	0.00	21%	0.08	0.01	1	0	0.61			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Warehouse	2014	2054	0.01	0.00	0.00	0.01	27%	0.00	0.00	22%	0.24	0.06	5	0	0.20			0.00
Opt-Out/Ex	5400	5400	Base Copier	Warehouse	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Warehouse	2014	2054	0.03	0.00	0.00	0.00	12%	0.00	0.00	12%	0.00	0.00	0	0	32.89			0.00
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Warehouse	2014	2054	0.03	0.00	0.00	0.00	15%	0.00	0.00	14%	0.09	0.02	1	0	0.58			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Warehouse	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Warehouse	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	9.11			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Warehouse	2014	2054	0.00	0.00	0.00	0.00	32%	0.00	0.00	29%	0.24	0.06	3	0	0.22			0.00
Opt-Out/Ex	5600	5600	Base Printer	Warehouse	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Warehouse	2014	2054	0.02	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00	0.00	0	0	41.89			0.01
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Warehouse	2014	2054	0.02	0.00	0.00	0.01	41%	0.00	0.00	38%	0.05	0.01	1	0	1.01			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Warehouse	2014	2054	0.37	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.37	0.06	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Warehouse	2014	2054	0.33	0.05	0.04	0.04	10%	0.01	0.01	10%	0.00	0.00	0	0	119.82			0.04
Opt-Out/Ex	5700	5702	Data Center Best Practices	Warehouse	2014	2054	0.29	0.05	0.04	0.08	21%	0.01	0.01	21%	0.00	0.00	0	0	48.78			0.04

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Warehouse	2014	2054	0.27	0.05	0.02	0.09	26%	0.00	0.02	26%	0.00	0.00	0	0	25.30			0.02
Opt-Out/Ex	6000	6000	Base Water Heating	Warehouse	2014	2054	0.14	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.14	0.02	0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Warehouse	2014	2054	0.13	0.02	0.01	0.01	7%	0.00	0.00	7%	0.25	0.25	2	2	0.26			0.00
Opt-Out/Ex	6000	6007	Heat Trap	Warehouse	2014	2054	0.12	0.02	0.01	0.02	11%	0.00	0.00	11%	0.45	0.33	3	2	0.15			0.00
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Warehouse	2014	2054	0.12	0.02	0.00	0.02	13%	0.00	0.00	13%	0.93	0.42	6	3	0.08			0.00
Opt-Out/Ex	6000	6004	Tankless Water Heater	Warehouse	2014	2054	0.11	0.02	0.01	0.03	20%	0.00	0.00	20%	1.42	0.75	9	5	0.06			0.00
Opt-Out/Ex	6000	6008	Solar Water Heater	Warehouse	2014	2054	0.07	0.01	0.04	0.07	47%	0.01	0.01	47%	1.66	1.28	11	8	0.05			0.00
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Warehouse	2014	2054	0.07	0.01	0.00	0.07	48%	0.00	0.01	48%	2.58	1.31	16	8	0.03			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Warehouse	2014	2054	0.07	0.01	0.00	0.07	49%	0.00	0.01	49%	2.88	1.34	18	9	0.03			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Warehouse	2014	2054	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Warehouse	2014	2054	0.08	0.02	0.02	0.02	16%	0.00	0.00	8%	0.03	0.03	0	0	2.00			0.02
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Warehouse	2014	2054	0.07	0.02	0.01	0.02	25%	0.00	0.00	12%	0.05	0.03	1	0	1.10			0.01
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Warehouse	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Warehouse	2014	2054	0.00	0.00	0.00	0.00	45%	0.00	0.00	23%	0.44	0.44	5	5	0.12			0.00
Opt-Out/Ex	7200	7200	Base Oven	Warehouse	2014	2054	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Warehouse	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00
Opt-Out/Ex	7400	7400	Base Steamer	Warehouse	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Warehouse	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Warehouse	2014	2054	0.01	0.00	0.00	0.00	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	1.90			0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Warehouse	2014	2054	0.11	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Warehouse	2014	2054	2.24	0.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.24	0.42	0.00
Opt-Out/Ex	9500	9501	Xmisc	Warehouse	2014	2054	2.24	0.42	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	School	2020	2054	3.64	0.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.64	0.49	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	School	2020	2054	3.60	0.49	0.04	0.04	1%	0.00	0.00	1%	0.02	0.02	0	0	2.61			0.04
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	School	2020	2054	3.23	0.44	0.37	0.41	11%	0.05	0.05	11%	0.03	0.03	0	0	2.55			0.37
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	School	2020	2054	2.99	0.41	0.24	0.65	18%	0.03	0.08	16%	0.03	0.03	0	0	2.07			0.24
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	School	2020	2054	2.87	0.40	0.12	0.77	21%	0.02	0.09	19%	0.20	0.05	1	0	0.35			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	School	2020	2054	2.41	0.33	0.46	1.23	34%	0.06	0.16	32%	0.35	0.17	3	1	0.22			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	School	2020	2054	2.28	0.33	0.13	1.36	37%	0.00	0.16	33%	0.18	0.17	5	1	0.31			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	School	2020	2054	2.08	0.30	0.19	1.56	43%	0.03	0.19	38%	0.31	0.18	2	2	0.25			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	School	2020	2054	0.23	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.23	0.03	0.00
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	School	2020	2054	0.21	0.03	0.02	0.02	10%	0.00	0.00	10%	0.03	0.03	0	0	2.04			0.02
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	School	2020	2054	0.20	0.03	0.00	0.03	11%	0.00	0.00	11%	0.03	0.03	0	0	1.58			0.00
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	School	2020	2054	0.19	0.03	0.02	0.04	18%	0.00	0.00	16%	0.05	0.04	0	0	1.41			0.02
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	School	2020	2054	0.16	0.02	0.02	0.06	28%	0.00	0.01	27%	0.08	0.05	1	0	0.89			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	School	2020	2054	0.16	0.02	0.01	0.07	32%	0.00	0.01	30%	0.32	0.08	2	1	0.25			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	School	2020	2054	0.14	0.02	0.01	0.09	38%	0.00	0.01	36%	0.40	0.13	3	1	0.20			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	School	2020	2054	0.13	0.02	0.01	0.09	41%	0.00	0.01	37%	0.33	0.15	10	1	0.17			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	School	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	School	2014	2054	0.02	0.00	0.00	0.00	6%	0.00	0.00	3%	0.02	0.02	0	0	2.15			0.00
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	School	2014	2054	0.02	0.00	0.00	0.00	14%	0.00	0.00	11%	0.11	0.07	1	1	0.61			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	School	2014	2054	0.01	0.00	0.00	0.01	37%	0.00	0.00	25%	0.20	0.16	6	2	0.28			0.00
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	School	2014	2054	0.01	0.00	0.00	0.01	41%	0.00	0.00	29%	0.37	0.18	3	2	0.19			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	School	2020	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	School	2020	2054	0.02	0.00	0.03	0.03	67%	0.00	0.00	67%	0.00	0.00	0	0	16.50			0.03
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	School	2020	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	School	2020	2054	0.01	0.00	0.01	0.01	64%	0.00	0.00	64%	0.00	0.00	0	0	13.70			0.01
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	School	2020	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	School	2020	2054	0.01	0.00	0.01	0.01	54%	0.00	0.00	54%	0.01	0.01	0	0	9.46			0.01
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	School	2020	2054	0.25	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.25	0.03	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	School	2020	2054	0.18	0.02	0.07	0.07	28%	0.01	0.01	28%	0.08	0.08	1	1	0.86			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	School	2020	2054	0.32	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.32	0.04	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	School	2020	2054	0.23	0.03	0.08	0.08	26%	0.01	0.01	26%	0.06	0.06	0	0	1.15			0.08
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	School	2014	2054	1.31	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.31	0.18	0.00
Opt-Out/Ex	1800	1801	T5 (240W) (base metal halide)	School	2014	2054	0.87	0.12	0.44	0.44	34%	0.06	0.06	34%	0.02	0.02	0	0	3.90			0.44
Opt-Out/Ex	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	School	2014	2054	0.80	0.11	0.06	0.51	39%	0.01	0.07	38%	0.03	0.02	0	0	2.47			0.06
Opt-Out/Ex	1800	1806	Occupancy Sensor, High Bay T5	School	2014	2054	0.78	0.11	0.03	0.53	41%	0.00	0.07	38%	0.06	0.02	2	0	0.95			0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	School	2014	2054	0.04	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.00	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	School	2014	2054	0.02	0.00	0.02	0.02	55%	0.00	0.00	55%	0.04	0.04	0	0	1.46			0.02
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	School	2014	2054	1.30	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.30	0.05	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	School	2014	2054	1.19	0.04	0.11	0.11	9%	0.01	0.01	28%	0.05	0.05	0	0	1.55			0.11
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	School	2014	2054	0.57	0.01	0.62	0.73	56%	0.02	0.04	75%	0.11	0.10	3	2	0.60			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	School	2014	2054	0.40	0.01	0.17	0.90	69%	0.01	0.04	87%	0.72	0.22	20	4	0.09			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	School	2014	2054	3.60	1.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.60	1.85	0.00
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	School	2014	2054	3.29	1.69	0.31	0.31	9%	0.16	0.16	9%	0.07	0.07	0	0	1.47			0.31
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	School	2014	2054	3.29	1.69	0.00	0.31	9%	0.00	0.16	9%	0.12	0.08	0	0	0.95			0.00
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	School	2014	2054	3.28	1.69	0.01	0.32	9%	0.00	0.16	9%	0.09	0.08	0	0	0.89			0.00
Opt-Out/Ex	2000	2003	EMS - Chiller	School	2014	2054	3.11	1.66	0.18	0.49	14%	0.03	0.19	10%	0.14	0.10	1	0	0.50			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	School	2014	2054	3.05	1.63	0.06	0.55	15%	0.03	0.22	12%	0.23	0.11	0	0	0.38			0.00
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	School	2014	2054	3.03	1.62	0.02	0.57	16%	0.01	0.22	12%	0.26	0.12	1	0	0.33			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	School	2014	2054	2.53	1.37	0.50	1.07	30%	0.26	0.48	26%	0.38	0.24	1	1	0.28			0.00
Opt-Out/Ex	2000	2008	New Economizer - Chiller	School	2014	2054	2.26	1.33	0.27	1.34	37%	0.04	0.52	28%	0.43	0.28	3	1	0.14			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	School	2014	2054	2.25	1.32	0.01	1.35	38%	0.01	0.53	29%	6.18	0.34	12	1	0.01			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	School	2014	2054	1.83	0.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.83	0.94	0.00

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	2100	2113	Ceiling/roof Insulation - DX	School	2014	2054	1.83	0.94	0.00	0.00	0%	0.00	0.00	0%	0.03	0.03	0	0	3.79			0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	School	2014	2054	1.41	0.72	0.42	0.42	23%	0.22	0.22	23%	0.07	0.06	0	0	1.54			0.42
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	School	2014	2054	1.41	0.72	0.00	0.42	23%	0.00	0.22	23%	0.19	0.07	1	0	0.33			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	School	2014	2054	1.40	0.72	0.01	0.44	24%	0.01	0.22	24%	0.29	0.07	1	0	0.30			0.00
Opt-Out/Ex	2100	2108	Optimize Controls - DX	School	2014	2054	1.38	0.71	0.02	0.46	25%	0.00	0.23	24%	0.20	0.08	1	0	0.27			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	School	2014	2054	1.30	0.68	0.07	0.53	29%	0.04	0.26	28%	0.42	0.12	1	0	0.25			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	School	2014	2054	1.29	0.68	0.01	0.54	30%	0.00	0.27	28%	0.26	0.13	2	0	0.23			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	School	2014	2054	1.27	0.66	0.02	0.57	31%	0.01	0.28	29%	0.47	0.14	1	0	0.18			0.00
Opt-Out/Ex	2100	2111	Economizer Repair - DX	School	2014	2054	1.24	0.65	0.02	0.59	32%	0.02	0.30	31%	1.04	0.18	1	0	0.08			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	School	2014	2054	1.24	0.64	0.01	0.60	33%	0.00	0.30	32%	1.56	0.19	11	0	0.04			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	School	2014	2054	1.22	0.64	0.01	0.61	33%	0.01	0.30	32%	5.79	0.33	11	1	0.01			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	School	2014	2054	1.83	0.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.83	0.94	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	2014	2054	1.61	0.83	0.23	0.23	12%	0.12	0.12	12%	0.05	0.05	0	0	1.83			0.23
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	School	2014	2054	1.83	0.94	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.83	0.94	0.00
Opt-Out/Ex	2300	2301	HE PTAC, EER=9.6, 1 ton	School	2014	2054	1.59	0.81	0.25	0.25	14%	0.13	0.13	14%	0.14	0.14	0	0	0.73			0.00
Opt-Out/Ex	2300	2302	Occupancy Sensor (hotels)	School	2014	2054	1.34	0.66	0.25	0.50	27%	0.16	0.29	30%	0.43	0.28	1	0	0.22			0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	School	2014	2054	0.87	0.17	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.87	0.17	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	School	2014	2054	0.85	0.17	0.01	0.01	2%	0.00	0.00	2%	0.06	0.06	0	0	1.34			0.01
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	School	2014	2054	0.72	0.12	0.13	0.14	16%	0.04	0.05	28%	1.75	1.57	5	5	0.05			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	School	2014	2054	2.32	0.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.32	0.45	0.00
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	School	2014	2054	2.00	0.40	0.33	0.33	14%	0.06	0.06	13%	0.06	0.06	0	0	1.30			0.33
Opt-Out/Ex	3100	3103	Air Handler Optimization, 15 HP	School	2014	2054	1.80	0.39	0.19	0.52	22%	0.01	0.07	15%	0.06	0.06	1	0	0.88			0.00
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	School	2014	2054	1.79	0.38	0.02	0.54	23%	0.00	0.07	16%	0.16	0.06	1	0	0.52			0.00
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	School	2014	2054	1.69	0.35	0.09	0.63	27%	0.03	0.10	23%	0.58	0.14	2	1	0.17			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	School	2014	2054	1.44	0.26	0.25	0.88	38%	0.09	0.19	42%	2.36	0.78	7	4	0.04			0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	School	2014	2054	0.97	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.97	0.19	0.00
Opt-Out/Ex	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	School	2014	2054	0.97	0.19	0.00	0.00	0%	0.00	0.00	0%	0.03	0.03	0	0	2.96			0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	School	2014	2054	0.87	0.18	0.09	0.10	10%	0.00	0.01	3%	0.05	0.05	1	1	1.02			0.09
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	School	2014	2054	0.74	0.14	0.13	0.23	23%	0.05	0.05	27%	1.91	1.12	5	5	0.05			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	School	2014	2054	1.31	0.18	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.31	0.18	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	School	2014	2054	1.21	0.17	0.10	0.10	7%	0.01	0.01	7%	0.00	0.00	0	0	21.04			0.10
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	School	2014	2054	1.20	0.17	0.02	0.11	9%	0.00	0.02	9%	0.00	0.00	0	0	12.13			0.02
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	School	2014	2054	1.18	0.16	0.01	0.13	10%	0.00	0.02	10%	0.01	0.00	0	0	7.93			0.01
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	School	2014	2054	1.15	0.16	0.03	0.16	12%	0.00	0.02	12%	0.01	0.01	0	0	4.78			0.03
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	School	2014	2054	1.14	0.16	0.01	0.17	13%	0.00	0.02	13%	0.02	0.01	0	0	3.09			0.01
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	School	2014	2054	1.13	0.16	0.01	0.18	14%	0.00	0.02	14%	0.02	0.01	0	0	2.57			0.01
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	School	2014	2054	1.11	0.15	0.02	0.20	15%	0.00	0.03	15%	0.04	0.01	0	0	1.69			0.02
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	School	2014	2054	1.11	0.15	0.00	0.20	15%	0.00	0.03	15%	0.34	0.01	2	0	0.19			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	School	2014	2054	1.11	0.15	0.00	0.20	16%	0.00	0.03	16%	0.39	0.02	3	0	0.15			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	School	2014	2054	1.10	0.15	0.00	0.21	16%	0.00	0.03	16%	1.26	0.03	9	0	0.04			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	School	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	School	2014	2054	0.02	0.00	0.01	0.01	45%	0.00	0.00	23%	0.01	0.01	0	0	3.35			0.01
Opt-Out/Ex	5000	5002	Energy Star or Better PC	School	2014	2054	0.01	0.00	0.01	0.02	61%	0.00	0.00	39%	0.03	0.02	0	0	1.71			0.01
Opt-Out/Ex	5100	5100	Base Laptop PC	School	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	School	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	4.55			0.00
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	School	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.38	0.12	16	1	0.04			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	School	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	School	2014	2054	0.01	0.00	0.01	0.01	56%	0.00	0.00	56%	0.00	0.00	0	0	36.20			0.01
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	School	2014	2054	0.01	0.00	0.00	0.02	68%	0.00	0.00	62%	0.02	0.00	0	0	2.30			0.00
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	School	2014	2054	0.01	0.00	0.00	0.02	71%	0.00	0.00	65%	0.24	0.01	3	0	0.21			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	School	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	School	2014	2054	0.01	0.00	0.00	0.00	18%	0.00	0.00	18%	0.01	0.01	0	0	5.33			0.00
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	School	2014	2054	0.01	0.00	0.00	0.00	20%	0.00	0.00	19%	0.09	0.02	2	0	0.55			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	School	2014	2054	0.01	0.00	0.00	0.00	26%	0.00	0.00	20%	0.26	0.07	12	1	0.18			0.00
Opt-Out/Ex	5400	5400	Base Copier	School	2014	2054	0.04	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.00	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	School	2014	2054	0.03	0.00	0.00	0.00	6%	0.00	0.00	6%	0.00	0.00	0	0	29.99			0.00
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	School	2014	2054	0.03	0.00	0.00	0.00	10%	0.00	0.00	8%	0.10	0.04	2	1	0.54			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	School	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	School	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	7.76			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	School	2014	2054	0.00	0.00	0.00	0.00	39%	0.00	0.00	32%	0.30	0.11	7	2	0.17			0.00
Opt-Out/Ex	5600	5600	Base Printer	School	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	School	2014	2054	0.02	0.00	0.01	0.01	35%	0.00	0.00	35%	0.00	0.00	0	0	35.66			0.01
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	School	2014	2054	0.01	0.00	0.00	0.01	47%	0.00	0.00	41%	0.06	0.02	1	0	0.79			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	School	2014	2054	1.55	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.55	0.13	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	School	2014	2054	1.39	0.12	0.15	0.15	10%	0.01	0.01	10%	0.00	0.00	0	0	125.92			0.15
Opt-Out/Ex	5700	5702	Data Center Best Practices	School	2014	2054	1.21	0.10	0.18	0.33	21%	0.02	0.03	21%	0.00	0.00	0	0	51.26			0.18
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	School	2014	2054	1.15	0.10	0.07	0.40	26%	0.01	0.03	26%	0.00	0.00	0	0	26.59			0.07
Opt-Out/Ex	6000	6000	Base Water Heating	School	2014	2054	0.54	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.54	0.04	0.00
Opt-Out/Ex	6000	6007	Heat Trap	School	2014	2054	0.51	0.04	0.03	0.03	5%	0.00	0.00	5%	0.05	0.05	1	1	1.31			0.03
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	School	2014	2054	0.50	0.04	0.01	0.04	7%	0.00	0.00	7%	0.10	0.06	1	1	0.69			0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	School	2014	2054	0.45	0.04	0.05	0.09	16%	0.00	0.01	16%	0.10	0.08	1	1	0.64			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	School	2014	2054	0.44	0.03	0.02	0.10	19%	0.00	0.01	19%	0.13	0.09	2	1	0.53			0.00
Opt-Out/Ex	6000	6004	Tankless Water Heater	School	2014	2054	0.40	0.03	0.03	0.14	25%	0.00	0.01	25%	0.17	0.11	2	1	0.43			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	6000	6008	Solar Water Heater	School	2014	2054	0.37	0.03	0.03	0.16	31%	0.00	0.01	31%	0.20	0.13	3	2	0.37			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	School	2014	2054	0.12	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.01	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	School	2014	2054	0.11	0.01	0.01	0.01	10%	0.00	0.00	5%	0.02	0.02	0	0	2.49			0.01
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	School	2014	2054	0.10	0.01	0.01	0.02	16%	0.00	0.00	8%	0.04	0.03	1	1	1.33			0.01
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	School	2014	2054	0.00	0.00	0.00	0.00	30%	0.00	0.00	15%	0.34	0.34	8	8	0.15			0.00
Opt-Out/Ex	7200	7200	Base Oven	School	2014	2054	0.34	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.34	0.03	0.00
Opt-Out/Ex	7200	7201	Convection Oven	School	2014	2054	0.26	0.02	0.08	0.08	23%	0.01	0.01	23%	0.31	0.31	4	4	0.21			0.00
Opt-Out/Ex	7300	7300	Base Fryer	School	2014	2054	0.04	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.00	0.00
Opt-Out/Ex	7400	7400	Base Steamer	School	2014	2054	0.26	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.26	0.02	0.00
Opt-Out/Ex	7400	7401	Efficient Steamer	School	2014	2054	0.10	0.01	0.17	0.17	63%	0.01	0.01	63%	0.11	0.11	1	1	0.62			0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	School	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	School	2014	2054	0.24	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.24	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	School	2014	2054	1.71	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.71	0.15	0.00
Opt-Out/Ex	9500	9501	Xmisc	School	2014	2054	1.71	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Health	2020	2054	16.35	2.49	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	16.35	2.49	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Health	2020	2054	16.01	2.46	0.34	0.34	2%	0.02	0.02	1%	0.03	0.03	0	0	1.90			0.34
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Health	2020	2054	14.79	2.32	1.23	1.57	10%	0.15	0.17	7%	0.04	0.04	0	0	1.63			1.23
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Health	2020	2054	13.25	2.08	1.54	3.11	19%	0.23	0.40	16%	0.05	0.04	0	0	1.25			1.54
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Health	2020	2054	13.09	2.06	0.16	3.26	20%	0.02	0.43	17%	1.07	0.09	7	1	0.06			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Health	2020	2054	12.44	2.04	0.66	3.92	24%	0.02	0.45	18%	0.14	0.10	4	1	0.39			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Health	2020	2054	10.43	1.73	2.00	5.92	36%	0.30	0.76	30%	0.53	0.25	3	2	0.13			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Health	2020	2054	9.54	1.60	0.89	6.81	42%	0.14	0.89	36%	0.44	0.27	3	2	0.15			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Health	2020	2054	1.97	0.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.97	0.30	0.00
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Health	2020	2054	1.77	0.27	0.21	0.21	10%	0.03	0.03	10%	0.05	0.05	0	0	1.09			0.21
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Health	2020	2054	1.73	0.27	0.04	0.24	12%	0.00	0.03	11%	0.06	0.06	1	0	0.80			0.00
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Health	2020	2054	1.60	0.25	0.13	0.37	19%	0.02	0.05	17%	0.10	0.07	1	1	0.69			0.00
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Health	2020	2054	1.39	0.22	0.20	0.58	29%	0.03	0.08	27%	0.13	0.09	1	1	0.47			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Health	2020	2054	1.33	0.21	0.07	0.64	33%	0.01	0.09	30%	0.46	0.13	3	1	0.15			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Health	2020	2054	1.21	0.19	0.11	0.76	38%	0.02	0.11	36%	0.59	0.20	4	1	0.12			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Health	2020	2054	1.15	0.19	0.06	0.82	42%	0.00	0.11	37%	0.33	0.21	9	2	0.17			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Health	2014	2054	0.53	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.53	0.08	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Health	2014	2054	0.49	0.08	0.04	0.04	7%	0.00	0.00	4%	0.01	0.01	0	0	5.10			0.04
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Health	2014	2054	0.45	0.07	0.04	0.08	14%	0.00	0.01	9%	0.12	0.06	1	1	0.58			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Health	2014	2054	0.38	0.07	0.07	0.15	28%	0.00	0.01	12%	0.15	0.11	4	2	0.36			0.00
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Health	2014	2054	0.34	0.06	0.04	0.19	35%	0.01	0.02	20%	0.24	0.14	2	2	0.25			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Health	2020	2054	1.07	0.16	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.07	0.16	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Health	2020	2054	0.18	0.03	0.88	0.88	83%	0.13	0.13	83%	0.01	0.01	0	0	4.74			0.88
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Health	2020	2054	0.38	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.38	0.06	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Health	2020	2054	0.07	0.01	0.31	0.31	82%	0.05	0.05	82%	0.02	0.02	0	0	4.00			0.31
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Health	2020	2054	0.28	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.04	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Health	2020	2054	0.07	0.01	0.21	0.21	75%	0.03	0.03	75%	0.02	0.02	0	0	2.98			0.21
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Health	2020	2054	0.09	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.09	0.01	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Health	2020	2054	0.06	0.01	0.02	0.02	28%	0.00	0.00	28%	0.13	0.13	1	1	0.49			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Health	2020	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Health	2020	2054	0.08	0.01	0.03	0.03	26%	0.00	0.00	26%	0.10	0.10	1	1	0.65			0.00
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Health	2014	2054	0.45	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.07	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Health	2014	2054	0.39	0.06	0.05	0.05	12%	0.01	0.01	12%	0.04	0.04	0	0	1.58			0.05
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Health	2014	2054	1.86	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.86	0.02	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Health	2014	2054	1.81	0.02	0.05	0.05	3%	0.00	0.00	9%	0.09	0.09	3	3	0.78			0.00
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Health	2014	2054	0.87	0.01	0.94	0.99	53%	0.01	0.01	60%	0.19	0.18	20	17	0.34			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Health	2014	2054	0.61	0.00	0.26	1.25	67%	0.00	0.01	72%	1.22	0.40	145	39	0.05			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Health	2014	2054	32.62	17.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	32.62	17.93	0.00
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Health	2014	2054	29.84	16.40	2.78	2.78	9%	1.53	1.53	9%	0.05	0.05	0	0	2.38			2.78
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Health	2014	2054	29.77	16.38	0.07	2.85	9%	0.02	1.55	9%	0.05	0.05	0	0	1.58			0.07
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Health	2014	2054	29.67	16.33	0.10	2.95	9%	0.05	1.60	9%	0.07	0.05	0	0	1.53			0.10
Opt-Out/Ex	2000	2003	EMS - Chiller	Health	2014	2054	26.85	15.97	2.82	5.77	18%	0.36	1.96	11%	0.08	0.06	1	0	0.90			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Health	2014	2054	21.75	13.16	5.10	10.87	33%	2.80	4.77	27%	0.25	0.15	0	0	0.44			0.00
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Health	2014	2054	19.29	12.84	2.46	13.34	41%	0.32	5.09	28%	0.19	0.16	2	0	0.31			0.00
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Health	2014	2054	19.26	12.83	0.03	13.37	41%	0.02	5.10	28%	0.41	0.16	1	0	0.21			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Health	2014	2054	19.20	12.80	0.05	13.42	41%	0.03	5.13	29%	1.07	0.16	2	0	0.08			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Health	2014	2054	18.99	12.68	0.22	13.64	42%	0.12	5.25	29%	4.17	0.22	8	1	0.02			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Health	2014	2054	32.62	17.93	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	32.62	17.93	0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Health	2014	2054	25.12	13.81	7.50	7.50	23%	4.12	4.12	23%	0.04	0.04	0	0	2.50			7.50
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Health	2014	2054	24.66	13.75	0.46	7.96	24%	0.06	4.18	23%	0.10	0.04	1	0	0.51			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Health	2014	2054	24.15	13.68	0.51	8.47	26%	0.07	4.25	24%	0.13	0.05	1	0	0.45			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Health	2014	2054	22.68	12.87	1.47	9.94	30%	0.81	5.06	28%	0.27	0.08	0	0	0.39			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Health	2014	2054	22.56	12.81	0.12	10.06	31%	0.07	5.12	29%	0.35	0.09	1	0	0.25			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Health	2014	2054	22.49	12.77	0.07	10.13	31%	0.04	5.16	29%	0.91	0.09	2	0	0.09			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Health	2014	2054	22.24	12.63	0.25	10.38	32%	0.14	5.30	30%	3.56	0.17	6	0	0.02			0.00
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Health	2014	2054	22.24	12.63	0.00	10.38	32%	0.00	5.30	30%	32188.47	0.18	38,820	0	0.00			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	Health	2014	2054	22.24	12.63	0.00	10.38	32%	0.00	5.30	30%	37474.44	0.22	291,636	0	0.00			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Health	2014	2054	18.27	10.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.27	10.04	0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	2014	2054	16.01	8.80	2.26	2.26	12%	1.24	1.24	12%	0.03	0.03	0	0	2.91			2.26
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Health	2014	2054	18.27	10.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.27	10.04	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Health	2014	2054	6.05	1.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.05	1.23	0.00
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Health	2014	2054	4.15	1.14	1.90	1.90	31%	0.09	0.09	7%	0.02	0.02	0	0	3.36			1.90
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Health	2014	2054	4.08	1.12	0.07	1.97	33%	0.01	0.11	9%	0.04	0.02	0	0	2.18			0.07
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Health	2014	2054	3.69	0.96	0.39	2.36	39%	0.16	0.27	22%	1.21	0.22	3	2	0.08			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Health	2014	2054	21.03	4.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	21.03	4.27	0.00
Opt-Out/Ex	3100	3102	Variable Speed Drive Control, 15 HP	Health	2014	2054	14.44	3.95	6.59	6.59	31%	0.32	0.32	7%	0.01	0.01	0	0	9.73			6.59
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Health	2014	2054	14.41	3.94	0.03	6.63	32%	0.01	0.33	8%	0.02	0.01	0	0	3.86			0.03
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Health	2014	2054	12.31	3.56	2.10	8.72	41%	0.38	0.71	17%	0.04	0.01	0	0	2.09			2.10
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	Health	2014	2054	11.51	3.23	0.80	9.52	45%	0.33	1.04	24%	0.38	0.04	1	0	0.27			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	Health	2014	2054	10.41	2.78	1.10	10.62	50%	0.46	1.49	35%	1.49	0.19	4	1	0.06			0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Health	2014	2054	22.35	4.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	22.35	4.54	0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Health	2014	2054	20.22	3.65	2.13	2.13	10%	0.89	0.89	20%	0.82	0.82	2	2	0.11			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Health	2014	2054	3.02	0.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.02	0.44	0.00
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Health	2014	2054	2.98	0.43	0.05	0.05	2%	0.01	0.01	2%	0.01	0.01	0	0	8.12			0.05
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Health	2014	2054	2.90	0.42	0.07	0.12	4%	0.01	0.02	4%	0.02	0.02	0	0	2.84			0.07
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Health	2014	2054	2.80	0.41	0.10	0.22	7%	0.01	0.03	7%	0.02	0.02	0	0	2.71			0.10
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Health	2014	2054	2.68	0.39	0.12	0.34	11%	0.02	0.05	11%	0.07	0.04	0	0	0.97			0.00
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Health	2014	2054	2.68	0.39	0.00	0.34	11%	0.00	0.05	11%	0.41	0.04	3	0	0.16			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Health	2014	2054	2.67	0.39	0.01	0.35	12%	0.00	0.05	12%	0.47	0.05	3	0	0.13			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Health	2014	2054	0.44	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.44	0.06	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Health	2014	2054	0.24	0.05	0.21	0.21	46%	0.01	0.01	23%	0.03	0.03	0	0	1.93			0.21
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Health	2014	2054	0.16	0.04	0.08	0.28	63%	0.01	0.03	40%	0.06	0.03	0	0	0.92			0.00
Opt-Out/Ex	5100	5100	Base Laptop PC	Health	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Health	2014	2054	0.04	0.01	0.01	0.01	19%	0.00	0.00	19%	0.02	0.02	0	0	2.59			0.01
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Health	2014	2054	0.04	0.01	0.00	0.01	21%	0.00	0.00	21%	2.48	0.22	17	2	0.02			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Health	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Health	2014	2054	0.10	0.01	0.02	0.02	20%	0.00	0.00	20%	0.02	0.02	0	0	2.96			0.02
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Health	2014	2054	0.10	0.01	0.01	0.03	24%	0.00	0.00	22%	0.16	0.04	2	0	0.30			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Health	2014	2054	0.09	0.01	0.01	0.04	30%	0.00	0.00	23%	0.46	0.13	13	1	0.10			0.00
Opt-Out/Ex	5400	5400	Base Copier	Health	2014	2054	0.22	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.22	0.03	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Health	2014	2054	0.18	0.03	0.04	0.04	17%	0.01	0.01	17%	0.00	0.00	0	0	15.02			0.04
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Health	2014	2054	0.17	0.03	0.01	0.05	22%	0.00	0.01	19%	0.20	0.05	3	0	0.27			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Health	2014	2054	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Health	2014	2054	0.03	0.00	0.01	0.01	25%	0.00	0.00	25%	0.01	0.01	0	0	4.40			0.01
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Health	2014	2054	0.03	0.00	0.00	0.02	36%	0.00	0.00	31%	0.48	0.15	7	1	0.11			0.00
Opt-Out/Ex	5600	5600	Base Printer	Health	2014	2054	0.18	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.02	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Health	2014	2054	0.11	0.02	0.06	0.06	35%	0.01	0.01	35%	0.00	0.00	0	0	20.25			0.06
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Health	2014	2054	0.10	0.02	0.02	0.08	44%	0.00	0.01	40%	0.10	0.02	1	0	0.49			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Health	2014	2054	7.01	1.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.01	1.00	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Health	2014	2054	6.31	0.90	0.70	0.70	10%	0.10	0.10	10%	0.00	0.00	0	0	72.24			0.70
Opt-Out/Ex	5700	5702	Data Center Best Practices	Health	2014	2054	5.50	0.78	0.80	1.50	21%	0.11	0.21	21%	0.00	0.00	0	0	29.41			0.80
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Health	2014	2054	5.19	0.74	0.31	1.81	26%	0.04	0.26	26%	0.00	0.00	0	0	15.25			0.31
Opt-Out/Ex	6000	6000	Base Water Heating	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Health	2014	2054	0.74	0.10	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.74	0.10	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Health	2014	2054	0.62	0.10	0.12	0.12	16%	0.01	0.01	8%	0.03	0.03	0	0	2.00			0.12
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Health	2014	2054	0.56	0.09	0.07	0.19	25%	0.00	0.01	12%	0.05	0.03	1	0	1.09			0.07
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Health	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Health	2014	2054	0.01	0.00	0.01	0.01	47%	0.00	0.00	23%	0.43	0.43	6	6	0.12			0.00
Opt-Out/Ex	7200	7200	Base Oven	Health	2014	2054	0.39	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.07	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Health	2014	2054	0.66	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.66	0.13	0.00
Opt-Out/Ex	7300	7301	Efficient Fryer	Health	2014	2054	0.62	0.12	0.04	0.04	6%	0.01	0.01	6%	31.87	31.87	167	167	0.00			0.00
Opt-Out/Ex	7400	7400	Base Steamer	Health	2014	2054	0.47	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.47	0.09	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Health	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Health	2014	2054	50.19	6.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	50.19	6.99	0.00
Opt-Out/Ex	9500	9501	Xmisc	Health	2014	2054	50.19	6.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Lodging	2020	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Lodging	2020	2054	0.02	0.00	0.00	0.00	10%	0.00	0.00	10%	0.02	0.02	0	0	2.86			0.00
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Lodging	2020	2054	0.02	0.00	0.00	0.00	17%	0.00	0.00	17%	0.09	0.05	1	0	0.76			0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Lodging	2020	2054	0.02	0.00	0.00	0.00	17%	0.00	0.00	17%	0.04	0.05	1	0	1.18			0.00
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Lodging	2020	2054	0.02	0.00	0.00	0.01	23%	0.00	0.00	22%	0.07	0.05	1	0	1.02			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Lodging	2020	2054	0.02	0.00	0.00	0.01	36%	0.00	0.00	34%	0.33	0.15	2	1	0.24			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Lodging	2020	2054	0.02	0.00	0.00	0.01	38%	0.00	0.00	35%	0.17	0.15	5	1	0.33			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Lodging	2020	2054	0.01	0.00	0.00	0.01	43%	0.00	0.00	40%	0.29	0.17	2	1	0.28			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Lodging	2020	2054	0.11	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.01	0.00
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Lodging	2020	2054	0.09	0.01	0.01	0.01	10%	0.00	0.00	10%	0.03	0.03	0	0	2.26			0.01
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Lodging	2020	2054	0.08	0.01	0.01	0.02	22%	0.00	0.00	22%	0.06	0.05	0	0	1.08			0.01
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Lodging	2020	2054	0.08	0.01	0.00	0.02	22%	0.00	0.00	22%	0.07	0.05	1	0	0.79			0.00
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Lodging	2020	2054	0.08	0.01	0.01	0.03	28%	0.00	0.00	27%	0.10	0.06	1	0	0.69			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Lodging	2020	2054	0.07	0.01	0.00	0.03	32%	0.00	0.00	30%	0.29	0.08	2	1	0.28			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Lodging	2020	2054	0.07	0.01	0.01	0.04	37%	0.00	0.01	36%	0.37	0.13	3	1	0.22			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Lodging	2020	2054	0.06	0.01	0.00	0.04	39%	0.00	0.01	36%	0.31	0.14	9	1	0.18			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Lodging	2014	2054	0.00	0.00	0.00	0.00	3%	0.00	0.00	1%	0.02	0.02	0	0	2.70			0.00
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Lodging	2014	2054	0.00	0.00	0.00	0.00	13%	0.00	0.00	11%	0.10	0.08	1	1	0.69			0.00
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Lodging	2014	2054	0.00	0.00	0.00	0.00	30%	0.00	0.00	27%	0.23	0.16	2	1	0.30			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Lodging	2014	2054	0.00	0.00	0.00	0.00	35%	0.00	0.00	28%	0.21	0.17	6	1	0.26			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Lodging	2020	2054	0.16	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.16	0.02	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Lodging	2020	2054	0.03	0.00	0.13	0.13	81%	0.02	0.02	81%	0.01	0.01	0	0	8.95			0.13
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Lodging	2020	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Lodging	2020	2054	0.01	0.00	0.05	0.05	79%	0.01	0.01	79%	0.01	0.01	0	0	7.54			0.05
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Lodging	2020	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Lodging	2020	2054	0.01	0.00	0.03	0.03	71%	0.00	0.00	71%	0.01	0.01	0	0	5.55			0.03
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Lodging	2020	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Lodging	2020	2054	0.02	0.00	0.01	0.01	28%	0.00	0.00	28%	0.09	0.09	1	1	0.81			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Lodging	2020	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Lodging	2020	2054	0.03	0.00	0.01	0.01	26%	0.00	0.00	26%	0.07	0.07	0	0	1.07			0.01
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Lodging	2014	2054	0.08	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.01	0.00
Opt-Out/Ex	1800	1801	T5 (240W) (base metal halide)	Lodging	2014	2054	0.06	0.01	0.03	0.03	34%	0.00	0.00	34%	0.02	0.02	0	0	4.03			0.03
Opt-Out/Ex	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Lodging	2014	2054	0.05	0.01	0.00	0.03	39%	0.00	0.00	38%	0.05	0.02	0	0	1.42			0.00
Opt-Out/Ex	1800	1806	Occupancy Sensor, High Bay T5	Lodging	2014	2054	0.05	0.01	0.00	0.03	41%	0.00	0.00	38%	0.05	0.02	2	0	1.07			0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Lodging	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Lodging	2014	2054	0.01	0.00	0.01	0.01	44%	0.00	0.00	44%	0.03	0.03	0	0	2.00			0.01
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Lodging	2014	2054	0.12	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.00	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Lodging	2014	2054	0.10	0.00	0.02	0.02	20%	0.00	0.00	66%	0.06	0.06	2	2	1.26			0.02
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Lodging	2014	2054	0.05	0.00	0.05	0.08	61%	0.00	0.00	108%	0.11	0.10	13	6	0.56			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Lodging	2014	2054	0.03	0.00	0.01	0.09	73%	0.00	0.00	118%	0.74	0.20	95	14	0.09			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Lodging	2014	2054	0.43	0.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.43	0.26	0.00
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Lodging	2014	2054	0.41	0.25	0.02	0.02	4%	0.01	0.01	4%	0.03	0.03	0	0	2.93			0.02
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Lodging	2014	2054	0.37	0.23	0.03	0.05	12%	0.02	0.03	12%	0.05	0.04	0	0	2.23			0.03
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Lodging	2014	2054	0.37	0.23	0.00	0.05	12%	0.00	0.03	12%	0.08	0.04	0	0	1.47			0.00
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Lodging	2014	2054	0.37	0.23	0.00	0.05	12%	0.00	0.03	12%	0.06	0.05	0	0	1.33			0.00
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Lodging	2014	2054	0.24	0.21	0.14	0.19	44%	0.02	0.05	20%	0.06	0.06	0	0	1.00			0.14
Opt-Out/Ex	2000	2003	EMS - Chiller	Lodging	2014	2054	0.22	0.20	0.02	0.21	49%	0.00	0.05	21%	0.13	0.06	1	0	0.53			0.00
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Lodging	2014	2054	0.18	0.18	0.04	0.25	59%	0.02	0.08	30%	0.42	0.12	1	0	0.26			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Lodging	2014	2054	0.17	0.18	0.00	0.25	59%	0.00	0.08	30%	1.89	0.13	3	0	0.05			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Lodging	2014	2054	0.17	0.18	0.00	0.25	59%	0.00	0.08	31%	4.50	0.14	7	0	0.02			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Lodging	2014	2054	1.09	0.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.09	0.65	0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Lodging	2014	2054	1.03	0.62	0.06	0.06	5%	0.03	0.03	5%	0.03	0.03	0	0	2.87			0.06
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Lodging	2014	2054	0.79	0.48	0.24	0.29	27%	0.14	0.18	27%	0.05	0.04	0	0	2.30			0.24
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Lodging	2014	2054	0.78	0.48	0.01	0.31	28%	0.00	0.18	27%	0.08	0.04	1	0	0.65			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Lodging	2014	2054	0.76	0.47	0.02	0.33	30%	0.00	0.18	28%	0.14	0.05	1	0	0.40			0.00
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Lodging	2014	2054	0.71	0.44	0.05	0.38	35%	0.03	0.21	32%	0.31	0.08	1	0	0.36			0.00
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Lodging	2014	2054	0.71	0.44	0.00	0.38	35%	0.00	0.21	32%	0.88	0.09	1	0	0.10			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Lodging	2014	2054	0.70	0.44	0.00	0.38	35%	0.00	0.21	33%	1.20	0.09	2	0	0.07			0.00
Opt-Out/Ex	2100	2109	Economizer - DX	Lodging	2014	2054	0.69	0.44	0.01	0.39	36%	0.00	0.21	33%	1.04	0.12	7	0	0.06			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Lodging	2014	2054	0.69	0.44	0.00	0.39	36%	0.00	0.21	33%	1.75	0.12	12	0	0.04			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Lodging	2014	2054	0.69	0.43	0.01	0.40	37%	0.00	0.22	34%	2.93	0.17	5	0	0.03			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Lodging	2014	2054	0.84	0.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.84	0.51	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	2014	2054	0.74	0.44	0.10	0.10	12%	0.06	0.06	12%	0.03	0.03	0	0	3.96			0.10
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Lodging	2014	2054	0.18	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.11	0.00
Opt-Out/Ex	2300	2301	HE PTAC, EER=9.6, 1 ton	Lodging	2014	2054	0.15	0.09	0.02	0.02	14%	0.01	0.01	14%	0.08	0.08	0	0	1.35			0.02
Opt-Out/Ex	2300	2302	Occupancy Sensor (hotels)	Lodging	2014	2054	0.13	0.07	0.02	0.05	26%	0.02	0.03	30%	0.26	0.16	0	0	0.39			0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Lodging	2014	2054	0.71	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.71	0.15	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Lodging	2014	2054	0.70	0.15	0.01	0.01	2%	0.00	0.00	2%	0.03	0.03	0	0	2.66			0.01
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Lodging	2014	2054	0.60	0.11	0.10	0.11	15%	0.04	0.04	30%	0.97	0.86	2	2	0.10			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Lodging	2014	2054	0.12	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.03	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Lodging	2014	2054	0.11	0.03	0.01	0.01	10%	0.00	0.00	3%	0.02	0.02	0	0	2.25			0.01
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Lodging	2014	2054	0.09	0.02	0.02	0.03	23%	0.01	0.01	28%	1.06	0.59	2	2	0.09			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Lodging	2014	2054	0.40	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.40	0.06	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	Lodging	2014	2054	0.38	0.06	0.02	0.02	4%	0.00	0.00	4%	0.00	0.00	0	0	75.70			0.02
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Lodging	2014	2054	0.38	0.06	0.00	0.02	6%	0.00	0.00	6%	0.00	0.00	0	0	28.53			0.00
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	Lodging	2014	2054	0.37	0.05	0.01	0.03	7%	0.00	0.00	7%	0.00	0.00	0	0	22.27			0.01
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	Lodging	2014	2054	0.37	0.05	0.00	0.03	8%	0.00	0.00	8%	0.01	0.00	0	0	8.87			0.00
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Lodging	2014	2054	0.37	0.05	0.00	0.03	8%	0.00	0.00	8%	0.01	0.00	0	0	7.07			0.00
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Lodging	2014	2054	0.37	0.05	0.00	0.04	9%	0.00	0.01	9%	0.02	0.00	0	0	2.62			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Lodging	2014	2054	0.37	0.05	0.00	0.04	9%	0.00	0.01	9%	0.33	0.00	2	0	0.18			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Lodging	2014	2054	0.36	0.05	0.00	0.04	10%	0.00	0.01	10%	0.35	0.03	2	0	0.15			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Lodging	2014	2054	0.03	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.00	0.00
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Lodging	2014	2054	0.02	0.00	0.01	0.01	21%	0.00	0.00	21%	0.01	0.01	0	0	3.97			0.01
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Lodging	2014	2054	0.01	0.00	0.01	0.01	58%	0.00	0.00	39%	0.02	0.02	0	0	3.06			0.01
Opt-Out/Ex	5100	5100	Base Laptop PC	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Lodging	2014	2054	0.00	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	5.20			0.00
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Lodging	2014	2054	0.00	0.00	0.00	0.00	21%	0.00	0.00	21%	1.24	0.11	8	1	0.04			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Lodging	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Lodging	2014	2054	0.00	0.00	0.00	0.00	56%	0.00	0.00	56%	0.00	0.00	0	0	41.36			0.00
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Lodging	2014	2054	0.00	0.00	0.00	0.01	67%	0.00	0.00	61%	0.02	0.00	0	0	2.92			0.00
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Lodging	2014	2054	0.00	0.00	0.00	0.01	69%	0.00	0.00	64%	0.21	0.01	1	0	0.26			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Lodging	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Lodging	2014	2054	0.00	0.00	0.00	0.00	10%	0.00	0.00	10%	0.01	0.01	0	0	6.66			0.00
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Lodging	2014	2054	0.00	0.00	0.00	0.00	20%	0.00	0.00	15%	0.08	0.05	1	0	0.61			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Lodging	2014	2054	0.00	0.00	0.00	0.00	27%	0.00	0.00	17%	0.22	0.09	6	1	0.21			0.00
Opt-Out/Ex	5400	5400	Base Copier	Lodging	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Lodging	2014	2054	0.01	0.00	0.00	0.00	10%	0.00	0.00	10%	0.00	0.00	0	0	32.75			0.00
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Lodging	2014	2054	0.01	0.00	0.00	0.00	13%	0.00	0.00	12%	0.09	0.03	1	0	0.60			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Lodging	2014	2054	0.00	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	8.85			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Lodging	2014	2054	0.00	0.00	0.00	0.00	39%	0.00	0.00	32%	0.26	0.09	3	1	0.20			0.00
Opt-Out/Ex	5600	5600	Base Printer	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Lodging	2014	2054	0.00	0.00	0.00	0.00	35%	0.00	0.00	35%	0.00	0.00	0	0	40.66			0.00
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Lodging	2014	2054	0.00	0.00	0.00	0.00	47%	0.00	0.00	41%	0.06	0.02	1	0	0.92			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Lodging	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Lodging	2014	2054	0.10	0.02	0.01	0.01	10%	0.00	0.00	10%	0.00	0.00	0	0	116.16			0.01
Opt-Out/Ex	5700	5702	Data Center Best Practices	Lodging	2014	2054	0.09	0.01	0.01	0.02	21%	0.00	0.00	21%	0.00	0.00	0	0	47.29			0.01
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Lodging	2014	2054	0.08	0.01	0.01	0.03	26%	0.00	0.00	26%	0.00	0.00	0	0	24.53			0.01
Opt-Out/Ex	6000	6000	Base Water Heating	Lodging	2014	2054	0.18	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.02	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Lodging	2014	2054	0.17	0.02	0.01	0.01	5%	0.00	0.00	5%	0.01	0.01	0	0	4.77			0.01
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Lodging	2014	2054	0.15	0.02	0.02	0.03	18%	0.00	0.00	18%	0.02	0.02	0	0	3.57			0.02
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Lodging	2014	2054	0.14	0.02	0.01	0.04	21%	0.00	0.00	21%	0.03	0.02	0	0	2.46			0.01
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Lodging	2014	2054	0.14	0.02	0.00	0.04	22%	0.00	0.01	22%	0.03	0.02	0	0	2.14			0.00
Opt-Out/Ex	6000	6004	Tankless Water Heater	Lodging	2014	2054	0.13	0.02	0.01	0.05	28%	0.00	0.01	28%	0.05	0.03	0	0	1.53			0.01
Opt-Out/Ex	6000	6008	Solar Water Heater	Lodging	2014	2054	0.11	0.01	0.02	0.07	38%	0.00	0.01	38%	0.06	0.03	0	0	1.31			0.02
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Lodging	2014	2054	0.11	0.01	0.00	0.07	39%	0.00	0.01	39%	0.07	0.04	1	0	1.02			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Lodging	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Lodging	2014	2054	0.04	0.01	0.01	0.01	16%	0.00	0.00	8%	0.03	0.03	0	0	2.01			0.01
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Lodging	2014	2054	0.03	0.01	0.00	0.01	25%	0.00	0.00	12%	0.05	0.03	1	0	1.10			0.00
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Lodging	2014	2054	0.00	0.00	0.00	0.00	47%	0.00	0.00	23%	0.43	0.43	5	5	0.12			0.00
Opt-Out/Ex	7200	7200	Base Oven	Lodging	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Lodging	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	7400	7400	Base Steamer	Lodging	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Lodging	2014	2054	0.07	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.00	0.00
Opt-Out/Ex	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	2014	2054	0.07	0.00	0.00	0.00	6%	0.00	0.00	0%	0.02	0.02	N/A	N/A	2.43			0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Lodging	2014	2054	0.06	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Lodging	2014	2054	0.79	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.79	0.13	0.00
Opt-Out/Ex	9500	9501	Xmisc	Lodging	2014	2054	0.79	0.13	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Data Centers	2020	2054	17.77	3.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	17.77	3.09	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Data Centers	2020	2054	17.71	3.09	0.05	0.05	0%	0.00	0.00	0%	0.01	0.01	0	0	4.43			0.05
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Data Centers	2020	2054	16.40	2.90	1.31	1.36	8%	0.18	0.19	6%	0.02	0.02	0	0	4.13			1.31
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Data Centers	2020	2054	14.73	2.61	1.67	3.03	17%	0.29	0.48	16%	0.03	0.02	0	0	2.34			1.67
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	2020	2054	13.37	2.37	1.36	4.40	25%	0.24	0.72	23%	0.08	0.04	0	0	0.82			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Data Centers	2020	2054	12.31	2.32	1.06	5.46	31%	0.05	0.77	25%	0.08	0.05	2	0	0.69			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Data Centers	2020	2054	10.33	1.98	1.98	7.44	42%	0.35	1.11	36%	0.34	0.13	2	1	0.22			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Data Centers	2020	2054	9.44	1.83	0.88	8.32	47%	0.15	1.27	41%	0.29	0.14	2	1	0.26			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Data Centers	2020	2054	0.30	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.30	0.05	0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Data Centers	2020	2054	0.30	0.05	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	2.57			0.00
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Data Centers	2020	2054	0.28	0.05	0.02	0.02	8%	0.00	0.00	6%	0.03	0.03	0	0	2.40			0.02
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Data Centers	2020	2054	0.25	0.04	0.03	0.05	17%	0.01	0.01	16%	0.03	0.03	0	0	1.84			0.03
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	2020	2054	0.22	0.04	0.03	0.08	28%	0.01	0.01	26%	0.07	0.05	0	0	0.88			0.00
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Data Centers	2020	2054	0.21	0.04	0.01	0.09	31%	0.00	0.02	30%	0.27	0.07	2	0	0.28			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Data Centers	2020	2054	0.19	0.04	0.02	0.11	37%	0.00	0.02	31%	0.16	0.08	3	1	0.35			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Data Centers	2020	2054	0.17	0.03	0.02	0.13	42%	0.00	0.02	37%	0.37	0.12	2	1	0.20			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Data Centers	2014	2054	0.65	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.65	0.11	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Data Centers	2014	2054	0.64	0.11	0.01	0.01	2%	0.00	0.00	1%	0.00	0.00	0	0	12.46			0.01
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Data Centers	2014	2054	0.59	0.11	0.05	0.06	9%	0.01	0.01	7%	0.04	0.03	0	0	1.91			0.05
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Data Centers	2014	2054	0.53	0.09	0.06	0.12	19%	0.01	0.02	16%	0.11	0.07	1	0	0.57			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Data Centers	2014	2054	0.46	0.09	0.07	0.19	30%	0.00	0.02	19%	0.15	0.10	3	1	0.36			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Data Centers	2020	2054	5.49	0.96	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.49	0.96	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Data Centers	2020	2054	1.08	0.19	4.41	4.41	80%	0.77	0.77	80%	0.01	0.01	0	0	9.39			4.41
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Data Centers	2020	2054	1.98	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.98	0.34	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Data Centers	2020	2054	0.42	0.07	1.56	1.56	79%	0.27	0.27	79%	0.01	0.01	0	0	7.91			1.56
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Data Centers	2020	2054	1.45	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.45	0.25	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Data Centers	2020	2054	0.42	0.07	1.03	1.03	71%	0.18	0.18	71%	0.01	0.01	0	0	5.82			1.03
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Data Centers	2020	2054	1.11	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.11	0.19	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Data Centers	2020	2054	0.80	0.14	0.31	0.31	28%	0.05	0.05	28%	0.07	0.07	0	0	0.83			0.00
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Data Centers	2020	2054	1.42	0.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.42	0.25	0.00

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Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Data Centers	2020	2054	1.05	0.18	0.37	0.37	26%	0.06	0.06	26%	0.06	0.06	0	0	1.11			0.37
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Data Centers	2014	2054	0.28	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.28	0.05	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Data Centers	2014	2054	0.16	0.03	0.12	0.12	44%	0.02	0.02	44%	0.03	0.03	0	0	1.78			0.12
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Data Centers	2014	2054	4.17	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.17	0.05	0.00
Opt-Out/Ex	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Data Centers	2014	2054	2.80	0.02	1.37	1.37	33%	0.03	0.03	66%	0.04	0.04	2	2	1.86			1.37
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Data Centers	2014	2054	1.35	0.00	1.45	2.82	68%	0.02	0.05	101%	0.16	0.10	14	6	0.42			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Data Centers	2014	2054	0.96	0.00	0.38	3.21	77%	0.00	0.05	109%	1.07	0.22	104	14	0.06			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Data Centers	2014	2054	36.02	8.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	36.02	8.87	0.00
Opt-Out/Ex	2000	2010	Ceiling/roof Insulation - Chiller	Data Centers	2014	2054	35.86	8.83	0.16	0.16	0%	0.04	0.04	0%	0.00	0.00	0	0	22.49			0.16
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Data Centers	2014	2054	32.80	8.07	3.06	3.22	9%	0.75	0.79	9%	0.02	0.02	0	0	5.12			3.06
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Data Centers	2014	2054	32.57	8.05	0.23	3.45	10%	0.03	0.82	9%	0.02	0.02	0	0	3.78			0.23
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Data Centers	2014	2054	32.51	8.03	0.06	3.51	10%	0.01	0.83	9%	0.03	0.02	0	0	3.32			0.06
Opt-Out/Ex	2000	2003	EMS - Chiller	Data Centers	2014	2054	31.68	7.99	0.84	4.35	12%	0.05	0.88	10%	0.03	0.02	0	0	2.55			0.84
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Data Centers	2014	2054	29.39	7.86	2.29	6.63	18%	0.13	1.01	11%	0.03	0.02	1	0	1.99			2.29
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Data Centers	2014	2054	29.38	7.85	0.01	6.64	18%	0.00	1.01	11%	0.05	0.02	0	0	1.32			0.01
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Data Centers	2014	2054	23.80	6.48	5.58	12.22	34%	1.37	2.39	27%	0.09	0.05	0	0	0.94			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Data Centers	2014	2054	23.72	6.46	0.07	12.30	34%	0.02	2.40	27%	0.14	0.05	1	0	0.53			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Data Centers	2014	2054	23.65	6.44	0.07	12.37	34%	0.02	2.42	27%	1.13	0.06	5	0	0.06			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Data Centers	2014	2054	20.54	5.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	20.54	5.06	0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Data Centers	2014	2054	15.82	3.89	4.72	4.72	23%	1.16	1.16	23%	0.01	0.01	0	0	5.45			4.72
Opt-Out/Ex	2100	2111	Economizer Repair - DX	Data Centers	2014	2054	15.47	3.74	0.34	5.07	25%	0.15	1.31	26%	0.04	0.02	0	0	1.68			0.34
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Data Centers	2014	2054	15.18	3.73	0.29	5.36	26%	0.02	1.33	26%	0.03	0.02	1	0	1.64			0.29
Opt-Out/Ex	2100	2109	Economizer - DX	Data Centers	2014	2054	13.35	3.62	1.83	7.19	35%	0.10	1.43	28%	0.04	0.02	1	0	1.44			1.83
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Data Centers	2014	2054	13.07	3.56	0.28	7.47	36%	0.07	1.50	30%	0.07	0.03	0	0	1.02			0.28
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Data Centers	2014	2054	12.43	3.52	0.64	8.11	39%	0.04	1.54	30%	0.06	0.03	1	0	1.00			0.64
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Data Centers	2014	2054	11.68	3.33	0.76	8.87	43%	0.19	1.72	34%	0.12	0.04	0	0	0.69			0.00
Opt-Out/Ex	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Data Centers	2014	2054	11.67	3.33	0.00	8.87	43%	0.00	1.72	34%	0.12	0.04	2	0	0.50			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Data Centers	2014	2054	11.57	3.31	0.10	8.97	44%	0.02	1.75	35%	0.16	0.04	1	0	0.45			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Data Centers	2014	2054	11.50	3.29	0.07	9.04	44%	0.02	1.77	35%	1.33	0.05	5	0	0.05			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Data Centers	2014	2054	2.63	0.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.63	0.65	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Data Centers	2014	2054	2.31	0.57	0.33	0.33	12%	0.08	0.08	12%	0.01	0.01	0	0	7.64			0.33
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Data Centers	2014	2054	5.27	1.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.27	1.30	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Data Centers	2014	2054	5.19	1.28	0.09	0.09	2%	0.02	0.02	2%	0.02	0.02	0	0	5.03			0.09
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Data Centers	2014	2054	3.92	1.20	1.27	1.35	26%	0.08	0.10	8%	0.01	0.01	0	0	4.84			1.27
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Data Centers	2014	2054	3.69	1.10	0.23	1.58	30%	0.10	0.20	15%	0.55	0.09	1	1	0.18			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Data Centers	2014	2054	18.33	4.51	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	18.33	4.51	0.00
Opt-Out/Ex	3100	3102	Variable Speed Drive Control, 15 HP	Data Centers	2014	2054	13.84	4.23	4.48	4.48	24%	0.28	0.28	6%	0.00	0.00	0	0	17.82			4.48
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Data Centers	2014	2054	13.76	4.21	0.08	4.57	25%	0.02	0.30	7%	0.01	0.00	0	0	8.36			0.08
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Data Centers	2014	2054	12.86	4.01	0.90	5.47	30%	0.20	0.50	11%	0.02	0.01	0	0	3.68			0.90
Opt-Out/Ex	3100	3103	Air Handler Optimization, 15 HP	Data Centers	2014	2054	11.65	3.93	1.21	6.68	36%	0.08	0.58	13%	0.02	0.01	0	0	2.93			1.21
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	Data Centers	2014	2054	11.36	3.81	0.29	6.97	38%	0.13	0.70	16%	0.21	0.02	0	0	0.51			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	Data Centers	2014	2054	10.70	3.52	0.65	7.62	42%	0.29	0.99	22%	0.65	0.07	1	1	0.15			0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Data Centers	2014	2054	19.47	4.79	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.47	4.79	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Data Centers	2014	2054	17.63	4.68	1.84	1.84	9%	0.11	0.11	2%	0.01	0.01	0	0	4.17			1.84
Opt-Out/Ex	3200	3202	Variable Speed Drive Control, 40 HP	Data Centers	2014	2054	13.32	4.41	4.31	6.15	32%	0.27	0.38	8%	0.02	0.02	0	0	3.20			4.31
Opt-Out/Ex	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Data Centers	2014	2054	13.26	4.40	0.06	6.21	32%	0.01	0.40	8%	0.09	0.02	0	0	0.94			0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Data Centers	2014	2054	12.50	4.06	0.76	6.98	36%	0.34	0.74	15%	0.60	0.08	1	1	0.16			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Data Centers	2014	2054	3.79	0.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.79	0.71	0.00
Opt-Out/Ex	4100	4109	Energy-Star Freezer, glass door	Data Centers	2014	2054	3.79	0.71	0.00	0.00	0%	0.00	0.00	0%	0.00	0.00	0	0	25.72			0.00
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Data Centers	2014	2054	3.72	0.70	0.07	0.07	2%	0.01	0.01	2%	0.00	0.00	0	0	23.61			0.07
Opt-Out/Ex	4100	4107	Energy-Star Freezer, solid door	Data Centers	2014	2054	3.72	0.70	0.00	0.07	2%	0.00	0.01	2%	0.01	0.00	0	0	10.30			0.00
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Data Centers	2014	2054	3.72	0.70	0.00	0.08	2%	0.00	0.01	2%	0.01	0.00	0	0	8.71			0.00
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Data Centers	2014	2054	3.71	0.70	0.00	0.08	2%	0.00	0.01	2%	0.01	0.00	0	0	8.35			0.00
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Data Centers	2014	2054	3.71	0.70	0.00	0.08	2%	0.00	0.02	2%	0.02	0.00	0	0	3.10			0.00
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Data Centers	2014	2054	3.71	0.70	0.00	0.08	2%	0.00	0.02	2%	0.31	0.00	2	0	0.22			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Data Centers	2014	2054	3.71	0.70	0.00	0.08	2%	0.00	0.02	2%	0.36	0.00	2	0	0.18			0.00
Opt-Out/Ex	4100	4101	Strip curtains for walk-ins (self-contained)	Data Centers	2014	2054	3.71	0.70	0.00	0.08	2%	0.00	0.02	2%	8.40	0.04	45	0	0.01			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Data Centers	2014	2054	0.50	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.50	0.09	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Data Centers	2014	2054	0.28	0.07	0.22	0.22	44%	0.02	0.02	23%	0.02	0.02	0	0	3.22			0.22
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Data Centers	2014	2054	0.22	0.06	0.06	0.28	56%	0.01	0.03	35%	0.03	0.02	0	0	1.78			0.06
Opt-Out/Ex	5100	5100	Base Laptop PC	Data Centers	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Data Centers	2014	2054	0.03	0.01	0.01	0.01	19%	0.00	0.00	19%	0.01	0.01	0	0	4.64			0.01
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Data Centers	2014	2054	0.03	0.00	0.00	0.01	21%	0.00	0.00	21%	1.46	0.13	8	1	0.04			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Data Centers	2014	2054	0.21	0.04	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.21	0.04	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Data Centers	2014	2054	0.12	0.02	0.09	0.09	43%	0.02	0.02	43%	0.00	0.00	0	0	48.34			0.09
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Data Centers	2014	2054	0.10	0.02	0.01	0.10	50%	0.00	0.02	46%	0.01	0.00	0	0	3.75			0.01
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Data Centers	2014	2054	0.10	0.02	0.01	0.11	54%	0.00	0.02	50%	0.16	0.01	1	0	0.35			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Data Centers	2014	2054	0.13	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.02	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Data Centers	2014	2054	0.11	0.02	0.02	0.02	13%	0.00	0.00	13%	0.01	0.01	0	0	5.74			0.02
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Data Centers	2014	2054	0.11	0.02	0.01	0.03	19%	0.00	0.00	16%	0.10	0.04	1	0	0.52			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Data Centers	2014	2054	0.10	0.02	0.01	0.03	25%	0.00	0.00	18%	0.29	0.10	6	1	0.17			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	5400	5400	Base Copier	Data Centers	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Data Centers	2014	2054	0.10	0.02	0.01	0.01	10%	0.00	0.00	10%	0.00	0.00	0	0	29.08			0.01
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Data Centers	2014	2054	0.10	0.02	0.00	0.02	14%	0.00	0.00	12%	0.11	0.03	1	0	0.49			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Data Centers	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	7.88			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Data Centers	2014	2054	0.01	0.00	0.00	0.01	38%	0.00	0.00	32%	0.32	0.11	4	1	0.16			0.00
Opt-Out/Ex	5600	5600	Base Printer	Data Centers	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Data Centers	2014	2054	0.03	0.00	0.02	0.02	35%	0.00	0.00	35%	0.00	0.00	0	0	36.22			0.02
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Data Centers	2014	2054	0.02	0.00	0.00	0.02	46%	0.00	0.00	41%	0.07	0.02	1	0	0.76			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Data Centers	2014	2054	992.35	172.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	992.35	172.65	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Data Centers	2014	2054	893.12	155.39	99.24	99.24	10%	17.27	17.27	10%	0.00	0.00	0	0	129.50			99.24
Opt-Out/Ex	5700	5702	Data Center Best Practices	Data Centers	2014	2054	779.49	135.62	113.63	212.86	21%	19.77	37.03	21%	0.00	0.00	0	0	52.72			113.63
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Data Centers	2014	2054	735.84	128.02	43.65	256.51	26%	7.59	44.63	26%	0.00	0.00	0	0	27.34			43.65
Opt-Out/Ex	6000	6000	Base Water Heating	Data Centers	2014	2054	0.47	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.47	0.08	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Data Centers	2014	2054	0.45	0.08	0.02	0.02	5%	0.00	0.00	5%	0.08	0.08	0	0	0.88			0.00
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Data Centers	2014	2054	0.44	0.08	0.01	0.03	7%	0.00	0.01	7%	0.16	0.10	1	1	0.48			0.00
Opt-Out/Ex	6000	6004	Tankless Water Heater	Data Centers	2014	2054	0.40	0.07	0.03	0.07	14%	0.01	0.01	14%	0.24	0.17	1	1	0.34			0.00
Opt-Out/Ex	6000	6008	Solar Water Heater	Data Centers	2014	2054	0.19	0.03	0.21	0.28	60%	0.04	0.05	60%	0.28	0.26	2	1	0.29			0.00
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Data Centers	2014	2054	0.19	0.03	0.00	0.28	60%	0.00	0.05	60%	0.62	0.26	4	1	0.12			0.00
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Data Centers	2014	2054	0.17	0.03	0.01	0.30	63%	0.00	0.05	63%	0.63	0.28	4	2	0.11			0.00
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Data Centers	2014	2054	0.17	0.03	0.01	0.30	64%	0.00	0.05	64%	1.89	0.30	11	2	0.04			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Data Centers	2014	2054	0.31	0.05	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.31	0.05	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Data Centers	2014	2054	0.26	0.05	0.05	0.05	16%	0.00	0.00	8%	0.01	0.01	0	0	5.94			0.05
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Data Centers	2014	2054	0.23	0.05	0.03	0.07	24%	0.00	0.01	12%	0.02	0.01	0	0	3.27			0.03
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Data Centers	2014	2054	0.01	0.00	0.01	0.01	44%	0.00	0.00	23%	0.12	0.12	1	1	0.45			0.00
Opt-Out/Ex	7200	7200	Base Oven	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7400	7400	Base Steamer	Data Centers	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Data Centers	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Data Centers	2014	2054	0.58	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.58	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Data Centers	2014	2054	4.70	0.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.70	0.82	0.00
Opt-Out/Ex	9500	9501	Xmisc	Data Centers	2014	2054	4.70	0.82	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
Opt-Out/Ex	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Misc	2020	2054	9.64	1.64	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	9.64	1.64	0.00
Opt-Out/Ex	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Misc	2020	2054	9.53	1.63	0.11	0.11	1%	0.01	0.01	1%	0.01	0.01	0	0	4.07			0.11
Opt-Out/Ex	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Misc	2020	2054	8.81	1.53	0.72	0.83	9%	0.10	0.11	6%	0.02	0.02	0	0	3.62			0.72
Opt-Out/Ex	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Misc	2020	2054	7.89	1.37	0.91	1.75	18%	0.15	0.26	16%	0.02	0.02	0	0	3.01			0.91
Opt-Out/Ex	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Misc	2020	2054	7.80	1.36	0.09	1.84	19%	0.02	0.28	17%	0.45	0.04	3	0	0.13			0.00
Opt-Out/Ex	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Misc	2020	2054	7.62	1.35	0.18	2.02	21%	0.01	0.28	17%	0.07	0.04	2	0	0.85			0.00
Opt-Out/Ex	1030	1034	ROB 4L4' LED Tube, 2020	Misc	2020	2054	6.39	1.14	1.23	3.25	34%	0.21	0.49	30%	0.22	0.11	1	1	0.32			0.00
Opt-Out/Ex	1030	1035	LED Troffer (base 4L4'T8), 2020	Misc	2020	2054	5.85	1.05	0.55	3.79	39%	0.09	0.59	36%	0.18	0.12	1	1	0.39			0.00
Opt-Out/Ex	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Misc	2020	2054	7.38	1.25	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.38	1.25	0.00
Opt-Out/Ex	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Misc	2020	2054	7.29	1.25	0.09	0.09	1%	0.01	0.01	1%	0.02	0.02	0	0	3.31			0.09
Opt-Out/Ex	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Misc	2020	2054	6.74	1.17	0.55	0.64	9%	0.07	0.08	6%	0.02	0.02	0	0	2.94			0.55
Opt-Out/Ex	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Misc	2020	2054	6.11	1.06	0.64	1.28	17%	0.11	0.19	15%	0.03	0.02	0	0	2.40			0.64
Opt-Out/Ex	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Misc	2020	2054	5.33	0.93	0.78	2.05	28%	0.13	0.32	26%	0.05	0.03	0	0	1.15			0.78
Opt-Out/Ex	1130	1134	ROB 2L4' LED Tube, 2020	Misc	2020	2054	5.07	0.89	0.26	2.31	31%	0.04	0.37	29%	0.19	0.05	1	0	0.36			0.00
Opt-Out/Ex	1130	1135	LED Troffer (base 2L4'T8), 2020	Misc	2020	2054	4.64	0.81	0.43	2.74	37%	0.07	0.44	35%	0.25	0.08	1	1	0.28			0.00
Opt-Out/Ex	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Misc	2020	2054	4.53	0.81	0.11	2.85	39%	0.00	0.44	35%	0.15	0.09	4	1	0.37			0.00
Opt-Out/Ex	1200	1200	Base Other Fluorescent Fixture	Misc	2014	2054	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00
Opt-Out/Ex	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Misc	2014	2054	0.09	0.02	0.01	0.01	7%	0.00	0.00	3%	0.01	0.01	0	0	5.21			0.01
Opt-Out/Ex	1200	1201	ROB High Performance T8 (base other fluorescent)	Misc	2014	2054	0.09	0.02	0.01	0.01	14%	0.00	0.00	10%	0.08	0.04	0	0	0.78			0.00
Opt-Out/Ex	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Misc	2014	2054	0.08	0.02	0.01	0.02	20%	0.00	0.00	12%	0.08	0.05	2	1	0.72			0.00
Opt-Out/Ex	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Misc	2014	2054	0.07	0.01	0.01	0.03	26%	0.00	0.00	17%	0.11	0.07	1	1	0.63			0.00
Opt-Out/Ex	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Misc	2020	2054	11.75	1.99	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	11.75	1.99	0.00
Opt-Out/Ex	1330	1332	LEDs (base incandescent flood) 2020	Misc	2020	2054	2.48	0.42	9.27	9.27	79%	1.57	1.57	79%	0.00	0.00	0	0	13.91			9.27
Opt-Out/Ex	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Misc	2020	2054	4.23	0.72	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.23	0.72	0.00
Opt-Out/Ex	1430	1432	LEDs (base incandescent A-line 72W) 2020	Misc	2020	2054	0.97	0.16	3.26	3.26	77%	0.55	0.55	77%	0.01	0.01	0	0	11.70			3.26
Opt-Out/Ex	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Misc	2020	2054	3.11	0.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	3.11	0.53	0.00
Opt-Out/Ex	1530	1532	LEDs (base incandescent A-line 53W) 2020	Misc	2020	2054	0.96	0.16	2.15	2.15	69%	0.37	0.37	69%	0.01	0.01	0	0	8.55			2.15
Opt-Out/Ex	1630	1630	Base CFL 18W to screw-in replacement 2020	Misc	2020	2054	1.90	0.32	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.90	0.32	0.00
Opt-Out/Ex	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Misc	2020	2054	1.38	0.23	0.53	0.53	28%	0.09	0.09	28%	0.05	0.05	0	0	1.15			0.53
Opt-Out/Ex	1730	1730	Base CFL 23W to screw-in replacement 2020	Misc	2020	2054	2.43	0.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.43	0.41	0.00
Opt-Out/Ex	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Misc	2020	2054	1.80	0.31	0.63	0.63	26%	0.11	0.11	26%	0.04	0.04	0	0	1.53			0.63
Opt-Out/Ex	1800	1800	BaseMetal Halide, 465W	Misc	2014	2054	4.40	0.75	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	4.40	0.75	0.00
Opt-Out/Ex	1800	1801	T5 (240W) (base metal halide)	Misc	2014	2054	2.91	0.49	1.49	1.49	34%	0.25	0.25	34%	0.01	0.01	0	0	8.49			1.49
Opt-Out/Ex	1800	1806	Occupancy Sensor, High Bay T5	Misc	2014	2054	2.81	0.49	0.10	1.58	36%	0.00	0.26	34%	0.02	0.01	1	0	2.28			0.10
Opt-Out/Ex	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Misc	2014	2054	2.60	0.46	0.21	1.79	41%	0.03	0.28	38%	0.05	0.01	0	0	1.56			0.21
Opt-Out/Ex	1850	1850	Base CFL Exit Sign	Misc	2014	2054	0.52	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.52	0.09	0.00
Opt-Out/Ex	1850	1851	LED Exit Sign	Misc	2014	2054	0.28	0.05	0.24	0.24	46%	0.04	0.04	46%	0.03	0.03	0	0	2.16			0.24
Opt-Out/Ex	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Misc	2014	2054	7.31	0.57	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.31	0.57	0.00
Opt-Out/Ex	1900	1902	LED Outdoor Area Lighting	Misc	2014	2054	3.52	0.27	3.79	3.79	52%	0.29	0.29	52%	0.08	0.08	1	1	0.84			0.00
Opt-Out/Ex	1900	1903	Bi-Level LED Outdoor Lighting	Misc	2014	2054	2.49	0.20	1.03	4.82	66%	0.07	0.37	65%	0.54	0.18	8	2	0.13			0.00
Opt-Out/Ex	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Misc	2014	2054	2.28	1.76	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.28	1.76	0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	2000	2010	Ceiling/roof Insulation - Chiller	Misc	2014	2054	2.25	1.74	0.03	0.03	1%	0.02	0.02	1%	0.02	0.02	0	0	6.46			0.03
Opt-Out/Ex	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Misc	2014	2054	2.06	1.59	0.19	0.22	10%	0.15	0.17	10%	0.04	0.04	0	0	3.32			0.19
Opt-Out/Ex	2000	2013	High Efficiency Chiller Motors	Misc	2014	2054	2.06	1.59	0.00	0.22	10%	0.00	0.17	10%	0.06	0.04	0	0	2.14			0.00
Opt-Out/Ex	2000	2006	VSD for Chiller Pumps and Towers	Misc	2014	2054	1.98	1.56	0.08	0.30	13%	0.03	0.20	12%	0.05	0.04	0	0	1.88			0.08
Opt-Out/Ex	2000	2003	EMS - Chiller	Misc	2014	2054	1.80	1.53	0.17	0.48	21%	0.03	0.24	14%	0.07	0.05	0	0	1.02			0.17
Opt-Out/Ex	2000	2012	Duct Testing/Sealing	Misc	2014	2054	1.47	1.27	0.33	0.81	35%	0.26	0.49	28%	0.21	0.12	0	0	0.59			0.00
Opt-Out/Ex	2000	2002	Window Film (Standard) - Chiller	Misc	2014	2054	1.46	1.26	0.01	0.82	36%	0.01	0.50	28%	0.76	0.12	1	0	0.13			0.00
Opt-Out/Ex	2000	2004	Cool Roof - Chiller	Misc	2014	2054	1.46	1.26	0.00	0.82	36%	0.00	0.50	29%	3.29	0.13	4	0	0.03			0.00
Opt-Out/Ex	2000	2011	Duct/Pipe Insulation - Chiller	Misc	2014	2054	1.44	1.25	0.02	0.84	37%	0.02	0.52	29%	3.97	0.22	5	0	0.02			0.00
Opt-Out/Ex	2000	2008	New Economizer - Chiller	Misc	2014	2054	1.44	1.25	0.00	0.84	37%	0.00	0.52	29%	36634.21	0.28	184,662	0	0.00			0.00
Opt-Out/Ex	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Misc	2014	2054	53.61	41.46	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	53.61	41.46	0.00
Opt-Out/Ex	2100	2113	Ceiling/roof Insulation - DX	Misc	2014	2054	53.61	41.46	0.00	0.00	0%	0.00	0.00	0%	0.02	0.02	0	0	6.63			0.00
Opt-Out/Ex	2100	2102	DX Packaged System, EER=13.4, 10 tons	Misc	2014	2054	41.28	31.92	12.33	12.33	23%	9.53	9.54	23%	0.03	0.03	0	0	3.51			12.33
Opt-Out/Ex	2100	2112	Aerosol Duct Sealing - DX	Misc	2014	2054	38.85	30.04	2.43	14.76	28%	1.88	11.41	28%	0.21	0.06	0	0	0.58			0.00
Opt-Out/Ex	2100	2106	Prog. Thermostat - DX	Misc	2014	2054	38.11	29.90	0.74	15.50	29%	0.15	11.56	28%	0.12	0.07	1	0	0.51			0.00
Opt-Out/Ex	2100	2108	Optimize Controls - DX	Misc	2014	2054	37.47	29.77	0.63	16.13	30%	0.13	11.69	28%	0.13	0.07	1	0	0.44			0.00
Opt-Out/Ex	2100	2115	Window Film (Standard) - DX	Misc	2014	2054	37.33	29.66	0.15	16.28	30%	0.11	11.80	28%	0.59	0.07	1	0	0.17			0.00
Opt-Out/Ex	2100	2107	Cool Roof - DX	Misc	2014	2054	37.25	29.60	0.07	16.35	31%	0.06	11.86	29%	3.03	0.09	4	0	0.03			0.00
Opt-Out/Ex	2100	2114	Duct/Pipe Insulation - DX	Misc	2014	2054	37.02	29.42	0.24	16.59	31%	0.18	12.04	29%	3.62	0.14	5	0	0.03			0.00
Opt-Out/Ex	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Misc	2014	2054	6.61	5.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.61	5.11	0.00
Opt-Out/Ex	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	2014	2054	5.79	4.48	0.82	0.82	12%	0.63	0.63	12%	0.04	0.04	0	0	3.28			0.82
Opt-Out/Ex	2300	2300	Base PTAC, EER=8.3, 1 ton	Misc	2014	2054	6.61	5.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.61	5.11	0.00
Opt-Out/Ex	2300	2301	HE PTAC, EER=9.6, 1 ton	Misc	2014	2054	5.72	4.42	0.90	0.90	14%	0.69	0.69	14%	0.08	0.08	0	0	1.43			0.90
Opt-Out/Ex	2300	2302	Occupancy Sensor (hotels)	Misc	2014	2054	4.86	3.56	0.86	1.76	27%	0.86	1.55	30%	0.26	0.17	0	0	0.43			0.00
Opt-Out/Ex	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Misc	2014	2054	19.47	5.53	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.47	5.53	0.00
Opt-Out/Ex	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Misc	2014	2054	19.13	5.44	0.34	0.34	2%	0.10	0.10	2%	0.06	0.06	0	0	1.40			0.34
Opt-Out/Ex	3000	3002	Variable Speed Drive Control, 5 HP	Misc	2014	2054	13.38	5.03	5.75	6.09	31%	0.41	0.50	9%	0.05	0.05	1	1	1.33			5.75
Opt-Out/Ex	3000	3003	Demand Controlled Ventilation	Misc	2014	2054	13.12	4.89	0.26	6.35	33%	0.14	0.65	12%	1.56	0.11	3	1	0.07			0.00
Opt-Out/Ex	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Misc	2014	2054	15.52	4.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.52	4.41	0.00
Opt-Out/Ex	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Misc	2014	2054	13.28	3.84	2.24	2.24	14%	0.57	0.57	13%	0.03	0.03	0	0	2.68			2.24
Opt-Out/Ex	3100	3103	Air Handler Optimization, 15 HP	Misc	2014	2054	12.37	3.77	0.91	3.15	20%	0.06	0.64	14%	0.04	0.03	1	0	1.41			0.91
Opt-Out/Ex	3100	3102	Variable Speed Drive Control, 15 HP	Misc	2014	2054	8.65	3.51	3.72	6.87	44%	0.26	0.90	20%	0.07	0.05	1	0	0.98			0.00
Opt-Out/Ex	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Misc	2014	2054	8.52	3.47	0.13	7.00	45%	0.04	0.94	21%	0.21	0.05	1	0	0.43			0.00
Opt-Out/Ex	3100	3105	Energy Recovery Ventilation (ERV)	Misc	2014	2054	8.41	3.41	0.11	7.11	46%	0.06	1.00	23%	0.43	0.06	1	0	0.26			0.00
Opt-Out/Ex	3100	3107	Demand Controlled Ventilation	Misc	2014	2054	8.25	3.32	0.16	7.27	47%	0.09	1.09	25%	1.97	0.10	4	1	0.05			0.00
Opt-Out/Ex	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Misc	2014	2054	12.31	3.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	12.31	3.50	0.00
Opt-Out/Ex	3200	3203	Air Handler Optimization, 40 HP	Misc	2014	2054	11.47	3.44	0.84	0.84	7%	0.06	0.06	2%	0.03	0.03	0	0	1.65			0.84
Opt-Out/Ex	3200	3202	Variable Speed Drive Control, 40 HP	Misc	2014	2054	8.02	3.19	3.45	4.29	35%	0.24	0.30	9%	0.10	0.09	1	1	0.63			0.00
Opt-Out/Ex	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Misc	2014	2054	7.99	3.19	0.03	4.33	35%	0.01	0.31	9%	0.51	0.09	2	1	0.17			0.00
Opt-Out/Ex	3200	3204	Demand Controlled Ventilation	Misc	2014	2054	7.83	3.10	0.16	4.48	36%	0.09	0.40	11%	1.65	0.15	3	2	0.06			0.00
Opt-Out/Ex	4000	4000	Base Built-Up Refrigeration System	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	4100	4100	Base Self-Contained Refrigeration	Misc	2014	2054	13.77	2.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	13.77	2.07	0.00
Opt-Out/Ex	4100	4103	Night covers for display cases (self-contained)	Misc	2014	2054	12.53	1.89	1.24	1.24	9%	0.19	0.19	9%	0.00	0.00	0	0	39.56			1.24
Opt-Out/Ex	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Misc	2014	2054	12.35	1.86	0.18	1.42	10%	0.03	0.21	10%	0.00	0.00	0	0	34.58			0.18
Opt-Out/Ex	4100	4108	Energy-Star Refrigerator, glass door	Misc	2014	2054	12.19	1.83	0.17	1.58	11%	0.02	0.24	11%	0.01	0.00	0	0	11.71			0.17
Opt-Out/Ex	4100	4106	Energy-Star Refrigerator, solid door	Misc	2014	2054	11.76	1.77	0.42	2.01	15%	0.06	0.30	15%	0.01	0.00	0	0	11.40			0.42
Opt-Out/Ex	4100	4110	Energy Star Ice Machines	Misc	2014	2054	11.72	1.76	0.05	2.05	15%	0.01	0.31	15%	0.02	0.00	0	0	4.07			0.05
Opt-Out/Ex	4100	4112	Reach-in unit occupancy sensors	Misc	2014	2054	11.72	1.76	0.00	2.05	15%	0.00	0.31	15%	0.31	0.00	2	0	0.21			0.00
Opt-Out/Ex	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Misc	2014	2054	11.71	1.76	0.01	2.07	15%	0.00	0.31	15%	0.35	0.00	2	0	0.17			0.00
Opt-Out/Ex	5000	5000	Base Desktop PC	Misc	2014	2054	0.48	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.48	0.07	0.00
Opt-Out/Ex	5000	5001	PC Network Power Management Enabling	Misc	2014	2054	0.26	0.06	0.21	0.21	45%	0.02	0.02	23%	0.01	0.01	0	0	4.18			0.21
Opt-Out/Ex	5000	5002	Energy Star or Better PC	Misc	2014	2054	0.18	0.04	0.08	0.30	62%	0.01	0.03	40%	0.03	0.02	0	0	2.12			0.08
Opt-Out/Ex	5100	5100	Base Laptop PC	Misc	2014	2054	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00
Opt-Out/Ex	5100	5102	Energy Star or Better Laptop	Misc	2014	2054	0.01	0.00	0.00	0.00	19%	0.00	0.00	19%	0.01	0.01	0	0	5.80			0.00
Opt-Out/Ex	5100	5101	Laptop Network Power Management Enabling	Misc	2014	2054	0.01	0.00	0.00	0.00	21%	0.00	0.00	21%	1.13	0.10	7	1	0.05			0.00
Opt-Out/Ex	5200	5200	Base Monitor, CRT	Misc	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	5200	5201	Energy Star or Better Monitor - CRT	Misc	2014	2054	0.02	0.00	0.02	0.02	56%	0.00	0.00	56%	0.00	0.00	0	0	46.17			0.02
Opt-Out/Ex	5200	5202	Monitor Power Management Enabling - CRT	Misc	2014	2054	0.01	0.00	0.00	0.03	67%	0.00	0.00	62%	0.02	0.00	0	0	3.02			0.00
Opt-Out/Ex	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Misc	2014	2054	0.01	0.00	0.00	0.03	70%	0.00	0.00	64%	0.19	0.01	1	0	0.28			0.00
Opt-Out/Ex	5300	5300	Base Monitor, LCD	Misc	2014	2054	0.06	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.06	0.01	0.00
Opt-Out/Ex	5300	5301	Energy Star or Better Monitor - LCD	Misc	2014	2054	0.05	0.01	0.01	0.01	18%	0.00	0.00	18%	0.01	0.01	0	0	6.77			0.01
Opt-Out/Ex	5300	5302	Monitor Power Management Enabling - LCD	Misc	2014	2054	0.05	0.01	0.00	0.01	21%	0.00	0.00	19%	0.07	0.02	1	0	0.68			0.00
Opt-Out/Ex	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Misc	2014	2054	0.05	0.01	0.00	0.02	27%	0.00	0.00	21%	0.21	0.06	5	1	0.22			0.00
Opt-Out/Ex	5400	5400	Base Copier	Misc	2014	2054	0.11	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.11	0.02	0.00
Opt-Out/Ex	5400	5401	Energy Star or Better Copier	Misc	2014	2054	0.10	0.01	0.01	0.01	13%	0.00	0.00	13%	0.00	0.00	0	0	35.00			0.01
Opt-Out/Ex	5400	5402	Copier Power Management Enabling	Misc	2014	2054	0.09	0.01	0.00	0.02	18%	0.00	0.00	16%	0.09	0.02	1	0	0.61			0.00
Opt-Out/Ex	5500	5500	Base Multifunction	Misc	2014	2054	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00
Opt-Out/Ex	5500	5502	ENERGY STAR Multi-Function Device	Misc	2014	2054	0.01	0.00	0.00	0.00	25%	0.00	0.00	25%	0.01	0.01	0	0	9.86			0.00
Opt-Out/Ex	5500	5501	Multifunction Power Management Enabling	Misc	2014	2054	0.01	0.00	0.00	0.01	37%	0.00	0.00	31%	0.23	0.08	3	1	0.22			0.00
Opt-Out/Ex	5600	5600	Base Printer	Misc	2014	2054	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00
Opt-Out/Ex	5600	5602	ENERGY STAR Printer	Misc	2014	2054	0.03	0.00	0.02	0.02	35%	0.00	0.00	35%	0.00	0.00	0	0	45.31			0.02
Opt-Out/Ex	5600	5601	Printer Power Management Enabling	Misc	2014	2054	0.02	0.00	0.00	0.02	45%	0.00	0.00	40%	0.05	0.01	1	0	1.02			0.00
Opt-Out/Ex	5700	5700	Base Data Center/Server Room	Misc	2014	2054	5.32	0.81	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.32	0.81	0.00
Opt-Out/Ex	5700	5701	Data Center Improved Operations	Misc	2014	2054	4.79	0.73	0.53	0.53	10%	0.08	0.08	10%	0.00	0.00	0	0	117.62			0.53

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
Opt-Out/Ex	5700	5702	Data Center Best Practices	Misc	2014	2054	4.18	0.63	0.61	1.14	21%	0.09	0.17	21%	0.00	0.00	0	0	47.88			0.61
Opt-Out/Ex	5700	5703	Data Center State of the Art practices	Misc	2014	2054	3.95	0.60	0.23	1.38	26%	0.04	0.21	26%	0.00	0.00	0	0	24.83			0.23
Opt-Out/Ex	6000	6000	Base Water Heating	Misc	2014	2054	0.77	0.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.77	0.11	0.00
Opt-Out/Ex	6000	6007	Heat Trap	Misc	2014	2054	0.73	0.11	0.04	0.04	5%	0.01	0.01	5%	0.01	0.01	0	0	4.47			0.04
Opt-Out/Ex	6000	6002	High Efficiency Water Heater (electric)	Misc	2014	2054	0.72	0.11	0.01	0.05	7%	0.00	0.01	7%	0.03	0.02	0	0	2.40			0.01
Opt-Out/Ex	6000	6004	Tankless Water Heater	Misc	2014	2054	0.66	0.10	0.05	0.11	14%	0.01	0.02	14%	0.05	0.03	0	0	1.71			0.05
Opt-Out/Ex	6000	6003	Hot Water Pipe Insulation	Misc	2014	2054	0.65	0.10	0.01	0.12	16%	0.00	0.02	16%	0.05	0.03	0	0	1.33			0.01
Opt-Out/Ex	6000	6006	Heat Recovery Unit	Misc	2014	2054	0.63	0.09	0.02	0.14	18%	0.00	0.02	18%	0.05	0.04	0	0	1.24			0.02
Opt-Out/Ex	6000	6001	Demand controlled circulating systems	Misc	2014	2054	0.60	0.09	0.02	0.17	22%	0.00	0.02	22%	0.15	0.05	1	0	0.48			0.00
Opt-Out/Ex	7000	7000	Base Refrigerated Vending Machines	Misc	2014	2054	0.12	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.12	0.02	0.00
Opt-Out/Ex	7000	7001	Vending Misers (Refrigerated units)	Misc	2014	2054	0.10	0.02	0.02	0.02	16%	0.00	0.00	8%	0.03	0.03	0	0	1.99			0.02
Opt-Out/Ex	7000	7002	Vending Misers (Refrigerated glass-front units)	Misc	2014	2054	0.09	0.02	0.01	0.03	25%	0.00	0.00	12%	0.05	0.03	1	0	1.09			0.01
Opt-Out/Ex	7100	7100	Base Non-Refrigerated Vending Machines	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	7100	7101	Vending Misers (Non-Refrigerated)	Misc	2014	2054	0.00	0.00	0.00	0.00	46%	0.00	0.00	23%	0.44	0.44	5	5	0.12			0.00
Opt-Out/Ex	7200	7200	Base Oven	Misc	2014	2054	0.56	0.09	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.56	0.09	0.00
Opt-Out/Ex	7300	7300	Base Fryer	Misc	2014	2054	1.16	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.16	0.19	0.00
Opt-Out/Ex	7300	7301	Efficient Fryer	Misc	2014	2054	1.08	0.18	0.07	0.07	6%	0.01	0.01	6%	1.65	1.65	10	10	0.04			0.00
Opt-Out/Ex	7400	7400	Base Steamer	Misc	2014	2054	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00
Opt-Out/Ex	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Misc	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
Opt-Out/Ex	8100	8100	Base Heating, Other Electric	Misc	2014	2054	5.50	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.50	0.00	0.00
Opt-Out/Ex	9500	9500	Base Miscellaneous	Misc	2014	2054	44.56	7.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	44.56	7.41	0.00
Opt-Out/Ex	9500	9501	Xmisc	Misc	2014	2054	44.56	7.41	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00
VA	1030	1030	Base Fluorescent Fixture, 4L4'T8, 1EB, 2020	Non-Jurisdictional	2020	2054	1,337.88	237.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1,337.88	237.97	0.00
VA	1030	1036	Lighting Control Tuneup (base 4L4'T8), 2020	Non-Jurisdictional	2020	2054	1,323.24	236.69	14.64	14.64	1%	1.29	1.29	1%	0.01	0.01	0	0	4.40			14.64
VA	1030	1038	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Non-Jurisdictional	2020	2054	1,223.50	222.57	99.75	114.38	9%	14.12	15.41	6%	0.02	0.02	0	0	3.95			99.75
VA	1030	1031	ROB 4L4' High Performance T8 (86 W), 2020	Non-Jurisdictional	2020	2054	1,097.81	200.21	125.69	240.07	18%	22.36	37.77	16%	0.02	0.02	0	0	2.95			125.69
VA	1030	1032	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Non-Jurisdictional	2020	2054	958.13	175.36	139.68	379.75	28%	24.84	62.61	26%	0.04	0.03	0	0	1.41			139.68
VA	1030	1037	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Non-Jurisdictional	2020	2054	915.80	173.51	42.33	422.08	32%	1.85	64.46	27%	0.07	0.03	2	0	0.79			0.00
VA	1030	1034	ROB 4L4' LED Tube, 2020	Non-Jurisdictional	2020	2054	768.24	147.27	147.56	569.64	43%	26.25	90.71	38%	0.27	0.09	2	1	0.27			0.00
VA	1030	1035	LED Troffer (base 4L4'T8), 2020	Non-Jurisdictional	2020	2054	702.66	135.60	65.58	635.22	47%	11.67	102.37	43%	0.22	0.11	1	1	0.33			0.00
VA	1130	1130	Base Fluorescent Fixture, 2L4'T8, 1EB, 2020	Non-Jurisdictional	2020	2054	266.78	47.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	266.78	47.45	0.00
VA	1130	1136	Lighting Control Tuneup (base 2L4'T8), 2020	Non-Jurisdictional	2020	2054	263.81	47.19	2.97	2.97	1%	0.26	0.26	1%	0.02	0.02	0	0	3.08			2.97
VA	1130	1138	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Non-Jurisdictional	2020	2054	243.92	44.38	19.89	22.85	9%	2.82	3.08	6%	0.03	0.02	0	0	2.77			19.89
VA	1130	1131	ROB 2L4' High Performance T8 (86 W), 2020	Non-Jurisdictional	2020	2054	219.71	40.07	24.21	47.07	18%	4.31	7.38	16%	0.03	0.03	0	0	2.34			24.21
VA	1130	1132	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Non-Jurisdictional	2020	2054	191.76	35.10	27.95	75.02	28%	4.97	12.36	26%	0.06	0.04	0	0	1.12			27.95
VA	1130	1134	ROB 2L4' LED Tube, 2020	Non-Jurisdictional	2020	2054	182.49	33.45	9.27	84.29	32%	1.65	14.00	30%	0.21	0.06	1	0	0.35			0.00
VA	1130	1137	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Non-Jurisdictional	2020	2054	174.42	33.10	8.06	92.35	35%	0.35	14.36	30%	0.13	0.06	3	0	0.43			0.00
VA	1130	1135	LED Troffer (base 2L4'T8), 2020	Non-Jurisdictional	2020	2054	159.53	30.45	14.89	107.24	40%	2.65	17.00	36%	0.28	0.09	2	1	0.27			0.00
VA	1200	1200	Base Other Fluorescent Fixture	Non-Jurisdictional	2014	2054	25.29	4.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.29	4.50	0.00
VA	1200	1203	Lighting Control Tuneup (base other fluorescent fixture)	Non-Jurisdictional	2014	2054	23.60	4.35	1.69	1.69	7%	0.15	0.15	3%	0.01	0.01	0	0	7.12			1.69
VA	1200	1205	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Non-Jurisdictional	2014	2054	21.82	4.10	1.78	3.47	14%	0.25	0.40	9%	0.07	0.04	1	0	1.01			1.78
VA	1200	1201	ROB High Performance T8 (base other fluorescent)	Non-Jurisdictional	2014	2054	19.86	3.75	1.97	5.43	21%	0.35	0.75	17%	0.09	0.06	1	0	0.70			0.00
VA	1200	1204	Occupancy Sensor, 4L8' Fluorescent Fixtures	Non-Jurisdictional	2014	2054	17.91	3.66	1.95	7.38	29%	0.09	0.84	19%	0.10	0.07	2	1	0.55			0.00
VA	1200	1202	ROB Low Watt High Performance T8 (base other fluorescent)	Non-Jurisdictional	2014	2054	15.63	3.26	2.28	9.66	38%	0.41	1.24	28%	0.21	0.10	1	1	0.30			0.00
VA	1330	1330	Base Incandescent Flood, 100W to Screw-in Replacement 2020	Non-Jurisdictional	2020	2054	235.95	41.97	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	235.95	41.97	0.00
VA	1330	1332	LEDs (base incandescent flood) 2020	Non-Jurisdictional	2020	2054	58.86	10.47	177.09	177.09	75%	31.50	31.50	75%	0.00	0.00	0	0	16.04			177.09
VA	1430	1430	Base Incandescent A-Line Lamp, 72W to Screw-in Replacement 2020	Non-Jurisdictional	2020	2054	84.94	15.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	84.94	15.11	0.00
VA	1430	1432	LEDs (base incandescent A-line 72W) 2020	Non-Jurisdictional	2020	2054	22.87	4.07	62.08	62.08	73%	11.04	11.04	73%	0.00	0.00	0	0	13.43			62.08
VA	1530	1530	Base Incandescent A-Line Lamp, 53W to Screw-in Replacement 2020	Non-Jurisdictional	2020	2054	62.53	11.12	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	62.53	11.12	0.00
VA	1530	1532	LEDs (base incandescent A-line 53W) 2020	Non-Jurisdictional	2020	2054	22.33	3.97	40.20	40.20	64%	7.15	7.15	64%	0.01	0.01	0	0	9.63			40.20
VA	1630	1630	Base CFL 18W to screw-in replacement 2020	Non-Jurisdictional	2020	2054	78.05	13.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	78.05	13.88	0.00
VA	1630	1631	LED screw-in replacement (base CFL 18W) 2020	Non-Jurisdictional	2020	2054	56.43	10.04	21.62	21.62	28%	3.85	3.85	28%	0.05	0.05	0	0	1.12			21.62
VA	1730	1730	Base CFL 23W to screw-in replacement 2020	Non-Jurisdictional	2020	2054	99.73	17.74	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	99.73	17.74	0.00
VA	1730	1731	LED screw-in replacement (base CFL 23W) 2020	Non-Jurisdictional	2020	2054	73.80	13.13	25.93	25.93	26%	4.61	4.61	26%	0.04	0.04	0	0	1.49			25.93
VA	1800	1800	BaseMetal Halide, 465W	Non-Jurisdictional	2014	2054	179.43	31.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	179.43	31.92	0.00
VA	1800	1801	T5 (240W) (base metal halide)	Non-Jurisdictional	2014	2054	118.76	21.12	60.66	60.66	34%	10.79	10.79	34%	0.01	0.01	0	0	7.29			60.66
VA	1800	1806	Occupancy Sensor, High Bay T5	Non-Jurisdictional	2014	2054	114.95	20.96	3.81	64.47	36%	0.17	10.96	34%	0.03	0.01	1	0	1.91			3.81
VA	1800	1805	High Performance Lighting R/R - 25% Savings (base metal halide)	Non-Jurisdictional	2014	2054	106.29	19.73	8.67	73.14	41%	1.23	12.18	38%	0.04	0.02	0	0	1.87			8.67
VA	1850	1850	Base CFL Exit Sign	Non-Jurisdictional	2014	2054	14.79	2.63	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.79	2.63	0.00
VA	1850	1851	LED Exit Sign	Non-Jurisdictional	2014	2054	8.14	1.45	6.66	6.66	45%	1.18	1.18	45%	0.03	0.03	0	0	2.22			6.66
VA	1900	1900	Base Outdoor High Pressure Sodium 250W Lamp	Non-Jurisdictional	2014	2054	214.61	8.98	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	214.61	8.98	0.00
VA	1900	1901	Outdoor Lighting Controls (Photocell/Timeclock)	Non-Jurisdictional	2014	2054	199.35	7.01	15.26	15.26	7%	1.97	1.97	22%	0.04	0.04	0	0	2.02			15.26
VA	1900	1902	LED Outdoor Area Lighting	Non-Jurisdictional	2014	2054	95.93	2.69	103.42	118.69	55%	4.33	6.30	70%	0.09	0.08	2	2	0.75			0.00
VA	1900	1903	Bi-Level LED Outdoor Lighting	Non-Jurisdictional	2014	2054	67.81	1.62	28.12	146.80	68%	1.06	7.36	82%	0.58	0.18	15	4	0.11			0.00
VA	2000	2000	Base Centrifugal Chiller, 0.58 kW/ton, 500 tons	Non-Jurisdictional	2014	2054	639.79	471.58	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	639.79	471.58	0.00
VA	2000	2010	Ceiling/roof Insulation - Chiller	Non-Jurisdictional	2014	2054	634.60	467.75	5.20	5.20	1%	3.83	3.83	1%	0.01	0.01	0	0	11.39			5.20
VA	2000	2001	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Non-Jurisdictional	2014	2054	580.42	427.82	54.17	59.37	9%	39.93	43.76	9%	0.05	0.05	0	0	2.59			54.17
VA	2000	2005	Chiller Tune Up/Diagnostics	Non-Jurisdictional	2014	2054	577.09	426.58	3.33	62.70	10%	1.24	45.00	10%	0.04	0.04	0	0	2.06			3.33
VA	2000	2013	High Efficiency Chiller Motors	Non-Jurisdictional	2014	2054	575.85	425.67	1.24	63.94	10%	0.91	45.91	10%	0.08	0.05	0	0	1.67			1.24
VA	2000	2006	VSD for Chiller Pumps and Towers	Non-Jurisdictional	2014	2054	564.16	421.32	11.68	75.63	12%	4.35	50.26	11%	0.06	0.05	0	0	1.50			11.68
VA	2000	2003	EMS - Chiller	Non-Jurisdictional	2014	2054	542.51	417.28	21.66	97.28	15%	4.04	54.30	12%	0.08	0.06	0	0	0.87			0.00
VA	2000	2012	Duct Testing/Sealing - Chiller	Non-Jurisdictional	2014	2054	441.10	342.53	101.41	198.69	31%	74.75	129.05	27%	0.25	0.15	0	0	0.49			0.00
VA	2000	2002	Window Film (Standard) - Chiller	Non-Jurisdictional	2014	2054	433.63	337.03	7.47	206.16	32%	5.50	134.55	29%	0.35	0.16	0	0	0.28			0.00
VA	2000	2008	New Economizer - Chiller	Non-Jurisdictional	2014	2054	398.83	330.53	34.81	240.97	38%	6.50	141.04	30%	0.30	0.18	2	0	0.22			0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
VA	2000	2004	Cool Roof - Chiller	Non-Jurisdictional	2014	2054	397.35	329.45	1.47	242.44	38%	1.08	142.13	30%	0.67	0.18	1	0	0.14			0.00
VA	2000	2011	Duct/Pipe Insulation - Chiller	Non-Jurisdictional	2014	2054	394.07	327.03	3.28	245.72	38%	2.42	144.55	31%	3.41	0.23	5	0	0.03			0.00
VA	2100	2100	Base DX Packaged System, EER=10.3, 10 tons	Non-Jurisdictional	2014	2054	788.26	581.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	788.26	581.01	0.00
VA	2100	2113	Ceiling/roof Insulation - DX	Non-Jurisdictional	2014	2054	788.25	581.01	0.01	0.01	0%	0.00	0.00	0%	0.01	0.01	0	0	11.66			0.01
VA	2100	2102	DX Packaged System, EER=13.4, 10 tons	Non-Jurisdictional	2014	2054	606.95	447.37	181.30	181.30	23%	133.63	133.64	23%	0.04	0.04	0	0	2.73			181.30
VA	2100	2108	Optimize Controls - DX	Non-Jurisdictional	2014	2054	596.73	445.47	10.23	191.53	24%	1.91	135.54	23%	0.10	0.04	1	0	0.57			0.00
VA	2100	2105	DX Tune Up/ Advanced Diagnostics	Non-Jurisdictional	2014	2054	594.65	444.69	2.08	193.61	25%	0.77	136.32	23%	0.14	0.05	0	0	0.52			0.00
VA	2100	2111	Economizer Repair - DX	Non-Jurisdictional	2014	2054	586.00	435.43	8.64	202.25	26%	9.27	145.58	25%	0.20	0.05	0	0	0.46			0.00
VA	2100	2112	Duct Testing/Sealing - DX	Non-Jurisdictional	2014	2054	550.95	409.59	35.05	237.31	30%	25.84	171.42	30%	0.28	0.09	0	0	0.43			0.00
VA	2100	2106	Prog. Thermostat - DX	Non-Jurisdictional	2014	2054	532.42	406.13	18.53	255.84	32%	3.46	174.88	30%	0.16	0.09	1	0	0.39			0.00
VA	2100	2115	Window Film (Standard) - DX	Non-Jurisdictional	2014	2054	524.69	400.43	7.73	263.57	33%	5.70	180.58	31%	0.35	0.10	0	0	0.28			0.00
VA	2100	2109	Economizer - DX	Non-Jurisdictional	2014	2054	501.30	396.07	23.38	286.95	36%	4.36	184.94	32%	0.29	0.11	2	0	0.22			0.00
VA	2100	2107	Cool Roof - DX	Non-Jurisdictional	2014	2054	498.63	394.10	2.68	289.63	37%	1.97	186.91	32%	0.66	0.12	1	0	0.15			0.00
VA	2100	2110	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Non-Jurisdictional	2014	2054	498.59	394.09	0.04	289.67	37%	0.01	186.92	32%	0.66	0.12	4	0	0.10			0.00
VA	2100	2114	Duct/Pipe Insulation - DX	Non-Jurisdictional	2014	2054	495.38	391.73	3.20	292.87	37%	2.36	189.28	33%	3.34	0.15	5	0	0.03			0.00
VA	2200	2200	Base Heat Pump (13 SEER, 7.7 HSPF)	Non-Jurisdictional	2014	2054	342.49	252.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	342.49	252.44	0.00
VA	2200	2201	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Non-Jurisdictional	2014	2054	300.13	221.22	42.36	42.36	12%	31.22	31.22	12%	0.03	0.03	0	0	3.83			42.36
VA	2300	2300	Base PTAC, EER=8.3, 1 ton	Non-Jurisdictional	2014	2054	530.62	391.11	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	530.62	391.11	0.00
VA	3000	3000	Base Fan Motor, 5hp, 1800rpm, 87.5%	Non-Jurisdictional	2014	2054	488.60	143.21	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	488.60	143.21	0.00
VA	3000	3002	Variable Speed Drive Control, 5 HP	Non-Jurisdictional	2014	2054	390.32	136.02	98.28	98.28	20%	7.19	7.19	5%	0.02	0.02	0	0	2.66			98.28
VA	3000	3001	Fan Motor, 5hp, 1800rpm, 89.5%	Non-Jurisdictional	2014	2054	383.78	134.10	6.54	104.82	21%	1.92	9.11	6%	0.05	0.03	0	0	1.99			6.54
VA	3000	3003	Demand Controlled Ventilation	Non-Jurisdictional	2014	2054	368.87	125.76	14.91	119.73	25%	8.35	17.45	12%	1.11	0.16	2	1	0.09			0.00
VA	3100	3100	Base Fan Motor, 15hp, 1800rpm, 91.0%	Non-Jurisdictional	2014	2054	254.70	74.65	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	254.70	74.65	0.00
VA	3100	3102	Variable Speed Drive Control, 15 HP	Non-Jurisdictional	2014	2054	203.47	70.91	51.23	51.23	20%	3.75	3.75	5%	0.01	0.01	0	0	9.62			51.23
VA	3100	3101	Fan Motor, 15hp, 1800rpm, 92.4%	Non-Jurisdictional	2014	2054	201.36	70.29	2.11	53.34	21%	0.62	4.37	6%	0.02	0.01	0	0	4.36			2.11
VA	3100	3104	Electronically Commutated Motors (ECM) on an Air Handler Unit	Non-Jurisdictional	2014	2054	179.83	64.62	21.53	74.87	29%	5.67	10.04	13%	0.04	0.02	0	0	1.85			21.53
VA	3100	3103	Air Handler Optimization, 15 HP	Non-Jurisdictional	2014	2054	165.03	63.53	14.80	89.67	35%	1.08	11.12	15%	0.04	0.02	1	0	1.44			14.80
VA	3100	3105	Energy Recovery Ventilation (ERV)	Non-Jurisdictional	2014	2054	161.67	61.65	3.37	93.03	37%	1.88	13.01	17%	0.45	0.04	1	0	0.26			0.00
VA	3100	3107	Demand Controlled Ventilation	Non-Jurisdictional	2014	2054	155.39	58.13	6.28	99.32	39%	3.52	16.52	22%	1.37	0.12	2	1	0.08			0.00
VA	3200	3200	Base Fan Motor, 40hp, 1800rpm, 93.0%	Non-Jurisdictional	2014	2054	196.01	57.45	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	196.01	57.45	0.00
VA	3200	3203	Air Handler Optimization, 40 HP	Non-Jurisdictional	2014	2054	179.88	56.27	16.13	16.13	8%	1.18	1.18	2%	0.03	0.03	0	0	2.04			16.13
VA	3200	3202	Variable Speed Drive Control, 40 HP	Non-Jurisdictional	2014	2054	143.70	53.62	36.18	52.31	27%	2.65	3.83	7%	0.04	0.03	1	0	1.75			36.18
VA	3200	3201	Fan Motor, 40hp, 1800rpm, 94.1%	Non-Jurisdictional	2014	2054	143.10	53.45	0.60	52.91	27%	0.18	4.00	7%	0.18	0.04	1	0	0.50			0.00
VA	3200	3204	Demand Controlled Ventilation	Non-Jurisdictional	2014	2054	137.54	50.34	5.56	58.47	30%	3.11	7.12	12%	1.20	0.15	2	1	0.09			0.00
VA	4000	4000	Base Built-Up Refrigeration System	Non-Jurisdictional	2014	2054	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00
VA	4100	4100	Base Self-Contained Refrigeration	Non-Jurisdictional	2014	2054	395.15	57.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	395.15	57.43	0.00
VA	4100	4103	Night covers for display cases (self-contained)	Non-Jurisdictional	2014	2054	385.17	55.98	9.98	9.98	3%	1.45	1.45	3%	0.00	0.00	0	0	72.87			9.98
VA	4100	4104	Freezer-Cooler Replacement Gaskets (self-contained)	Non-Jurisdictional	2014	2054	378.91	55.07	6.26	16.24	4%	0.91	2.36	4%	0.00	0.00	0	0	29.76			6.26
VA	4100	4109	Energy-Star Freezer, glass door	Non-Jurisdictional	2014	2054	377.75	54.90	1.16	17.40	4%	0.17	2.53	4%	0.00	0.00	0	0	17.92			1.16
VA	4100	4106	Energy-Star Refrigerator, solid door	Non-Jurisdictional	2014	2054	372.61	54.16	5.13	22.53	6%	0.75	3.28	6%	0.00	0.00	0	0	16.91			5.13
VA	4100	4108	Energy-Star Refrigerator, glass door	Non-Jurisdictional	2014	2054	367.40	53.40	5.22	27.75	7%	0.76	4.03	7%	0.01	0.00	0	0	8.02			5.22
VA	4100	4107	Energy-Star Freezer, solid door	Non-Jurisdictional	2014	2054	366.92	53.33	0.47	28.23	7%	0.07	4.10	7%	0.01	0.00	0	0	7.11			0.47
VA	4100	4110	Energy Star Ice Machines	Non-Jurisdictional	2014	2054	361.12	52.49	5.80	34.02	9%	0.84	4.94	9%	0.01	0.00	0	0	6.09			5.80
VA	4100	4112	Reach-in unit occupancy sensors	Non-Jurisdictional	2014	2054	361.05	52.48	0.07	34.09	9%	0.01	4.96	9%	0.32	0.01	2	0	0.20			0.00
VA	4100	4105	Bi-level LED Case Lighting (self-contained units) 2014	Non-Jurisdictional	2014	2054	360.88	52.45	0.17	34.26	9%	0.02	4.98	9%	0.37	0.01	3	0	0.16			0.00
VA	4100	4101	Strip curtains for walk-ins (self-contained)	Non-Jurisdictional	2014	2054	360.66	52.42	0.22	34.48	9%	0.03	5.01	9%	14.92	0.10	103	1	0.00			0.00
VA	5000	5000	Base Desktop PC	Non-Jurisdictional	2014	2054	68.50	9.95	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	68.50	9.95	0.00
VA	5000	5001	PC Network Power Management Enabling	Non-Jurisdictional	2014	2054	37.28	7.66	31.22	31.22	46%	2.29	2.29	23%	0.01	0.01	0	0	4.20			31.22
VA	5000	5002	Energy Star or Better PC	Non-Jurisdictional	2014	2054	27.36	6.22	9.92	41.14	60%	1.44	3.73	37%	0.03	0.02	0	0	2.10			9.92
VA	5100	5100	Base Laptop PC	Non-Jurisdictional	2014	2054	6.06	0.88	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.06	0.88	0.00
VA	5100	5102	Energy Star or Better Laptop	Non-Jurisdictional	2014	2054	4.91	0.71	1.15	1.15	19%	0.17	0.17	19%	0.01	0.01	0	0	5.75			1.15
VA	5100	5101	Laptop Network Power Management Enabling	Non-Jurisdictional	2014	2054	4.81	0.70	0.10	1.25	21%	0.01	0.18	21%	1.13	0.10	8	1	0.05			0.00
VA	5200	5200	Base Monitor, CRT	Non-Jurisdictional	2014	2054	14.74	2.14	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.74	2.14	0.00
VA	5200	5201	Energy Star or Better Monitor - CRT	Non-Jurisdictional	2014	2054	7.34	1.07	7.40	7.40	50%	1.08	1.08	50%	0.00	0.00	0	0	51.88			7.40
VA	5200	5202	Monitor Power Management Enabling - CRT	Non-Jurisdictional	2014	2054	5.86	0.96	1.47	8.88	60%	0.11	1.18	55%	0.01	0.00	0	0	3.83			1.47
VA	5200	5203	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Non-Jurisdictional	2014	2054	5.40	0.89	0.46	9.34	63%	0.07	1.25	58%	0.16	0.01	1	0	0.34			0.00
VA	5300	5300	Base Monitor, LCD	Non-Jurisdictional	2014	2054	15.83	2.30	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.83	2.30	0.00
VA	5300	5301	Energy Star or Better Monitor - LCD	Non-Jurisdictional	2014	2054	13.36	1.94	2.47	2.47	16%	0.36	0.36	16%	0.01	0.01	0	0	6.90			2.47
VA	5300	5302	Monitor Power Management Enabling - LCD	Non-Jurisdictional	2014	2054	12.63	1.89	0.73	3.20	20%	0.05	0.41	18%	0.07	0.02	1	0	0.68			0.00
VA	5300	5303	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Non-Jurisdictional	2014	2054	11.65	1.85	0.98	4.18	26%	0.04	0.45	19%	0.21	0.07	6	1	0.23			0.00
VA	5400	5400	Base Copier	Non-Jurisdictional	2014	2054	19.09	2.77	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	19.09	2.77	0.00
VA	5400	5401	Energy Star or Better Copier	Non-Jurisdictional	2014	2054	16.86	2.45	2.23	2.23	12%	0.32	0.32	12%	0.00	0.00	0	0	35.39			2.23
VA	5400	5402	Copier Power Management Enabling	Non-Jurisdictional	2014	2054	16.08	2.39	0.78	3.01	16%	0.06	0.38	14%	0.08	0.02	1	0	0.63			0.00
VA	5500	5500	Base Multifunction	Non-Jurisdictional	2014	2054	2.74	0.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.74	0.40	0.00
VA	5500	5502	ENERGY STAR Multi-Function Printer	Non-Jurisdictional	2014	2054	2.05	0.30	0.69	0.69	25%	0.10	0.10	25%	0.01	0.01	0	0	9.78			0.69
VA	5500	5501	Multifunction Power Management Enabling	Non-Jurisdictional	2014	2054	1.70	0.27	0.35	1.04	38%	0.03	0.13	32%	0.23	0.08	3	1	0.22			0.00
VA	5600	5600	Base Printer	Non-Jurisdictional	2014	2054	22.50	3.27	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	22.50	3.27	0.00
VA	5600	5602	ENERGY STAR Printer	Non-Jurisdictional	2014	2054	14.67	2.13	7.83	7.83	35%	1.14	1.14	35%	0.00	0.00	0	0	44.94			7.83
VA	5600	5601	Printer Power Management Enabling	Non-Jurisdictional	2014	2054	12.14	1.95	2.54	10.36	46%	0.19	1.32	40%	0.05	0.01	1	0	1.01			2.54
VA	5700	5700	Base Data Center/Server Room	Non-Jurisdictional	2014	2054	143.83	20.89	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	143.83	20.89	0.00
VA	5700	5701	Data Center Improved Operations	Non-Jurisdictional	2014	2054	129.45	18.80	14.38	14.38	10%	2.09	2.09	10%	0.00	0.00	0	0	116.58			14.38
VA	5700	5702	Data Center Best Practices	Non-Jurisdictional	2014	2054	112.98	16.41	16.47	30.85	21%	2.39	4.48	21%	0.00	0.00	0	0	47.46			16.47
VA	5700	5703	Data Center State of the Art practices	Non-Jurisdictional	2014	2054	106.65	15.49	6.33	37.18	26%	0.92	5.40	26%	0.00	0.00	0	0	24.61			6.33
VA	6000	6000	Base Water Heating	Non-Jurisdictional	2014	2054	76.92	10.87	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	76.92	10.87	0.00

Commercial Opt-Out/Exempt/Nonjurisdictional Existing
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Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH
VA	6000	6007	Heat Trap	Non-Jurisdictional	2014	2054	72.94	10.31	3.98	3.98	5%	0.56	0.56	5%	0.02	0.02	0	0	4.20			3.98
VA	6000	6002	High Efficiency Water Heater (electric)	Non-Jurisdictional	2014	2054	71.48	10.10	1.46	5.44	7%	0.21	0.77	7%	0.03	0.02	0	0	2.26			1.46
VA	6000	6004	Tankless Water Heater	Non-Jurisdictional	2014	2054	66.12	9.34	5.36	10.80	14%	0.76	1.53	14%	0.05	0.03	0	0	1.61			5.36
VA	6000	6008	Solar Water Heater	Non-Jurisdictional	2014	2054	48.53	6.86	17.59	28.39	37%	2.49	4.01	37%	0.06	0.05	0	0	1.38			17.59
VA	6000	6003	Hot Water Pipe Insulation	Non-Jurisdictional	2014	2054	47.91	6.77	0.62	29.01	38%	0.09	4.10	38%	0.08	0.05	1	0	0.92			0.00
VA	6000	6006	Heat Recovery Unit	Non-Jurisdictional	2014	2054	45.57	6.44	2.34	31.35	41%	0.33	4.43	41%	0.08	0.05	1	0	0.80			0.00
VA	6000	6001	Demand controlled circulating systems	Non-Jurisdictional	2014	2054	44.03	6.22	1.54	32.89	43%	0.22	4.65	43%	0.24	0.06	2	0	0.30			0.00
VA	7000	7000	Base Refrigerated Vending Machines	Non-Jurisdictional	2014	2054	25.15	3.92	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	25.15	3.92	0.00
VA	7000	7001	Vending Misers (Refrigerated units)	Non-Jurisdictional	2014	2054	21.46	3.63	3.69	3.69	15%	0.29	0.29	7%	0.04	0.04	1	1	1.16			3.69
VA	7000	7002	Vending Misers (Refrigerated glass-front units)	Non-Jurisdictional	2014	2054	19.46	3.47	2.00	5.70	23%	0.16	0.44	11%	0.08	0.06	1	1	0.63			0.00
VA	7100	7100	Base Non-Refrigerated Vending Machines	Non-Jurisdictional	2014	2054	0.45	0.07	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.45	0.07	0.00
VA	7100	7101	Vending Misers (Non-Refrigerated)	Non-Jurisdictional	2014	2054	0.26	0.05	0.19	0.19	42%	0.01	0.01	21%	0.86	0.86	11	11	0.06			0.00
VA	7200	7200	Base Oven	Non-Jurisdictional	2014	2054	72.06	11.40	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	72.06	11.40	0.00
VA	7300	7300	Base Fryer	Non-Jurisdictional	2014	2054	36.07	5.71	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	36.07	5.71	0.00
VA	7300	7301	Efficient Fryer	Non-Jurisdictional	2014	2054	34.88	5.52	1.19	1.19	3%	0.19	0.19	3%	0.42	0.42	3	3	0.17			0.00
VA	7400	7400	Base Steamer	Non-Jurisdictional	2014	2054	72.69	11.50	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	72.69	11.50	0.00
VA	8000	8000	Base Heating, Heat Pump (7.7 HSPF)	Non-Jurisdictional	2014	2054	15.57	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	15.57	0.00	0.00
VA	8000	8001	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Non-Jurisdictional	2014	2054	14.70	0.00	0.88	0.88	6%	0.00	0.00	0%	0.03	0.03	N/A	N/A	2.18			0.88
VA	8100	8100	Base Heating, Other Electric	Non-Jurisdictional	2014	2054	34.88	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	34.88	0.00	0.00
VA	9500	9500	Base Miscellaneous	Non-Jurisdictional	2014	2054	894.20	139.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	894.20	139.33	0.00
VA	9500	9501	Xmisc	Non-Jurisdictional	2014	2054	894.20	139.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	0.00			0.00

Base Avoided Costs

Economic MW
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1.68
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Base Avoided Costs

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Base Avoided Costs

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APPENDIX H

Base Avoided Costs

Economic MW
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Base Avoided Costs

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APPENDIX H

Base Avoided Costs

Economic MW
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Economic MW
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APPENDIX H

Base Avoided Costs

Economic MW
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Base Avoided Costs

Economic MW
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31.50
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11.04
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7.15
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3.85
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4.61
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10.79
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1.23
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1.97
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3.83
39.93
1.24
0.91
4.35
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Base Avoided Costs

Economic MW
0.00
0.00
0.00
0.00
133.63
0.00
0.00
0.00
0.00
0.00
0.00
0.00
0.00
0.00
0.00
0.00
31.22
0.00
0.00
7.19
1.92
0.00
0.00
3.75
0.62
5.67
1.08
0.00
0.00
0.00
1.18
2.65
0.00
0.00
0.00
0.00
1.45
0.91
0.17
0.75
0.76
0.07
0.84
0.00
0.00
0.00
0.00
2.29
1.44
0.00
0.17
0.00
0.00
1.08
0.11
0.00
0.00
0.36
0.00
0.00
0.00
0.32
0.00
0.00
0.10
0.00
0.00
1.14
0.19
0.00
2.09
2.39
0.92
0.00

APPENDIX H

Base Avoided Costs

Economic MW
0.56
0.21
0.76
2.49
0.00
0.00
0.00
0.00
0.29
0.00
0.00
0.00
0.00
0.00
0.00
0.00
0.00
0.00
0.00
0.00
0.00

Base Avoided Costs

Commercial Opt-Out/Exempt/Nonjurisdictional New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Office	2014	2053	6.32	1.44	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	6.32	1.44	0.00	0.00
Opt-Out/Ex	100	101	High Performance Building/Int Design - Tier 1 1!	Office	2014	2053	5.36	1.16	0.97	0.97	15%	0.28	0.28	20%	0.04	0.04	0	0	2.15			0.97	0.28
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Office	2014	2053	5.06	1.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	5.06	1.15	0.00	0.00
Opt-Out/Ex	200	201	High Performance Building/Int Design - Tier 2 3!	Office	2014	2053	3.51	0.70	1.54	1.54	31%	0.45	0.45	39%	0.03	0.03	0	0	3.01			1.54	0.45
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Office	2014	2053	1.14	0.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.14	0.26	0.00	0.00
Opt-Out/Ex	300	301	High Performance Building/Int Design - Tier 3 5!	Office	2014	2053	0.56	0.09	0.58	0.58	51%	0.17	0.17	65%	0.03	0.03	0	0	2.86			0.58	0.17
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Office	2014	2053	0.13	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.13	0.03	0.00	0.00
Opt-Out/Ex	400	401	High Performance Building/Int Design - Tier 4 N	Office	2014	2053	0.04	0.00	0.09	0.09	71%	0.03	0.03	91%	0.04	0.04	0	0	2.55			0.09	0.03
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Retail	2014	2053	0.81	0.19	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.81	0.19	0.00	0.00
Opt-Out/Ex	100	103	High Performance Building/Int Design - Tier 1 1!	Retail	2014	2053	0.69	0.15	0.12	0.12	15%	0.04	0.04	20%	0.09	0.09	0	0	1.03			0.12	0.04
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Retail	2014	2053	0.65	0.15	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.65	0.15	0.00	0.00
Opt-Out/Ex	200	203	High Performance Building/Int Design - Tier 2 3!	Retail	2014	2053	0.45	0.09	0.20	0.20	31%	0.06	0.06	39%	0.06	0.06	0	0	1.44			0.20	0.06
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Retail	2014	2053	0.15	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.15	0.03	0.00	0.00
Opt-Out/Ex	300	303	High Performance Building/Int Design - Tier 3 5!	Retail	2014	2053	0.07	0.01	0.07	0.07	51%	0.02	0.02	65%	0.07	0.07	0	0	1.37			0.07	0.02
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Retail	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
Opt-Out/Ex	400	403	High Performance Building/Int Design - Tier 4 N	Retail	2014	2053	0.00	0.00	0.01	0.01	71%	0.00	0.00	91%	0.07	0.07	0	0	1.22			0.01	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Grocery	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
Opt-Out/Ex	100	104	High Performance Building/Int Design - Tier 1 1!	Grocery	2014	2053	0.02	0.00	0.00	0.00	15%	0.00	0.00	20%	0.03	0.03	0	0	2.67			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Grocery	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
Opt-Out/Ex	200	204	High Performance Building/Int Design - Tier 2 3!	Grocery	2014	2053	0.01	0.00	0.01	0.01	30%	0.00	0.00	39%	0.02	0.02	0	0	3.73			0.01	0.00
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Grocery	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	300	304	High Performance Building/Int Design - Tier 3 5!	Grocery	2014	2053	0.00	0.00	0.00	0.00	50%	0.00	0.00	65%	0.02	0.02	0	0	3.55			0.00	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Grocery	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	400	404	High Performance Building/Int Design - Tier 4 N	Grocery	2014	2053	0.00	0.00	0.00	0.00	70%	0.00	0.00	91%	0.03	0.03	0	0	3.17			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Warehouse	2014	2053	0.10	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.10	0.02	0.00	0.00
Opt-Out/Ex	100	105	High Performance Building/Int Design - Tier 1 1!	Warehouse	2014	2053	0.09	0.02	0.02	0.02	15%	0.00	0.00	20%	0.10	0.10	0	0	0.84			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Warehouse	2014	2053	0.08	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.08	0.02	0.00	0.00
Opt-Out/Ex	200	205	High Performance Building/Int Design - Tier 2 3!	Warehouse	2014	2053	0.06	0.01	0.03	0.03	30%	0.01	0.01	39%	0.07	0.07	0	0	1.17			0.03	0.01
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Warehouse	2014	2053	0.02	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.02	0.00	0.00	0.00
Opt-Out/Ex	300	305	High Performance Building/Int Design - Tier 3 5!	Warehouse	2014	2053	0.01	0.00	0.01	0.01	51%	0.00	0.00	65%	0.08	0.08	0	0	1.12			0.01	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Warehouse	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	400	405	High Performance Building/Int Design - Tier 4 N	Warehouse	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.09	0.09	0	0	1.00			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	School	2014	2053	0.19	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.19	0.03	0.00	0.00
Opt-Out/Ex	100	106	High Performance Building/Int Design - Tier 1 1!	School	2014	2053	0.16	0.02	0.03	0.03	15%	0.01	0.01	20%	0.12	0.12	1	1	0.69			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	School	2014	2053	0.15	0.02	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.15	0.02	0.00	0.00
Opt-Out/Ex	200	206	High Performance Building/Int Design - Tier 2 3!	School	2014	2053	0.10	0.01	0.05	0.05	31%	0.01	0.01	39%	0.09	0.09	0	0	0.97			0.00	0.00
Opt-Out/Ex	300	300	Base Bldg Design - 50%	School	2014	2053	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
Opt-Out/Ex	300	306	High Performance Building/Int Design - Tier 3 5!	School	2014	2053	0.02	0.00	0.02	0.02	51%	0.00	0.00	65%	0.09	0.09	0	0	0.92			0.00	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	School	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	400	406	High Performance Building/Int Design - Tier 4 N	School	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.10	0.10	1	1	0.82			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Health	2014	2053	1.74	0.33	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.74	0.33	0.00	0.00
Opt-Out/Ex	100	107	High Performance Building/Int Design - Tier 1 1!	Health	2014	2053	1.48	0.26	0.26	0.26	15%	0.06	0.06	20%	0.12	0.12	1	1	0.70			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Health	2014	2053	1.39	0.26	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.39	0.26	0.00	0.00
Opt-Out/Ex	200	207	High Performance Building/Int Design - Tier 2 3!	Health	2014	2053	0.97	0.16	0.42	0.42	30%	0.10	0.10	39%	0.09	0.09	0	0	0.97			0.00	0.00
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Health	2014	2053	0.31	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.31	0.06	0.00	0.00
Opt-Out/Ex	300	307	High Performance Building/Int Design - Tier 3 5!	Health	2014	2053	0.16	0.02	0.16	0.16	50%	0.04	0.04	65%	0.09	0.09	0	0	0.93			0.00	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Health	2014	2053	0.03	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.03	0.01	0.00	0.00
Opt-Out/Ex	400	407	High Performance Building/Int Design - Tier 4 N	Health	2014	2053	0.01	0.00	0.02	0.02	71%	0.01	0.01	91%	0.10	0.10	0	0	0.83			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Lodging	2014	2053	0.05	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.05	0.01	0.00	0.00
Opt-Out/Ex	100	108	High Performance Building/Int Design - Tier 1 1!	Lodging	2014	2053	0.04	0.01	0.01	0.01	15%	0.00	0.00	20%	0.09	0.09	0	0	0.93			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Lodging	2014	2053	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00
Opt-Out/Ex	200	208	High Performance Building/Int Design - Tier 2 3!	Lodging	2014	2053	0.03	0.00	0.01	0.01	30%	0.00	0.00	39%	0.07	0.07	0	0	1.31			0.01	0.00
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Lodging	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
Opt-Out/Ex	300	308	High Performance Building/Int Design - Tier 3 5!	Lodging	2014	2053	0.00	0.00	0.00	0.00	50%	0.00	0.00	65%	0.07	0.07	0	0	1.25			0.00	0.00
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Lodging	2014	2053	0.00	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00
Opt-Out/Ex	400	408	High Performance Building/Int Design - Tier 4 N	Lodging	2014	2053	0.00	0.00	0.00	0.00	71%	0.00	0.00	91%	0.08	0.08	0	0	1.11			0.00	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Data Centers	2014	2053	8.83	1.54	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	8.83	1.54	0.00	0.00
Opt-Out/Ex	100	109	High Performance Building/Int Design - Tier 1 1!	Data Centers	2014	2053	7.50	1.24	1.33	1.33	15%	0.30	0.30	20%	0.01	0.01	0	0	6.84			1.33	0.30
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Data Centers	2014	2053	7.07	1.23	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	7.07	1.23	0.00	0.00
Opt-Out/Ex	200	209	High Performance Building/Int Design - Tier 2 3!	Data Centers	2014	2053	4.94	0.75	2.13	2.13	30%	0.48	0.48	39%	0.01	0.01	0	0	9.58			2.13	0.48
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Data Centers	2014	2053	1.59	0.28	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.59	0.28	0.00	0.00
Opt-Out/Ex	300	309	High Performance Building/Int Design - Tier 3 5!	Data Centers	2014	2053	0.79	0.10	0.80	0.80	50%	0.18	0.18	65%	0.01	0.01	0	0	9.12			0.80	0.18
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Data Centers	2014	2053	0.18	0.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.18	0.03	0.00	0.00
Opt-Out/Ex	400	409	High Performance Building/Int Design - Tier 4 N	Data Centers	2014	2053	0.05	0.00	0.12	0.12	70%	0.03	0.03	91%	0.01	0.01	0	0	8.13			0.12	0.03
Opt-Out/Ex	100	100	Base Bldg Design - 15%	ion-Jurisdiction	2014	2053	0.38	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.38	0.08	0.00	0.00
Opt-Out/Ex	100	110	High Performance Building/Int Design - Tier 1 1!	ion-Jurisdiction	2014	2053	0.32	0.06	0.06	0.06	15%	0.02	0.02	20%	0.06	0.06	0	0	1.53			0.06	0.02
Opt-Out/Ex	200	200	Base Bldg Design - 30%	ion-Jurisdiction	2014	2053	0.30	0.06	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.30	0.06	0.00	0.00
Opt-Out/Ex	200	210	High Performance Building/Int Design - Tier 2 3!	ion-Jurisdiction	2014	2053	0.21	0.04	0.09	0.09	30%	0.03	0.03	39%	0.04	0.04	0	0	2.14			0.09	0.03
Opt-Out/Ex	300	300	Base Bldg Design - 50%	ion-Jurisdiction	2014	2053	0.07	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.07	0.01	0.00	0.00
Opt-Out/Ex	300	310	High Performance Building/Int Design - Tier 3 5!	ion-Jurisdiction	2014	2053	0.03	0.01	0.03	0.03	51%	0.01	0.01	65%	0.04	0.04	0	0	2.03			0.03	0.01
Opt-Out/Ex	400	400	Base Bldg Design - 70%	ion-Jurisdiction	2014	2053	0.01	0.00	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.01	0.00	0.00	0.00
Opt-Out/Ex	400	410	High Performance Building/Int Design - Tier 4 N	on-Jurisdiction	2014	2053	0.00	0.00	0.01	0.01	71%	0.00	0.00	91%	0.05	0.05	0	0	1.81			0.01	0.00
Opt-Out/Ex	100	100	Base Bldg Design - 15%	Misc	2014	2053	2.19	0.43	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	2.19	0.43	0.00	0.00
Opt-Out/Ex	100	112	High Performance Building/Int Design - Tier 1 1!	Misc	2014	2053	1.85	0.35	0.33	0.33	15%	0.08	0.08	20%	0.09	0.09	0	0	0.93			0.00	0.00
Opt-Out/Ex	200	200	Base Bldg Design - 30%	Misc	2014	2053	1.75	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.75	0.34	0.00	0.00
Opt-Out/Ex	200	212	High Performance Building/Int Design - Tier 2 3!	Misc	2014	2053	1.22	0.21	0.53	0.53	30%	0.13	0.13	39%	0.07	0.07	0	0	1.30			0.53	0.13
Opt-Out/Ex	300	300	Base Bldg Design - 50%	Misc	2014	2053	0.39	0.08	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.39	0.08	0.00	0.00
Opt-Out/Ex	300	312	High Performance Building/Int Design - Tier 3 5!	Misc	2014	2053	0.19	0.03	0.20	0.20	51%	0.05	0.05	65%	0.07	0.07	0	0	1.23			0.20	0.05
Opt-Out/Ex	400	400	Base Bldg Design - 70%	Misc	2014	2053	0.04	0.01	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	0.04	0.01	0.00	0.00

APPENDIX H

Base Avoided Costs

Commercial Opt-Out/Exempt/Nonjurisdictional New Construction
DSM ASSYST ADDITIVE SUPPLY ANALYSIS — Year 2014 — SUPPLY
Vintage

Sgmt	Base Number	Measure Number	Measure	Building Type	Measure Start Year	Measure End Year	Total GWH	Total MW	GWH Savings	Total Energy Savings GWH	Percent GWH Savings	MW Savings	Total Capacity Savings MW	Percent MW Savings	Marginal Energy Cost $/kWH	Average Energy Cost $/kWH	Marginal Capacity Cost $/kW	Average Capacity Cost $/kW	Total Resource Cost Test TRC	Base GWH	Base MW	Economic GWH	Economic MW
Opt-Out/Ex	400	412	High Performance Building/Int Design - Tier 4 N	Misc	2014	2053	0.01	0.00	0.03	0.03	71%	0.01	0.01	91%	0.08	0.08	0	0	1.10			0.03	0.01
VA	100	100	Base Bldg Design - 15%	ion-Jurisdiction	2014	2053	79.60	16.85	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	79.60	16.85	0.00	0.00
VA	100	110	High Performance Building/Int Design - Tier 1 1	ion-Jurisdiction	2014	2053	67.47	13.57	12.13	12.13	15%	3.29	3.29	20%	0.06	0.06	0	0	1.53			12.13	3.29
VA	200	200	Base Bldg Design - 30%	ion-Jurisdiction	2014	2053	63.68	13.48	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	63.68	13.48	0.00	0.00
VA	200	210	High Performance Building/Int Design - Tier 2 3	ion-Jurisdiction	2014	2053	44.28	8.22	19.40	19.40	30%	5.26	5.26	39%	0.04	0.04	0	0	2.14			19.40	5.26
VA	300	300	Base Bldg Design - 50%	ion-Jurisdiction	2014	2053	14.33	3.03	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	14.33	3.03	0.00	0.00
VA	300	310	High Performance Building/Int Design - Tier 3 5	ion-Jurisdiction	2014	2053	7.05	1.06	7.28	7.28	51%	1.97	1.97	65%	0.04	0.04	0	0	2.03			7.28	1.97
VA	400	400	Base Bldg Design - 70%	ion-Jurisdiction	2014	2053	1.59	0.34	0.00	0.00	0%	0.00	0.00	0%	N/A	N/A	N/A	N/A	N/A	1.59	0.34	0.00	0.00
VA	400	410	High Performance Building/Int Design - Tier 4 N	on-Jurisdiction	2014	2053	0.46	0.03	1.13	1.13	71%	0.31	0.31	91%	0.05	0.05	0	0	1.81			1.13	0.31

I MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
1	Direct Feedback	Single Family	1164.81	1.11	1164.81	Whole Bldg (Retrofit)
2	ECM Furnace Fan (variable speed motor) - Cooling	Single Family	779.92	3.60	779.92	Furnace Fan
3	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Single Family	566.21	25.34	566.21	Lighting
4	2nd Refrigerator Recycling	Single Family	459.50	2.13	459.50	Refrigeration
5	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Single Family	374.63	51.27	374.63	Lighting
6	Indirect Feedback	Single Family	372.52	2.38	372.52	Whole Bldg (Retrofit)
7	Heat Pump Water Heater - Energy Star	Single Family	325.48	1.03	325.48	Water Heating
8	LEDs (base Halogen 2.5 hrs/day) 2020	Single Family	313.63	9.12	313.63	Lighting
9	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Single Family	295.05	1.23	295.05	Cooling
10	Air Source Heat Pump (resistance heating)	Single Family	248.28	4.77	248.28	Space Heating
11	ROB 2L4'T8, 1EB	Single Family	209.84	1.68	209.84	Lighting
12	Variable-Speed Pool Pump (<1 hp)	Single Family	201.08	1.90	201.08	Pool Pump
13	High Efficiency CD (EF=3.01 w/moisture sensor)	Single Family	193.94	1.40	193.94	Clothes Dryer
14	LEDs (base Halogen 6 hrs/day) 2020	Single Family	191.09	17.02	191.09	Lighting
15	Refrigerator (Energy Star)	Single Family	156.08	1.81	156.08	Refrigeration
16	Proper Refrigerant Charging and Air Flow (CAC)	Single Family	148.83	1.10	148.83	Cooling
17	DHW Tank Wrap	Single Family	141.00	1.09	141.00	Water Heating
18	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Single Family	136.23	5.05	136.23	Lighting
19	Energy Star LCD TV	Single Family	109.45	15.36	109.45	Electronics
20	ECM Furnace Fan (variable speed motor) - Cooling	Multi-Family	103.26	3.60	103.26	Furnace Fan
21	Drain Water Heat Recovery (GFX)	Single Family	96.60	1.43	96.60	Water Heating
22	Pipe Wrap	Single Family	84.80	3.93	84.80	Water Heating
23	Low Flow Showerhead 1.5 Gal/Min	Single Family	79.18	2.48	79.18	Water Heating
24	Air Source Heat Pump (resistance heating)	Multi-Family	78.94	5.50	78.94	Space Heating
25	LEDs (base Halogen 0.5 hrs/day) 2020	Single Family	70.40	1.68	70.40	Lighting
26	Heat Pump Water Heater - Energy Star - Early Replacement	Single Family	69.53	1.00	69.53	Water Heating
27	Indirect Feedback	Multi-Family	61.02	1.55	61.02	Whole Bldg (Retrofit)
28	Freezer - Early Replacement (Energy Star)	Single Family	56.26	1.41	56.26	Freezer
29	Faucent Aerators	Single Family	52.41	1.22	52.41	Water Heating
30	Energy Star Desktop PC	Single Family	49.81	14.43	49.81	Miscellaneous
31	High Efficiency CD (EF=3.01 w/moisture sensor)	Multi-Family	47.51	1.96	47.51	Clothes Dryer
32	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Multi-Family	45.64	25.39	45.64	Lighting
33	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Early Replacement)	Single Family	45.56	1.08	45.56	Cooling
34	LEDs (base Halogen 2.5 hrs/day) 2020	Multi-Family	45.14	9.12	45.14	Lighting
35	Refrigerator (Energy Star)	Multi-Family	44.90	1.50	44.90	Refrigeration

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
36	LEDs (base CFL 2.5 hrs/day) 2020	Single Family	38.96	1.45	38.96	Lighting
37	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Multi-Family	38.63	1.19	38.63	Cooling
38	Programmable Thermostat (HP heating)	Single Family	36.82	1.36	36.82	Space Heating
39	Freezer (Energy Star)	Single Family	36.77	1.17	36.77	Refrigeration
40	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Multi-Family	31.23	51.29	31.23	Lighting
41	Plug Load Controls - Smart Power Strip (base Desktop PC)	Multi-Family	29.41	1.09	29.41	Miscellaneous
42	Self Install Weatherization (HP heating)	Single Family	27.62	2.64	27.62	Space Heating
43	Drain Water Heat Recovery (GFX)	Multi-Family	27.03	1.10	27.03	Water Heating
44	Programmable Thermostat (HP cooling)	Single Family	26.56	1.65	26.56	Cooling
45	LEDs (base Halogen 6 hrs/day) 2020	Multi-Family	25.86	16.95	25.86	Lighting
46	LEDs (base CFL 6 hrs/day) 2020	Single Family	25.66	2.96	25.66	Lighting
47	Low Flow Showerhead 1.5 Gal/Min	Multi-Family	25.39	2.85	25.39	Water Heating
48	Energy Star DVD Player	Single Family	24.96	3.89	24.96	Electronics
49	Pipe Wrap	Multi-Family	24.43	3.10	24.43	Water Heating
50	Self Install Weatherization (CAC)	Single Family	23.66	6.31	23.66	Cooling
51	Energy Star LCD TV	Multi-Family	20.66	15.62	20.66	Electronics
52	Duct Insulation (HP heating)	Single Family	20.40	9.83	20.40	Space Heating
53	Self Install Weatherization (HP cooling)	Single Family	19.92	2.28	19.92	Cooling
54	Door Weatherization (resistance heating)	Single Family	16.10	1.20	16.10	Space Heating
55	ROB 2L4'T8, 1EB	Multi-Family	16.07	1.69	16.07	Lighting
56	2nd Freezer Recycling	Single Family	15.85	2.94	15.85	Freezer
57	Faucent Aerators	Multi-Family	15.34	1.61	15.34	Water Heating
58	Duct Insulation (HP cooling)	Single Family	14.71	9.11	14.71	Cooling
59	Programmable Thermostat (resistance heating)	Single Family	14.44	1.75	14.44	Space Heating
60	Door Weatherization (HP heating)	Multi-Family	13.39	1.00	13.39	Space Heating
61	Door Weatherization (resistance heating)	Multi-Family	13.26	1.60	13.26	Space Heating
62	Hot water turndown 10 degrees	Single Family	12.66	2.72	12.66	Water Heating
63	Programmable Thermostat (CAC)	Single Family	12.34	2.29	12.34	Cooling
64	Return Duct Modification (CAC)	Single Family	12.10	1.82	12.10	Cooling
65	Energy Star Laptop PC	Single Family	12.07	2.16	12.07	Miscellaneous
66	Energy Star Plasma TV	Single Family	11.80	6.96	11.80	Electronics
67	Door Weatherization (HP cooling)	Multi-Family	11.61	1.34	11.61	Cooling
68	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Multi-Family	11.21	5.04	11.21	Lighting
69	Self Install Weatherization	Single Family	10.83	2.48	10.83	Space Heating
70	LEDs (base Halogen 0.5 hrs/day) 2020	Multi-Family	10.72	1.80	10.72	Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
71	Hot water turndown 5 degrees	Single Family	9.36	2.73	9.36	Water Heating
72	Energy Star Desktop PC	Multi-Family	9.10	14.28	9.10	Miscellaneous
73	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Early Replacement)	Multi-Family	6.98	1.22	6.98	Cooling
74	Door Weatherization (CAC early replacement)	Single Family	6.37	1.13	6.37	Cooling
75	Programmable Thermostat (HP heating early replacement)	Single Family	6.20	1.29	6.20	Space Heating
76	Self Install Weatherization (CAC early replacement)	Single Family	5.84	5.80	5.84	Cooling
77	Self Install Weatherization (HP heating)	Multi-Family	5.72	2.06	5.72	Space Heating
78	Hot water turndown 10 degrees	Multi-Family	5.39	2.08	5.39	Water Heating
79	Energy Star DVD Player	Multi-Family	5.12	4.04	5.12	Electronics
80	Self Install Weatherization	Multi-Family	4.70	2.72	4.70	Space Heating
81	Self Install Weatherization (HP heating early replacement)	Single Family	4.65	2.52	4.65	Space Heating
82	LEDs (base CFL 2.5 hrs/day) 2020	Multi-Family	4.41	1.44	4.41	Lighting
83	Hot water turndown 5 degrees	Multi-Family	3.99	2.09	3.99	Water Heating
84	Self Install Weatherization (HP cooling)	Multi-Family	3.88	2.28	3.88	Cooling
85	Proper Refrigerant Charging and Air Flow (CAC early replacement)	Multi-Family	3.83	1.18	3.83	Cooling
86	Duct Insulation (HP heating early replacement)	Single Family	3.43	9.38	3.43	Space Heating
87	Self Install Weatherization (HP cooling Early Replacement)	Single Family	3.03	1.97	3.03	Cooling
88	Hot water turndown 15 degrees	Single Family	2.98	2.70	2.98	Water Heating
89	LEDs (base CFL 6 hrs/day) 2020	Multi-Family	2.98	2.98	2.98	Lighting
90	Duct Insulation (HP heating)	Multi-Family	2.96	3.36	2.96	Space Heating
91	Duct Insulation (CAC early replacement)	Single Family	2.85	8.90	2.85	Cooling
92	Freezer - Early Replacement (Energy Star)	Multi-Family	2.81	1.29	2.81	Freezer
93	2nd Refrigerator Recycling	Multi-Family	2.59	1.10	2.59	Refrigeration
94	Self Install Weatherization (CAC)	Multi-Family	2.51	4.25	2.51	Cooling
95	Energy Star Laptop PC	Multi-Family	2.38	2.14	2.38	Miscellaneous
96	Door Weatherization (HP heating early replacement)	Multi-Family	2.36	1.00	2.36	Space Heating
97	Duct Insulation (HP cooling Early Replacement)	Single Family	2.24	7.85	2.24	Cooling
98	Duct Insulation (CAC)	Single Family	2.22	1.22	2.22	Cooling
99	Door Weatherization (CAC early replacement)	Multi-Family	2.20	1.59	2.20	Cooling
100	Door Weatherization (HP cooling Early Replacement)	Multi-Family	2.05	1.34	2.05	Cooling
101	Duct Insulation (HP cooling)	Multi-Family	2.00	3.99	2.00	Cooling
102	Programmable Thermostat (CAC early replacement)	Single Family	2.00	2.10	2.00	Cooling
103	Return Duct Modification (CAC early replacement)	Single Family	1.96	1.67	1.96	Cooling
104	Freezer (Energy Star)	Multi-Family	1.91	1.10	1.91	Refrigeration
105	Energy Star Plasma TV	Multi-Family	1.68	7.28	1.68	Electronics

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
106	Self Install Weatherization (HP heating early replacement)	Multi-Family	1.37	2.80	1.37	Space Heating
107	Hot water turndown 15 degrees	Multi-Family	1.27	2.07	1.27	Water Heating
108	Self Install Weatherization (RAC)	Single Family	1.25	2.95	1.25	Cooling
109	Hot water turndown 20 degrees	Single Family	1.13	2.70	1.13	Water Heating
110	Self Install Weatherization (CAC early replacement)	Multi-Family	0.80	7.28	0.80	Cooling
111	Duct Insulation (HP heating early replacement)	Multi-Family	0.71	4.56	0.71	Space Heating
112	Self Install Weatherization (HP cooling Early Replacement)	Multi-Family	0.70	2.33	0.70	Cooling
113	Door Weatherization (RAC)	Multi-Family	0.66	1.94	0.66	Cooling
114	Hot water turndown 20 degrees	Multi-Family	0.48	2.06	0.48	Water Heating
115	Duct Insulation (CAC early replacement)	Multi-Family	0.38	4.75	0.38	Cooling
116	Duct Insulation (HP cooling Early Replacement)	Multi-Family	0.36	4.07	0.36	Cooling
117	Programmable Thermostat (CAC early replacement)	Multi-Family	0.34	1.35	0.34	Cooling
118	Self Install Weatherization (RAC)	Multi-Family	0.22	8.63	0.22	Cooling
119	Door Weatherization (CAC)	Single Family	31.33	0.98	0.00	Cooling
119	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Single Family	114.89	0.81	0.00	Cooling
119	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Single Family	100.65	0.68	0.00	Cooling
119	Proper Sizing and Quality Install (CAC)	Single Family	162.94	0.62	0.00	Cooling
119	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Single Family	152.54	0.47	0.00	Cooling
119	Crawlspace insulation (CAC)	Single Family	8.70	0.42	0.00	Cooling
119	Ceiling R-0 to R-38 Insulation (CAC)	Single Family	38.18	0.40	0.00	Cooling
119	Ceiling R-0 to R-49 Insulation (CAC)	Single Family	0.55	0.04	0.00	Cooling
119	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Single Family	59.82	0.26	0.00	Cooling
119	WINDOWS - Default With Sunscreen (CAC)	Single Family	122.95	0.23	0.00	Cooling
119	Ceiling Fans (CAC)	Single Family	12.66	0.19	0.00	Cooling
119	Ceiling R-11 to R-38 Insulaton (CAC)	Single Family	23.41	0.15	0.00	Cooling
119	Ceiling R-11 to R-49 Insulation (CAC)	Single Family	1.00	0.03	0.00	Cooling
119	Duct Testing and Sealing (CAC)	Single Family	4.67	0.10	0.00	Cooling
119	Ceiling R-19 to R-38 Insulation (CAC)	Single Family	6.07	0.09	0.00	Cooling
119	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Single Family	5.27	0.08	0.00	Cooling
119	Cool Roof (CAC)	Single Family	18.31	0.07	0.00	Cooling
119	Ceiling R-19 to R-49 Insulation (CAC)	Single Family	0.55	0.03	0.00	Cooling
119	Whole House Fans (CAC)	Single Family	27.75	0.06	0.00	Cooling
119	Window Film (CAC)	Single Family	34.85	0.05	0.00	Cooling
119	Wall Blow-in R-0 to R-13 Insulation (CAC)	Single Family	2.05	0.04	0.00	Cooling
119	AC Filter Changes (CAC)	Single Family	4.24	0.04	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
119	AC Maintenance and/or tune-up (CAC)	Single Family	4.41	0.03	0.00	Cooling
119	Basement insulation R-13 (CAC)	Single Family	4.30	0.03	0.00	Cooling
119	Floor R-0 to R-19 Insulation-Batts (CAC)	Single Family	0.23	0.03	0.00	Cooling
119	Proper Refrigerant Charging and Air Flow (CAC early replacement)	Single Family	27.32	0.98	0.00	Cooling
119	Cool Roof (CAC early replacement)	Single Family	31.62	0.73	0.00	Cooling
119	Whole House Fans (CAC early replacement)	Single Family	49.68	0.60	0.00	Cooling
119	Proper Sizing and Quality Install (CAC early replacement)	Single Family	24.70	0.46	0.00	Cooling
119	Crawlspace insulation (CAC early replacement)	Single Family	1.26	0.34	0.00	Cooling
119	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Single Family	5.52	0.33	0.00	Cooling
119	Basement insulation R-13 (CAC early replacement)	Single Family	7.50	0.30	0.00	Cooling
119	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Single Family	0.08	0.03	0.00	Cooling
119	WINDOWS - Double-Glazed Clear to Energy Star (CAC early replacement)	Single Family	2.70	0.24	0.00	Cooling
119	Duct Testing and Sealing (CAC early replacement)	Single Family	1.68	0.20	0.00	Cooling
119	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early replacement)	Single Family	8.10	0.20	0.00	Cooling
119	Ceiling Fans (CAC early replacement)	Single Family	1.58	0.14	0.00	Cooling
119	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Single Family	3.52	0.13	0.00	Cooling
119	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Single Family	0.15	0.03	0.00	Cooling
119	Window Film (CAC early replacement)	Single Family	12.35	0.10	0.00	Cooling
119	WINDOWS - Default With Sunscreen (CAC early replacement)	Single Family	7.27	0.08	0.00	Cooling
119	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Single Family	0.81	0.07	0.00	Cooling
119	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Single Family	0.08	0.02	0.00	Cooling
119	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Single Family	0.30	0.04	0.00	Cooling
119	AC Filter Changes (CAC early replacement)	Single Family	0.61	0.03	0.00	Cooling
119	AC Maintenance and/or tune-up (CAC early replacement)	Single Family	0.64	0.03	0.00	Cooling
119	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality Install - Early	Single Family	3.66	0.02	0.00	Cooling
119	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Single Family	0.03	0.02	0.00	Cooling
119	Proper Refrigerant Charging and Air Flow (HP cooling)	Single Family	103.83	0.86	0.00	Cooling
119	Door Weatherization (HP cooling)	Single Family	21.86	0.77	0.00	Cooling
119	Cool Roof (HP cooling)	Single Family	137.91	0.63	0.00	Cooling
119	Whole House Fans (HP cooling)	Single Family	216.68	0.52	0.00	Cooling
119	Proper Sizing and Quality Install (HP cooling)	Single Family	93.84	0.36	0.00	Cooling
119	Crawlspace insulation (HP cooling)	Single Family	5.58	0.30	0.00	Cooling
119	Ceiling R-0 to R-38 Insulation (HP cooling)	Single Family	24.70	0.29	0.00	Cooling
119	Basement insulation R-13 (HP cooling)	Single Family	33.33	0.26	0.00	Cooling
119	Ceiling R-0 to R-49 Insulation (HP cooling)	Single Family	0.76	0.06	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
119	Duct Testing and Sealing (HP cooling)	Single Family	7.54	0.18	0.00	Cooling
119	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Single Family	36.42	0.18	0.00	Cooling
119	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Single Family	11.29	0.13	0.00	Cooling
119	Ceiling Fans (HP cooling)	Single Family	7.01	0.12	0.00	Cooling
119	Ceiling R-11 to R-38 Insulaton (HP cooling)	Single Family	15.99	0.11	0.00	Cooling
119	Ceiling R-11 to R-49 Insulation (HP cooling)	Single Family	1.48	0.05	0.00	Cooling
119	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Single Family	0.63	0.08	0.00	Cooling
119	Ceiling R-19 to R-38 Insulation (HP cooling)	Single Family	3.94	0.06	0.00	Cooling
119	Ceiling R-19 to R-49 Insulation (HP cooling)	Single Family	0.84	0.05	0.00	Cooling
119	Heat Pump Filter Replacement	Single Family	3.08	0.03	0.00	Cooling
119	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Single Family	2.49	0.02	0.00	Cooling
119	Heat pump tune up	Single Family	3.19	0.02	0.00	Cooling
119	Programmable Thermostat (HP cooling Early Replacement)	Single Family	3.35	0.86	0.00	Cooling
119	Door Weatherization (HP cooling Early Replacement)	Single Family	4.16	0.83	0.00	Cooling
119	Proper Refrigerant Charging and Air Flow (HP cooling Early Replacement)	Single Family	15.49	0.73	0.00	Cooling
119	Cool Roof (HP cooling Early Replacement)	Single Family	20.92	0.54	0.00	Cooling
119	Whole House Fans (HP cooling early replacement)	Single Family	32.86	0.45	0.00	Cooling
119	Proper Sizing and Quality Install (HP cooling Early Replacement)	Single Family	14.23	0.31	0.00	Cooling
119	Crawlspace insulation (HP cooling Early Replacement)	Single Family	0.84	0.26	0.00	Cooling
119	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Single Family	3.75	0.25	0.00	Cooling
119	Basement insulation R-13 (HP cooling Early Replacement)	Single Family	5.05	0.22	0.00	Cooling
119	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Single Family	0.11	0.05	0.00	Cooling
119	Duct Testing and Sealing (HP cooling Early Replacement)	Single Family	1.14	0.16	0.00	Cooling
119	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling Early	Single Family	5.52	0.15	0.00	Cooling
119	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling Early	Single Family	1.71	0.11	0.00	Cooling
119	Ceiling Fans (HP cooling early replacement)	Single Family	1.06	0.10	0.00	Cooling
119	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Single Family	2.42	0.10	0.00	Cooling
119	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement)	Single Family	0.22	0.04	0.00	Cooling
119	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacement)	Single Family	0.10	0.07	0.00	Cooling
119	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement)	Single Family	0.60	0.05	0.00	Cooling
119	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement)	Single Family	0.13	0.04	0.00	Cooling
119	Heat Pump Filter Replacement	Single Family	0.47	0.02	0.00	Cooling
119	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacement)	Single Family	0.38	0.02	0.00	Cooling
119	Heat pump tune up	Single Family	0.48	0.01	0.00	Cooling
119	Door Weatherization (RAC)	Single Family	1.81	0.50	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
119	Cool Roof (RAC)	Single Family	11.40	0.41	0.00	Cooling
119	Whole House Fans (RAC)	Single Family	17.91	0.34	0.00	Cooling
119	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Single Family	4.48	0.26	0.00	Cooling
119	Window Film (RAC)	Single Family	15.83	0.20	0.00	Cooling
119	Ceiling R-0 to R-38 Insulation (RAC)	Single Family	1.59	0.15	0.00	Cooling
119	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Single Family	0.86	0.12	0.00	Cooling
119	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Single Family	3.11	0.12	0.00	Cooling
119	Ceiling R-0 to R-49 Insulation (RAC)	Single Family	0.04	0.02	0.00	Cooling
119	Ceiling Fans (RAC)	Single Family	0.50	0.07	0.00	Cooling
119	Ceiling R-11 to R-38 Insulaton (RAC)	Single Family	1.02	0.06	0.00	Cooling
119	Ceiling R-11 to R-49 Insulation (RAC)	Single Family	0.09	0.02	0.00	Cooling
119	Wall Blow-in R-0 to R-13 Insulation (RAC)	Single Family	0.23	0.04	0.00	Cooling
119	WINDOWS - Default With Sunscreen (RAC)	Single Family	2.49	0.04	0.00	Cooling
119	Ceiling R-19 to R-38 Insulation (RAC)	Single Family	0.25	0.03	0.00	Cooling
119	Ceiling R-19 to R-49 Insulation (RAC)	Single Family	0.05	0.02	0.00	Cooling
119	Room AC Filter Replacement	Single Family	0.21	0.02	0.00	Cooling
119	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early replacement)	Single Family	3.13	0.13	0.00	Cooling
119	10% better than Energy Star Dehumidifier ROB (35-45 pints/day)	Single Family	3.84	0.50	0.00	Cooling
119	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Single Family	222.45	0.80	0.00	Space Heating
119	Door Weatherization (HP heating)	Single Family	21.69	0.68	0.00	Space Heating
119	Crawlspace insulation (HP heating)	Single Family	13.85	0.59	0.00	Space Heating
119	Ceiling R-0 to R-38 Insulation (HP heating)	Single Family	61.45	0.56	0.00	Space Heating
119	Heat Recovery Ventilators (HP heating)	Single Family	454.58	0.53	0.00	Space Heating
119	Basement insulation R-13 (HP heating)	Single Family	64.80	0.40	0.00	Space Heating
119	Ceiling R-0 to R-49 Insulation (HP heating)	Single Family	1.48	0.08	0.00	Space Heating
119	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Single Family	71.62	0.29	0.00	Space Heating
119	Duct Testing and Sealing (HP heating)	Single Family	14.03	0.26	0.00	Space Heating
119	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Single Family	21.31	0.19	0.00	Space Heating
119	Ceiling R-11 to R-38 Insulaton (HP heating)	Single Family	31.45	0.17	0.00	Space Heating
119	Ceiling R-11 to R-49 Insulation (HP heating)	Single Family	2.91	0.08	0.00	Space Heating
119	Floor R-0 to R-19 Insulation-Batts (HP heating)	Single Family	1.24	0.12	0.00	Space Heating
119	Ceiling R-19 to R-38 Insulation (HP heating)	Single Family	7.75	0.10	0.00	Space Heating
119	Ceiling R-19 to R-49 Insulation (HP heating)	Single Family	1.65	0.08	0.00	Space Heating
119	Ground Source Heat Pump with Desuperheater (HP heating)	Single Family	127.79	0.04	0.00	Space Heating
119	Heat Pump Filter Replacement	Single Family	5.51	0.04	0.00	Space Heating

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
119	Heat pump tune up	Single Family	5.74	0.03	0.00	Space Heating
119	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Single Family	4.44	0.03	0.00	Space Heating
119	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early replacement)	Single Family	37.46	0.76	0.00	Space Heating
119	Door Weatherization (HP heating early replacement)	Single Family	3.83	0.68	0.00	Space Heating
119	Crawlspace insulation (HP heating early replacement)	Single Family	2.33	0.56	0.00	Space Heating
119	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Single Family	10.34	0.54	0.00	Space Heating
119	Heat Recovery Ventilators (HP heating early replacement)	Single Family	76.51	0.51	0.00	Space Heating
119	Basement insulation R-13 (HP heating early replacement)	Single Family	10.90	0.38	0.00	Space Heating
119	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Single Family	0.25	0.08	0.00	Space Heating
119	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating early	Single Family	12.06	0.28	0.00	Space Heating
119	Duct Testing and Sealing (HP heating early replacement)	Single Family	2.36	0.25	0.00	Space Heating
119	WINDOWS - Double-Glazed Clear to Energy Star (HP heating early	Single Family	3.59	0.18	0.00	Space Heating
119	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Single Family	5.29	0.17	0.00	Space Heating
119	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Single Family	0.49	0.07	0.00	Space Heating
119	Floor R-0 to R-19 Insulation-Batts (HP heating early replacement)	Single Family	0.21	0.12	0.00	Space Heating
119	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Single Family	1.30	0.09	0.00	Space Heating
119	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Single Family	0.28	0.07	0.00	Space Heating
119	Ground Source Heat Pump with Desuperheater (HP heating early	Single Family	21.51	0.04	0.00	Space Heating
119	Heat Pump Filter Replacement (heating)	Single Family	0.93	0.04	0.00	Space Heating
119	Heat pump tune up (heating)	Single Family	0.97	0.03	0.00	Space Heating
119	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacement)	Single Family	0.75	0.02	0.00	Space Heating
119	Ceiling R-0 to R-38 Insulation (resistance heating)	Single Family	28.68	0.63	0.00	Space Heating
119	Heat Recovery Ventilators (resistance heating)	Single Family	195.75	0.55	0.00	Space Heating
119	Crawlspace insulation (resistance heating)	Single Family	4.14	0.42	0.00	Space Heating
119	Basement insulation R-13 (resistance heating)	Single Family	42.74	0.41	0.00	Space Heating
119	Ceiling R-0 to R-49 Insulation (resistance heating)	Single Family	0.53	0.07	0.00	Space Heating
119	Comprehensive Shell Air Sealing - Inf. Reduction (resistance heating)	Single Family	29.98	0.29	0.00	Space Heating
119	WINDOWS - Double-Glazed Clear to Energy Star (resistance heating)	Single Family	10.28	0.22	0.00	Space Heating
119	Ceiling R-11 to R-38 Insulaton (resistance heating)	Single Family	14.38	0.19	0.00	Space Heating
119	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Single Family	0.74	0.18	0.00	Space Heating
119	Ceiling R-11 to R-49 Insulation (resistance heating)	Single Family	1.05	0.07	0.00	Space Heating
119	Ceiling R-19 to R-38 Insulation (resistance heating)	Single Family	3.74	0.11	0.00	Space Heating
119	Ceiling R-19 to R-49 Insulation (resistance heating)	Single Family	0.59	0.07	0.00	Space Heating
119	Ground Source Heat Pump with Desuperheater (resistance heating)	Single Family	4.92	0.00	0.00	Space Heating
119	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Single Family	2.85	0.04	0.00	Space Heating

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
119	LEDs (base CFL 0.5 hrs/day) 2020	Single Family	9.50	0.29	0.00	Lighting
119	Refrigerator - Early Replacement (Energy Star)	Single Family	62.96	0.59	0.00	Refrigeration
119	Solar Domestic Water Heating	Single Family	913.38	0.45	0.00	Water Heating
119	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	2.77	0.02	0.00	Water Heating
119	Energy Star Dishwasher (EF=0.72)	Single Family	2.27	0.02	0.00	Water Heating
119	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	17.95	0.06	0.00	Clothes Washer
119	Heat Pump Dryer	Single Family	430.98	0.09	0.00	Clothes Dryer
119	Energy Star Dishwasher (EF=0.72)	Single Family	9.13	0.04	0.00	Dishwashers
119	PV-Powered Pool Pumps	Single Family	73.96	0.07	0.00	Pool Pump
119	Plug Load Controls - Smart Power Strip (base plasma TV)	Single Family	0.94	0.01	0.00	Electronics
119	Plug Load Controls - Smart Power Strip (base LCD TV)	Single Family	4.35	0.01	0.00	Electronics
119	Plug Load Controls - Smart Power Strip (base CRT TV)	Single Family	5.99	0.04	0.00	Electronics
119	Plug Load Controls - Smart Power Strip (base DVD player)	Single Family	19.83	0.07	0.00	Electronics
119	Plug Load Controls - Smart Power Strip (base Desktop PC)	Single Family	104.80	0.65	0.00	Miscellaneous
119	Door Weatherization (CAC)	Multi-Family	7.51	0.96	0.00	Cooling
119	Programmable Thermostat (CAC)	Multi-Family	1.15	0.79	0.00	Cooling
119	Proper Refrigerant Charging and Air Flow (CAC)	Multi-Family	10.51	0.71	0.00	Cooling
119	Duct Insulation (CAC)	Multi-Family	0.28	0.61	0.00	Cooling
119	Return Duct Modification (CAC)	Multi-Family	0.79	0.58	0.00	Cooling
119	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Multi-Family	8.64	0.52	0.00	Cooling
119	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Multi-Family	7.54	0.44	0.00	Cooling
119	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Multi-Family	12.58	0.34	0.00	Cooling
119	Crawlspace insulation (CAC)	Multi-Family	0.37	0.31	0.00	Cooling
119	Ceiling Fans (CAC)	Multi-Family	5.64	0.25	0.00	Cooling
119	Proper Sizing and Quality Install (CAC)	Multi-Family	9.72	0.18	0.00	Cooling
119	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Multi-Family	4.11	0.16	0.00	Cooling
119	Ceiling R-0 to R-38 Insulation (CAC)	Multi-Family	7.20	0.15	0.00	Cooling
119	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Multi-Family	1.76	0.13	0.00	Cooling
119	Duct Testing and Sealing (CAC)	Multi-Family	1.99	0.12	0.00	Cooling
119	Ceiling R-0 to R-49 Insulation (CAC)	Multi-Family	0.09	0.01	0.00	Cooling
119	WINDOWS - Default With Sunscreen (CAC)	Multi-Family	5.20	0.08	0.00	Cooling
119	Ceiling R-11 to R-38 Insulaton (CAC)	Multi-Family	1.04	0.05	0.00	Cooling
119	Cool Roof (CAC)	Multi-Family	2.19	0.05	0.00	Cooling
119	Wall Blow-in R-0 to R-13 Insulation (CAC)	Multi-Family	0.62	0.04	0.00	Cooling
119	Window Film (CAC)	Multi-Family	3.90	0.04	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
119	Whole House Fans (CAC)	Multi-Family	3.65	0.04	0.00	Cooling
119	Ceiling R-11 to R-49 Insulation (CAC)	Multi-Family	0.04	0.01	0.00	Cooling
119	Ceiling R-19 to R-38 Insulation (CAC)	Multi-Family	0.11	0.03	0.00	Cooling
119	Ceiling R-19 to R-49 Insulation (CAC)	Multi-Family	0.01	0.01	0.00	Cooling
119	Floor R-0 to R-19 Insulation-Batts (CAC)	Multi-Family	0.31	0.02	0.00	Cooling
119	Basement insulation R-13 (CAC)	Multi-Family	0.13	0.02	0.00	Cooling
119	AC Filter Changes (CAC)	Multi-Family	0.17	0.01	0.00	Cooling
119	AC Maintenance and/or tune-up (CAC)	Multi-Family	0.18	0.01	0.00	Cooling
119	Return Duct Modification (CAC early replacement)	Multi-Family	0.23	0.98	0.00	Cooling
119	Crawlspace insulation (CAC early replacement)	Multi-Family	0.14	0.66	0.00	Cooling
119	Cool Roof (CAC early replacement)	Multi-Family	4.44	0.59	0.00	Cooling
119	Whole House Fans (CAC early replacement)	Multi-Family	6.88	0.44	0.00	Cooling
119	WINDOWS - Double-Glazed Clear to Energy Star (CAC early replacement)	Multi-Family	0.71	0.30	0.00	Cooling
119	Proper Sizing and Quality Install (CAC early replacement)	Multi-Family	3.25	0.28	0.00	Cooling
119	Duct Testing and Sealing (CAC early replacement)	Multi-Family	0.73	0.25	0.00	Cooling
119	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early replacement)	Multi-Family	1.08	0.24	0.00	Cooling
119	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Multi-Family	1.89	0.22	0.00	Cooling
119	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Multi-Family	0.03	0.02	0.00	Cooling
119	Basement insulation R-13 (CAC early replacement)	Multi-Family	0.23	0.16	0.00	Cooling
119	Ceiling Fans (CAC early replacement)	Multi-Family	0.53	0.13	0.00	Cooling
119	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Multi-Family	0.30	0.09	0.00	Cooling
119	WINDOWS - Default With Sunscreen (CAC early replacement)	Multi-Family	0.94	0.08	0.00	Cooling
119	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Multi-Family	0.17	0.07	0.00	Cooling
119	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Multi-Family	0.01	0.02	0.00	Cooling
119	Window Film (CAC early replacement)	Multi-Family	0.85	0.05	0.00	Cooling
119	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Multi-Family	0.03	0.05	0.00	Cooling
119	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Multi-Family	0.00	0.02	0.00	Cooling
119	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality Install - Early	Multi-Family	0.90	0.03	0.00	Cooling
119	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Multi-Family	0.09	0.03	0.00	Cooling
119	AC Filter Changes (CAC early replacement)	Multi-Family	0.05	0.02	0.00	Cooling
119	AC Maintenance and/or tune-up (CAC early replacement)	Multi-Family	0.05	0.02	0.00	Cooling
119	Proper Refrigerant Charging and Air Flow (HP cooling)	Multi-Family	13.59	0.83	0.00	Cooling
119	Programmable Thermostat (HP cooling)	Multi-Family	3.48	0.58	0.00	Cooling
119	Crawlspace insulation (HP cooling)	Multi-Family	0.60	0.46	0.00	Cooling
119	Cool Roof (HP cooling)	Multi-Family	19.19	0.41	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
119	Whole House Fans (HP cooling)	Multi-Family	29.74	0.30	0.00	Cooling
119	Duct Testing and Sealing (HP cooling)	Multi-Family	3.65	0.20	0.00	Cooling
119	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Multi-Family	5.42	0.19	0.00	Cooling
119	Ceiling R-0 to R-38 Insulation (HP cooling)	Multi-Family	9.59	0.18	0.00	Cooling
119	Proper Sizing and Quality Install (HP cooling)	Multi-Family	10.11	0.14	0.00	Cooling
119	Ceiling R-0 to R-49 Insulation (HP cooling)	Multi-Family	0.26	0.03	0.00	Cooling
119	Basement insulation R-13 (HP cooling)	Multi-Family	1.03	0.12	0.00	Cooling
119	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Multi-Family	2.31	0.10	0.00	Cooling
119	Ceiling Fans (HP cooling)	Multi-Family	2.36	0.10	0.00	Cooling
119	Ceiling R-11 to R-38 Insulaton (HP cooling)	Multi-Family	1.35	0.06	0.00	Cooling
119	Ceiling R-11 to R-49 Insulation (HP cooling)	Multi-Family	0.13	0.03	0.00	Cooling
119	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Multi-Family	0.90	0.05	0.00	Cooling
119	Ceiling R-19 to R-38 Insulation (HP cooling)	Multi-Family	0.15	0.04	0.00	Cooling
119	Ceiling R-19 to R-49 Insulation (HP cooling)	Multi-Family	0.03	0.03	0.00	Cooling
119	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Multi-Family	0.70	0.01	0.00	Cooling
119	Heat Pump Filter Replacement	Multi-Family	0.26	0.01	0.00	Cooling
119	Heat pump tune up	Multi-Family	0.27	0.01	0.00	Cooling
119	Proper Refrigerant Charging and Air Flow (HP cooling Early Replacement)	Multi-Family	2.46	0.85	0.00	Cooling
119	Crawlspace insulation (HP cooling Early Replacement)	Multi-Family	0.11	0.48	0.00	Cooling
119	Programmable Thermostat (HP cooling Early Replacement)	Multi-Family	0.63	0.44	0.00	Cooling
119	Cool Roof (HP cooling Early Replacement)	Multi-Family	3.47	0.42	0.00	Cooling
119	Whole House Fans (HP cooling early replacement)	Multi-Family	5.37	0.31	0.00	Cooling
119	Duct Testing and Sealing (HP cooling Early Replacement)	Multi-Family	0.66	0.20	0.00	Cooling
119	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling Early	Multi-Family	0.98	0.20	0.00	Cooling
119	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Multi-Family	1.73	0.18	0.00	Cooling
119	Proper Sizing and Quality Install (HP cooling Early Replacement)	Multi-Family	1.83	0.14	0.00	Cooling
119	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	0.05	0.03	0.00	Cooling
119	Basement insulation R-13 (HP cooling Early Replacement)	Multi-Family	0.19	0.12	0.00	Cooling
119	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling Early	Multi-Family	0.42	0.10	0.00	Cooling
119	Ceiling Fans (HP cooling early replacement)	Multi-Family	0.43	0.10	0.00	Cooling
119	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Multi-Family	0.24	0.06	0.00	Cooling
119	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	0.02	0.03	0.00	Cooling
119	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacement)	Multi-Family	0.16	0.05	0.00	Cooling
119	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement)	Multi-Family	0.03	0.04	0.00	Cooling
119	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	0.01	0.03	0.00	Cooling

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VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
119	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacement)	Multi-Family	0.13	0.01	0.00	Cooling
119	Heat Pump Filter Replacement	Multi-Family	0.05	0.01	0.00	Cooling
119	Heat pump tune up	Multi-Family	0.05	0.01	0.00	Cooling
119	Cool Roof (RAC)	Multi-Family	1.46	0.79	0.00	Cooling
119	Whole House Fans (RAC)	Multi-Family	2.26	0.58	0.00	Cooling
119	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Multi-Family	0.51	0.46	0.00	Cooling
119	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Multi-Family	0.22	0.38	0.00	Cooling
119	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Multi-Family	0.51	0.36	0.00	Cooling
119	Ceiling R-0 to R-38 Insulation (RAC)	Multi-Family	0.64	0.30	0.00	Cooling
119	Ceiling R-0 to R-49 Insulation (RAC)	Multi-Family	0.02	0.05	0.00	Cooling
119	Ceiling Fans (RAC)	Multi-Family	0.19	0.20	0.00	Cooling
119	Window Film (RAC)	Multi-Family	0.65	0.17	0.00	Cooling
119	Wall Blow-in R-0 to R-13 Insulation (RAC)	Multi-Family	0.07	0.11	0.00	Cooling
119	WINDOWS - Default With Sunscreen (RAC)	Multi-Family	0.31	0.11	0.00	Cooling
119	Ceiling R-11 to R-38 Insulaton (RAC)	Multi-Family	0.08	0.10	0.00	Cooling
119	Ceiling R-11 to R-49 Insulation (RAC)	Multi-Family	0.01	0.04	0.00	Cooling
119	Ceiling R-19 to R-38 Insulation (RAC)	Multi-Family	0.01	0.06	0.00	Cooling
119	Ceiling R-19 to R-49 Insulation (RAC)	Multi-Family	0.00	0.04	0.00	Cooling
119	Room AC Filter Replacement	Multi-Family	0.02	0.02	0.00	Cooling
119	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early replacement)	Multi-Family	0.15	0.08	0.00	Cooling
119	10% better than Energy Star Dehumidifier ROB (35-45 pints/day)	Multi-Family	0.49	0.49	0.00	Cooling
119	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Multi-Family	31.38	0.61	0.00	Space Heating
119	Crawlspace insulation (HP heating)	Multi-Family	1.08	0.47	0.00	Space Heating
119	Programmable Thermostat (HP heating)	Multi-Family	6.10	0.45	0.00	Space Heating
119	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Multi-Family	13.74	0.30	0.00	Space Heating
119	Duct Testing and Sealing (HP heating)	Multi-Family	8.57	0.27	0.00	Space Heating
119	Ceiling R-0 to R-38 Insulation (HP heating)	Multi-Family	23.59	0.25	0.00	Space Heating
119	Ceiling R-0 to R-49 Insulation (HP heating)	Multi-Family	0.71	0.05	0.00	Space Heating
119	Basement insulation R-13 (HP heating)	Multi-Family	2.82	0.18	0.00	Space Heating
119	Heat Recovery Ventilators (HP heating)	Multi-Family	54.80	0.17	0.00	Space Heating
119	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Multi-Family	4.78	0.12	0.00	Space Heating
119	Ceiling R-11 to R-38 Insulaton (HP heating)	Multi-Family	2.95	0.08	0.00	Space Heating
119	Ceiling R-11 to R-49 Insulation (HP heating)	Multi-Family	0.27	0.04	0.00	Space Heating
119	Floor R-0 to R-19 Insulation-Batts (HP heating)	Multi-Family	1.97	0.06	0.00	Space Heating
119	Ground Source Heat Pump with Desuperheater (HP heating)	Multi-Family	17.29	0.03	0.00	Space Heating

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
119	Ceiling R-19 to R-38 Insulation (HP heating)	Multi-Family	0.30	0.04	0.00	Space Heating
119	Ceiling R-19 to R-49 Insulation (HP heating)	Multi-Family	0.06	0.03	0.00	Space Heating
119	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Multi-Family	1.39	0.02	0.00	Space Heating
119	Heat Pump Filter Replacement	Multi-Family	0.51	0.01	0.00	Space Heating
119	Heat pump tune up	Multi-Family	0.53	0.01	0.00	Space Heating
119	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early replacement)	Multi-Family	7.61	0.84	0.00	Space Heating
119	Crawlspace insulation (HP heating early replacement)	Multi-Family	0.26	0.64	0.00	Space Heating
119	Programmable Thermostat (HP heating early replacement)	Multi-Family	1.48	0.62	0.00	Space Heating
119	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating early	Multi-Family	3.33	0.41	0.00	Space Heating
119	Duct Testing and Sealing (HP heating early replacement)	Multi-Family	2.08	0.37	0.00	Space Heating
119	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Multi-Family	5.72	0.34	0.00	Space Heating
119	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Multi-Family	0.17	0.07	0.00	Space Heating
119	Basement insulation R-13 (HP heating early replacement)	Multi-Family	0.69	0.25	0.00	Space Heating
119	Heat Recovery Ventilators (HP heating early replacement)	Multi-Family	13.29	0.23	0.00	Space Heating
119	WINDOWS - Double-Glazed Clear to Energy Star (HP heating early	Multi-Family	1.16	0.16	0.00	Space Heating
119	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Multi-Family	0.72	0.11	0.00	Space Heating
119	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Multi-Family	0.07	0.05	0.00	Space Heating
119	Floor R-0 to R-19 Insulation-Batts (HP heating early replacement)	Multi-Family	0.48	0.08	0.00	Space Heating
119	Ground Source Heat Pump with Desuperheater (HP heating early	Multi-Family	4.19	0.04	0.00	Space Heating
119	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Multi-Family	0.07	0.05	0.00	Space Heating
119	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Multi-Family	0.02	0.04	0.00	Space Heating
119	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacement)	Multi-Family	0.34	0.02	0.00	Space Heating
119	Heat Pump Filter Replacement (heating)	Multi-Family	0.12	0.02	0.00	Space Heating
119	Heat pump tune up (heating)	Multi-Family	0.13	0.01	0.00	Space Heating
119	Programmable Thermostat (resistance heating)	Multi-Family	5.49	0.87	0.00	Space Heating
119	Crawlspace insulation (resistance heating)	Multi-Family	1.08	0.75	0.00	Space Heating
119	Comprehensive Shell Air Sealing - Inf. Reduction (resistance heating)	Multi-Family	12.33	0.43	0.00	Space Heating
119	Ceiling R-0 to R-38 Insulation (resistance heating)	Multi-Family	23.59	0.40	0.00	Space Heating
119	Ceiling R-0 to R-49 Insulation (resistance heating)	Multi-Family	0.56	0.06	0.00	Space Heating
119	Basement insulation R-13 (resistance heating)	Multi-Family	3.98	0.27	0.00	Space Heating
119	WINDOWS - Double-Glazed Clear to Energy Star (resistance heating)	Multi-Family	6.35	0.25	0.00	Space Heating
119	Heat Recovery Ventilators (resistance heating)	Multi-Family	48.63	0.24	0.00	Space Heating
119	Ceiling R-11 to R-38 Insulaton (resistance heating)	Multi-Family	2.91	0.13	0.00	Space Heating
119	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Multi-Family	2.53	0.12	0.00	Space Heating
119	Ceiling R-11 to R-49 Insulation (resistance heating)	Multi-Family	0.21	0.04	0.00	Space Heating

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
119	Ground Source Heat Pump with Desuperheater (resistance heating)	Multi-Family	-0.18	0.00	0.00	Space Heating
119	Ceiling R-19 to R-38 Insulation (resistance heating)	Multi-Family	0.34	0.07	0.00	Space Heating
119	Ceiling R-19 to R-49 Insulation (resistance heating)	Multi-Family	0.05	0.04	0.00	Space Heating
119	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Multi-Family	1.93	0.04	0.00	Space Heating
119	LEDs (base CFL 0.5 hrs/day) 2020	Multi-Family	1.07	0.29	0.00	Lighting
119	Refrigerator - Early Replacement (Energy Star)	Multi-Family	15.67	0.42	0.00	Refrigeration
119	DHW Tank Wrap	Multi-Family	38.84	0.87	0.00	Water Heating
119	Heat Pump Water Heater - Energy Star	Multi-Family	89.91	0.84	0.00	Water Heating
119	Solar Domestic Water Heating	Multi-Family	88.00	0.36	0.00	Water Heating
119	Energy Star CW CEE Tier 2 (MEF=2.0)	Multi-Family	2.01	0.03	0.00	Water Heating
119	Energy Star Dishwasher (EF=0.72)	Multi-Family	1.03	0.02	0.00	Water Heating
119	Heat Pump Water Heater - Energy Star - Early Replacement	Multi-Family	19.32	0.83	0.00	Water Heating
119	Energy Star CW CEE Tier 2 (MEF=2.0)	Multi-Family	3.92	0.06	0.00	Clothes Washer
119	Heat Pump Dryer	Multi-Family	105.57	0.12	0.00	Clothes Dryer
119	Energy Star Dishwasher (EF=0.72)	Multi-Family	2.15	0.04	0.00	Dishwashers
119	Plug Load Controls - Smart Power Strip (base plasma TV)	Multi-Family	0.23	0.02	0.00	Electronics
119	Plug Load Controls - Smart Power Strip (base LCD TV)	Multi-Family	1.37	0.02	0.00	Electronics
119	Plug Load Controls - Smart Power Strip (base CRT TV)	Multi-Family	1.73	0.08	0.00	Electronics
119	Plug Load Controls - Smart Power Strip (base DVD player)	Multi-Family	4.17	0.08	0.00	Electronics
119	Direct Feedback	Multi-Family	183.04	0.73	0.00	Whole Bldg (Retrofit)

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
1	Direct Feedback	Single Family	64.05	1.27	64.05	Whole Bldg (Retrofit)
2	ECM Furnace Fan (variable speed motor) - Cooling	Single Family	38.07	3.62	38.07	Furnace Fan
3	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Single Family	22.11	25.34	22.11	Lighting
4	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Single Family	20.53	1.27	20.53	Cooling
5	Indirect Feedback	Single Family	20.48	2.70	20.48	Whole Bldg (Retrofit)
6	2nd Refrigerator Recycling	Single Family	17.49	2.22	17.49	Refrigeration
7	Air Source Heat Pump (resistance heating)	Single Family	15.91	3.67	15.91	Space Heating
8	ROB 2L4'T8, 1EB	Single Family	14.64	1.69	14.64	Lighting
9	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Single Family	14.63	51.29	14.63	Lighting
10	LEDs (base Halogen 2.5 hrs/day) 2020	Single Family	12.24	9.11	12.24	Lighting
11	Variable-Speed Pool Pump (<1 hp)	Single Family	9.74	1.90	9.74	Pool Pump
12	High Efficiency CD (EF=3.01 w/moisture sensor)	Single Family	9.33	1.44	9.33	Clothes Dryer
13	Refrigerator (Energy Star)	Single Family	7.53	1.81	7.53	Refrigeration
14	LEDs (base Halogen 6 hrs/day) 2020	Single Family	7.47	17.03	7.47	Lighting
15	Drain Water Heat Recovery (GFX)	Single Family	6.62	1.23	6.62	Water Heating
16	Pipe Wrap	Single Family	5.81	3.39	5.81	Water Heating
17	Low Flow Showerhead 1.5 Gal/Min	Single Family	5.42	2.13	5.42	Water Heating
18	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Single Family	5.31	5.04	5.31	Lighting
19	ECM Furnace Fan (variable speed motor) - Cooling	Multi-Family	5.04	3.62	5.04	Furnace Fan
20	Energy Star LCD TV	Single Family	3.77	14.37	3.77	Electronics
21	Air Source Heat Pump (resistance heating)	Multi-Family	3.77	5.18	3.77	Space Heating
22	Faucent Aerators	Single Family	3.59	1.05	3.59	Water Heating
23	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Early Replacement)	Single Family	3.57	1.25	3.57	Cooling
24	Freezer - Early Replacement (Energy Star)	Single Family	3.56	1.41	3.56	Freezer
25	2nd Freezer Recycling	Single Family	3.51	3.48	3.51	Freezer
26	Programmable Thermostat (HP heating)	Single Family	3.33	1.16	3.33	Space Heating
27	Indirect Feedback	Multi-Family	3.05	1.61	3.05	Whole Bldg (Retrofit)
28	Freezer (Energy Star)	Single Family	2.77	1.38	2.77	Refrigeration
29	LEDs (base Halogen 0.5 hrs/day) 2020	Single Family	2.76	1.69	2.76	Lighting
30	Programmable Thermostat (HP cooling)	Single Family	2.50	1.32	2.50	Cooling
31	High Efficiency CD (EF=3.01 w/moisture sensor)	Multi-Family	2.30	2.10	2.30	Clothes Dryer
32	LEDs (base Halogen (Specialty) 2.5 hrs/day) 2020	Multi-Family	2.24	25.27	2.24	Lighting
33	Self Install Weatherization (HP heating)	Single Family	2.19	2.14	2.19	Space Heating
34	Refrigerator (Energy Star)	Multi-Family	2.17	1.49	2.17	Refrigeration
35	LEDs (base Halogen 2.5 hrs/day) 2020	Multi-Family	2.14	9.11	2.14	Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
36	Energy Star Desktop PC	Single Family	2.09	14.45	2.09	Miscellaneous
37	LEDs (base CFL 2.5 hrs/day) 2020	Single Family	2.05	1.46	2.05	Lighting
38	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling)	Multi-Family	1.87	1.12	1.87	Cooling
39	Self Install Weatherization (HP cooling)	Single Family	1.65	2.37	1.65	Cooling
40	LEDs (base Halogen (Specialty) 6 hrs/day) 2020	Multi-Family	1.54	51.33	1.54	Lighting
41	Plug Load Controls - Smart Power Strip (base Desktop PC)	Multi-Family	1.42	1.08	1.42	Miscellaneous
42	Duct Insulation (HP heating)	Single Family	1.37	7.97	1.37	Space Heating
43	LEDs (base CFL 6 hrs/day) 2020	Single Family	1.33	2.94	1.33	Lighting
44	Drain Water Heat Recovery (GFX)	Multi-Family	1.26	1.08	1.26	Water Heating
45	Programmable Thermostat (resistance heating)	Single Family	1.25	1.33	1.25	Space Heating
46	LEDs (base Halogen 6 hrs/day) 2020	Multi-Family	1.23	17.00	1.23	Lighting
47	Low Flow Showerhead 1.5 Gal/Min	Multi-Family	1.19	2.82	1.19	Water Heating
48	Pipe Wrap	Multi-Family	1.14	3.07	1.14	Water Heating
49	Duct Insulation (HP cooling)	Single Family	1.03	9.46	1.03	Cooling
50	Energy Star DVD Player	Single Family	0.88	3.59	0.88	Electronics
51	Hot water turndown 10 degrees	Single Family	0.87	2.39	0.87	Water Heating
52	Self Install Weatherization	Single Family	0.82	1.91	0.82	Space Heating
53	Energy Star Plasma TV	Single Family	0.80	6.51	0.80	Electronics
54	ROB 2L4'T8, 1EB	Multi-Family	0.78	1.69	0.78	Lighting
55	Energy Star LCD TV	Multi-Family	0.77	11.98	0.77	Electronics
56	Faucent Aerators	Multi-Family	0.72	1.59	0.72	Water Heating
57	Self Install Weatherization (CAC)	Single Family	0.66	5.42	0.66	Cooling
58	Programmable Thermostat (HP heating early replacement)	Single Family	0.65	1.28	0.65	Space Heating
59	Door Weatherization (HP heating)	Multi-Family	0.65	1.00	0.65	Space Heating
60	Hot water turndown 5 degrees	Single Family	0.64	2.38	0.64	Water Heating
61	Door Weatherization (resistance heating)	Multi-Family	0.63	1.60	0.63	Space Heating
62	Door Weatherization (HP cooling)	Multi-Family	0.56	1.34	0.56	Cooling
63	LEDs (base Halogen (Specialty) 0.5 hrs/day) 2020	Multi-Family	0.56	5.07	0.56	Lighting
64	LEDs (base Halogen 0.5 hrs/day) 2020	Multi-Family	0.52	1.84	0.52	Lighting
65	Energy Star Desktop PC	Multi-Family	0.44	14.26	0.44	Miscellaneous
66	Programmable Thermostat (HP cooling Early Replacement)	Single Family	0.44	1.30	0.44	Cooling
67	Self Install Weatherization (HP heating early replacement)	Single Family	0.43	2.36	0.43	Space Heating
68	Energy Star Laptop PC	Single Family	0.40	2.17	0.40	Miscellaneous
69	Programmable Thermostat (CAC)	Single Family	0.39	1.59	0.39	Cooling
70	Heat pump upgrade to (16+ SEER, 8.7+ HSPF) (HP cooling Early Replacement)	Multi-Family	0.34	1.15	0.34	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
71	Self Install Weatherization (HP cooling Early Replacement)	Single Family	0.29	2.33	0.29	Cooling
72	Return Duct Modification (CAC)	Single Family	0.28	1.26	0.28	Cooling
73	Self Install Weatherization (HP heating)	Multi-Family	0.28	1.94	0.28	Space Heating
74	Duct Insulation (HP heating early replacement)	Single Family	0.27	8.82	0.27	Space Heating
75	Hot water turndown 10 degrees	Multi-Family	0.26	2.05	0.26	Water Heating
76	Self Install Weatherization	Multi-Family	0.22	2.56	0.22	Space Heating
77	LEDs (base CFL 2.5 hrs/day) 2020	Multi-Family	0.21	1.44	0.21	Lighting
78	Hot water turndown 15 degrees	Single Family	0.20	2.38	0.20	Water Heating
79	Hot water turndown 5 degrees	Multi-Family	0.19	2.07	0.19	Water Heating
80	Proper Refrigerant Charging and Air Flow (CAC early replacement)	Multi-Family	0.19	1.13	0.19	Cooling
81	Energy Star DVD Player	Multi-Family	0.19	3.06	0.19	Electronics
82	Self Install Weatherization (HP cooling)	Multi-Family	0.19	2.15	0.19	Cooling
83	Duct Insulation (HP cooling Early Replacement)	Single Family	0.18	9.33	0.18	Cooling
84	LEDs (base CFL 6 hrs/day) 2020	Multi-Family	0.14	2.98	0.14	Lighting
85	Duct Insulation (HP heating)	Multi-Family	0.14	3.36	0.14	Space Heating
86	Freezer - Early Replacement (Energy Star)	Multi-Family	0.14	1.29	0.14	Freezer
87	2nd Refrigerator Recycling	Multi-Family	0.12	1.10	0.12	Refrigeration
88	Self Install Weatherization (CAC)	Multi-Family	0.12	4.06	0.12	Cooling
89	Energy Star Laptop PC	Multi-Family	0.12	2.14	0.12	Miscellaneous
90	Door Weatherization (HP heating early replacement)	Multi-Family	0.11	1.01	0.11	Space Heating
91	Self Install Weatherization (CAC early replacement)	Single Family	0.11	5.10	0.11	Cooling
92	Door Weatherization (CAC early replacement)	Multi-Family	0.11	1.59	0.11	Cooling
93	Door Weatherization (HP cooling Early Replacement)	Multi-Family	0.10	1.34	0.10	Cooling
94	Duct Insulation (HP cooling)	Multi-Family	0.10	3.99	0.10	Cooling
95	Freezer (Energy Star)	Multi-Family	0.09	1.10	0.09	Refrigeration
96	Self Install Weatherization (RAC)	Single Family	0.09	1.84	0.09	Cooling
97	Hot water turndown 20 degrees	Single Family	0.08	2.37	0.08	Water Heating
98	Duct Insulation (CAC early replacement)	Single Family	0.07	7.81	0.07	Cooling
99	Self Install Weatherization (HP heating early replacement)	Multi-Family	0.07	2.65	0.07	Space Heating
100	Programmable Thermostat (CAC early replacement)	Single Family	0.07	1.49	0.07	Cooling
101	Energy Star Plasma TV	Multi-Family	0.06	5.59	0.06	Electronics
102	Hot water turndown 15 degrees	Multi-Family	0.06	2.05	0.06	Water Heating
103	Duct Insulation (CAC)	Single Family	0.05	1.05	0.05	Cooling
104	Return Duct Modification (CAC early replacement)	Single Family	0.05	1.19	0.05	Cooling
105	Self Install Weatherization (CAC early replacement)	Multi-Family	0.04	6.88	0.04	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
106	Duct Insulation (HP heating early replacement)	Multi-Family	0.03	4.58	0.03	Space Heating
107	Self Install Weatherization (HP cooling Early Replacement)	Multi-Family	0.03	2.20	0.03	Cooling
108	Door Weatherization (RAC)	Multi-Family	0.03	1.94	0.03	Cooling
109	Hot water turndown 20 degrees	Multi-Family	0.02	2.04	0.02	Water Heating
110	Duct Insulation (CAC early replacement)	Multi-Family	0.02	4.77	0.02	Cooling
111	Duct Insulation (HP cooling Early Replacement)	Multi-Family	0.02	4.08	0.02	Cooling
112	Self Install Weatherization (RAC)	Multi-Family	0.01	8.12	0.01	Cooling
113	Proper Refrigerant Charging and Air Flow (CAC)	Single Family	3.49	0.94	0.00	Cooling
113	Door Weatherization (CAC)	Single Family	0.87	0.84	0.00	Cooling
113	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Single Family	2.69	0.69	0.00	Cooling
113	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Single Family	2.35	0.58	0.00	Cooling
113	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Single Family	3.95	0.45	0.00	Cooling
113	Proper Sizing and Quality Install (CAC)	Single Family	3.43	0.39	0.00	Cooling
113	Crawlspace insulation (CAC)	Single Family	0.30	0.33	0.00	Cooling
113	Ceiling R-0 to R-38 Insulation (CAC)	Single Family	0.62	0.30	0.00	Cooling
113	WINDOWS - Default With Sunscreen (CAC)	Single Family	3.03	0.24	0.00	Cooling
113	Ceiling R-0 to R-49 Insulation (CAC)	Single Family	0.01	0.02	0.00	Cooling
113	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Single Family	1.27	0.20	0.00	Cooling
113	Ceiling Fans (CAC)	Single Family	0.25	0.18	0.00	Cooling
113	Ceiling R-11 to R-38 Insulaton (CAC)	Single Family	0.69	0.11	0.00	Cooling
113	Ceiling R-11 to R-49 Insulation (CAC)	Single Family	0.03	0.02	0.00	Cooling
113	Duct Testing and Sealing (CAC)	Single Family	0.11	0.09	0.00	Cooling
113	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Single Family	0.12	0.08	0.00	Cooling
113	Ceiling R-19 to R-38 Insulation (CAC)	Single Family	0.08	0.06	0.00	Cooling
113	Cool Roof (CAC)	Single Family	0.43	0.06	0.00	Cooling
113	Ceiling R-19 to R-49 Insulation (CAC)	Single Family	0.01	0.02	0.00	Cooling
113	Window Film (CAC)	Single Family	0.84	0.05	0.00	Cooling
113	Wall Blow-in R-0 to R-13 Insulation (CAC)	Single Family	0.04	0.04	0.00	Cooling
113	Whole House Fans (CAC)	Single Family	0.64	0.04	0.00	Cooling
113	AC Filter Changes (CAC)	Single Family	0.10	0.02	0.00	Cooling
113	Basement insulation R-13 (CAC)	Single Family	0.02	0.02	0.00	Cooling
113	AC Maintenance and/or tune-up (CAC)	Single Family	0.10	0.02	0.00	Cooling
113	Floor R-0 to R-19 Insulation-Batts (CAC)	Single Family	0.03	0.02	0.00	Cooling
113	Proper Refrigerant Charging and Air Flow (CAC early replacement)	Single Family	0.67	0.88	0.00	Cooling
113	Door Weatherization (CAC early replacement)	Single Family	0.17	0.91	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
113	Cool Roof (CAC early replacement)	Single Family	0.76	0.55	0.00	Cooling
113	Whole House Fans (CAC early replacement)	Single Family	1.21	0.42	0.00	Cooling
113	Proper Sizing and Quality Install (CAC early replacement)	Single Family	0.59	0.32	0.00	Cooling
113	Crawlspace insulation (CAC early replacement)	Single Family	0.04	0.28	0.00	Cooling
113	WINDOWS - Double-Glazed Clear to Energy Star (CAC early replacement)	Single Family	0.07	0.26	0.00	Cooling
113	Basement insulation R-13 (CAC early replacement)	Single Family	0.04	0.24	0.00	Cooling
113	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Single Family	0.09	0.24	0.00	Cooling
113	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Single Family	0.00	0.02	0.00	Cooling
113	Duct Testing and Sealing (CAC early replacement)	Single Family	0.04	0.19	0.00	Cooling
113	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early replacement)	Single Family	0.20	0.18	0.00	Cooling
113	Ceiling Fans (CAC early replacement)	Single Family	0.03	0.13	0.00	Cooling
113	Window Film (CAC early replacement)	Single Family	0.31	0.10	0.00	Cooling
113	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Single Family	0.10	0.09	0.00	Cooling
113	WINDOWS - Default With Sunscreen (CAC early replacement)	Single Family	0.18	0.08	0.00	Cooling
113	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Single Family	0.00	0.02	0.00	Cooling
113	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Single Family	0.01	0.05	0.00	Cooling
113	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Single Family	0.00	0.02	0.00	Cooling
113	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Single Family	0.01	0.04	0.00	Cooling
113	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality Install - Early	Single Family	0.09	0.03	0.00	Cooling
113	AC Filter Changes (CAC early replacement)	Single Family	0.01	0.02	0.00	Cooling
113	AC Maintenance and/or tune-up (CAC early replacement)	Single Family	0.02	0.02	0.00	Cooling
113	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Single Family	0.00	0.02	0.00	Cooling
113	Proper Refrigerant Charging and Air Flow (HP cooling)	Single Family	7.22	0.89	0.00	Cooling
113	Door Weatherization (HP cooling)	Single Family	1.79	0.79	0.00	Cooling
113	Cool Roof (HP cooling)	Single Family	9.57	0.56	0.00	Cooling
113	Proper Sizing and Quality Install (HP cooling)	Single Family	7.97	0.48	0.00	Cooling
113	Whole House Fans (HP cooling)	Single Family	13.78	0.39	0.00	Cooling
113	Crawlspace insulation (HP cooling)	Single Family	0.58	0.29	0.00	Cooling
113	Ceiling R-0 to R-38 Insulation (HP cooling)	Single Family	1.18	0.26	0.00	Cooling
113	Basement insulation R-13 (HP cooling)	Single Family	0.48	0.25	0.00	Cooling
113	Ceiling R-0 to R-49 Insulation (HP cooling)	Single Family	0.04	0.05	0.00	Cooling
113	Duct Testing and Sealing (HP cooling)	Single Family	0.54	0.19	0.00	Cooling
113	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Single Family	2.62	0.19	0.00	Cooling
113	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Single Family	0.81	0.16	0.00	Cooling
113	Ceiling Fans (HP cooling)	Single Family	0.43	0.14	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
113	Ceiling R-11 to R-38 Insulaton (HP cooling)	Single Family	1.44	0.11	0.00	Cooling
113	Ceiling R-11 to R-49 Insulation (HP cooling)	Single Family	0.13	0.05	0.00	Cooling
113	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Single Family	0.22	0.07	0.00	Cooling
113	Ceiling R-19 to R-38 Insulation (HP cooling)	Single Family	0.16	0.06	0.00	Cooling
113	Ceiling R-19 to R-49 Insulation (HP cooling)	Single Family	0.03	0.05	0.00	Cooling
113	Heat Pump Filter Replacement	Single Family	0.22	0.03	0.00	Cooling
113	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Single Family	0.16	0.02	0.00	Cooling
113	Heat pump tune up	Single Family	0.23	0.02	0.00	Cooling
113	Proper Refrigerant Charging and Air Flow (HP cooling Early Replacement)	Single Family	1.26	0.87	0.00	Cooling
113	Door Weatherization (HP cooling Early Replacement)	Single Family	0.36	0.90	0.00	Cooling
113	Cool Roof (HP cooling Early Replacement)	Single Family	1.66	0.55	0.00	Cooling
113	Proper Sizing and Quality Install (HP cooling Early Replacement)	Single Family	1.38	0.48	0.00	Cooling
113	Whole House Fans (HP cooling early replacement)	Single Family	2.39	0.38	0.00	Cooling
113	Crawlspace insulation (HP cooling Early Replacement)	Single Family	0.10	0.28	0.00	Cooling
113	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Single Family	0.20	0.25	0.00	Cooling
113	Basement insulation R-13 (HP cooling Early Replacement)	Single Family	0.08	0.25	0.00	Cooling
113	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Single Family	0.01	0.05	0.00	Cooling
113	Duct Testing and Sealing (HP cooling Early Replacement)	Single Family	0.09	0.19	0.00	Cooling
113	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling Early	Single Family	0.45	0.18	0.00	Cooling
113	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling Early	Single Family	0.14	0.16	0.00	Cooling
113	Ceiling Fans (HP cooling early replacement)	Single Family	0.07	0.13	0.00	Cooling
113	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Single Family	0.25	0.10	0.00	Cooling
113	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement)	Single Family	0.02	0.05	0.00	Cooling
113	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacement)	Single Family	0.04	0.07	0.00	Cooling
113	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement)	Single Family	0.03	0.06	0.00	Cooling
113	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement)	Single Family	0.01	0.05	0.00	Cooling
113	Heat Pump Filter Replacement	Single Family	0.04	0.03	0.00	Cooling
113	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacement)	Single Family	0.03	0.02	0.00	Cooling
113	Heat pump tune up	Single Family	0.04	0.02	0.00	Cooling
113	Door Weatherization (RAC)	Single Family	0.13	0.31	0.00	Cooling
113	Cool Roof (RAC)	Single Family	0.69	0.22	0.00	Cooling
113	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Single Family	0.33	0.19	0.00	Cooling
113	Window Film (RAC)	Single Family	1.17	0.17	0.00	Cooling
113	Whole House Fans (RAC)	Single Family	0.82	0.13	0.00	Cooling
113	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Single Family	0.05	0.09	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
113	Ceiling R-0 to R-38 Insulation (RAC)	Single Family	0.07	0.08	0.00	Cooling
113	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Single Family	0.19	0.07	0.00	Cooling
113	Ceiling R-0 to R-49 Insulation (RAC)	Single Family	0.00	0.01	0.00	Cooling
113	Ceiling Fans (RAC)	Single Family	0.03	0.05	0.00	Cooling
113	Wall Blow-in R-0 to R-13 Insulation (RAC)	Single Family	0.01	0.03	0.00	Cooling
113	Ceiling R-11 to R-38 Insulaton (RAC)	Single Family	0.08	0.03	0.00	Cooling
113	WINDOWS - Default With Sunscreen (RAC)	Single Family	0.15	0.03	0.00	Cooling
113	Ceiling R-11 to R-49 Insulation (RAC)	Single Family	0.01	0.01	0.00	Cooling
113	Ceiling R-19 to R-38 Insulation (RAC)	Single Family	0.01	0.02	0.00	Cooling
113	Ceiling R-19 to R-49 Insulation (RAC)	Single Family	0.00	0.01	0.00	Cooling
113	Room AC Filter Replacement	Single Family	0.01	0.01	0.00	Cooling
113	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early replacement)	Single Family	0.27	0.11	0.00	Cooling
113	10% better than Energy Star Dehumidifier ROB (35-45 pints/day)	Single Family	0.23	0.50	0.00	Cooling
113	Door Weatherization (HP heating)	Single Family	1.88	0.60	0.00	Space Heating
113	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Single Family	14.65	0.63	0.00	Space Heating
113	Heat Recovery Ventilators (HP heating)	Single Family	31.32	0.44	0.00	Space Heating
113	Crawlspace insulation (HP heating)	Single Family	0.47	0.34	0.00	Space Heating
113	Ceiling R-0 to R-38 Insulation (HP heating)	Single Family	2.22	0.31	0.00	Space Heating
113	Basement insulation R-13 (HP heating)	Single Family	0.39	0.30	0.00	Space Heating
113	Ceiling R-0 to R-49 Insulation (HP heating)	Single Family	0.07	0.06	0.00	Space Heating
113	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Single Family	5.00	0.24	0.00	Space Heating
113	Duct Testing and Sealing (HP heating)	Single Family	0.98	0.22	0.00	Space Heating
113	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Single Family	1.49	0.18	0.00	Space Heating
113	Ceiling R-11 to R-38 Insulaton (HP heating)	Single Family	2.74	0.13	0.00	Space Heating
113	Ceiling R-11 to R-49 Insulation (HP heating)	Single Family	0.25	0.06	0.00	Space Heating
113	Floor R-0 to R-19 Insulation-Batts (HP heating)	Single Family	0.19	0.09	0.00	Space Heating
113	Ceiling R-19 to R-38 Insulation (HP heating)	Single Family	0.30	0.07	0.00	Space Heating
113	Ground Source Heat Pump with Desuperheater (HP heating)	Single Family	8.75	0.03	0.00	Space Heating
113	Ceiling R-19 to R-49 Insulation (HP heating)	Single Family	0.06	0.05	0.00	Space Heating
113	Heat Pump Filter Replacement	Single Family	0.38	0.04	0.00	Space Heating
113	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Single Family	0.28	0.03	0.00	Space Heating
113	Heat pump tune up	Single Family	0.40	0.02	0.00	Space Heating
113	Door Weatherization (HP heating early replacement)	Single Family	0.38	0.69	0.00	Space Heating
113	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early replacement)	Single Family	2.86	0.70	0.00	Space Heating
113	Heat Recovery Ventilators (HP heating early replacement)	Single Family	6.11	0.49	0.00	Space Heating

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
113	Crawlspace insulation (HP heating early replacement)	Single Family	0.52	0.38	0.00	Space Heating
113	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Single Family	0.42	0.33	0.00	Space Heating
113	Basement insulation R-13 (HP heating early replacement)	Single Family	0.43	0.33	0.00	Space Heating
113	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Single Family	0.01	0.07	0.00	Space Heating
113	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating early	Single Family	0.94	0.26	0.00	Space Heating
113	Duct Testing and Sealing (HP heating early replacement)	Single Family	0.18	0.24	0.00	Space Heating
113	WINDOWS - Double-Glazed Clear to Energy Star (HP heating early	Single Family	0.28	0.20	0.00	Space Heating
113	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Single Family	0.52	0.14	0.00	Space Heating
113	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Single Family	0.05	0.06	0.00	Space Heating
113	Floor R-0 to R-19 Insulation-Batts (HP heating early replacement)	Single Family	0.20	0.10	0.00	Space Heating
113	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Single Family	0.06	0.07	0.00	Space Heating
113	Ground Source Heat Pump with Desuperheater (HP heating early	Single Family	1.63	0.03	0.00	Space Heating
113	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Single Family	0.01	0.05	0.00	Space Heating
113	Heat Pump Filter Replacement (heating)	Single Family	0.07	0.04	0.00	Space Heating
113	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacement)	Single Family	0.05	0.03	0.00	Space Heating
113	Heat pump tune up (heating)	Single Family	0.07	0.03	0.00	Space Heating
113	Door Weatherization (resistance heating)	Single Family	1.21	0.92	0.00	Space Heating
113	Heat Recovery Ventilators (resistance heating)	Single Family	12.81	0.43	0.00	Space Heating
113	Ceiling R-0 to R-38 Insulation (resistance heating)	Single Family	0.98	0.33	0.00	Space Heating
113	Crawlspace insulation (resistance heating)	Single Family	0.41	0.30	0.00	Space Heating
113	Basement insulation R-13 (resistance heating)	Single Family	0.59	0.29	0.00	Space Heating
113	Ceiling R-0 to R-49 Insulation (resistance heating)	Single Family	0.02	0.05	0.00	Space Heating
113	Comprehensive Shell Air Sealing - Inf. Reduction (resistance heating)	Single Family	2.01	0.23	0.00	Space Heating
113	WINDOWS - Double-Glazed Clear to Energy Star (resistance heating)	Single Family	0.69	0.20	0.00	Space Heating
113	Ceiling R-11 to R-38 Insulaton (resistance heating)	Single Family	1.21	0.13	0.00	Space Heating
113	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Single Family	0.25	0.12	0.00	Space Heating
113	Ceiling R-11 to R-49 Insulation (resistance heating)	Single Family	0.09	0.05	0.00	Space Heating
113	Ceiling R-19 to R-38 Insulation (resistance heating)	Single Family	0.14	0.08	0.00	Space Heating
113	Ceiling R-19 to R-49 Insulation (resistance heating)	Single Family	0.02	0.05	0.00	Space Heating
113	Ground Source Heat Pump with Desuperheater (resistance heating)	Single Family	0.33	0.00	0.00	Space Heating
113	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Single Family	0.17	0.04	0.00	Space Heating
113	LEDs (base CFL 0.5 hrs/day) 2020	Single Family	0.51	0.30	0.00	Lighting
113	Refrigerator - Early Replacement (Energy Star)	Single Family	3.05	0.59	0.00	Refrigeration
113	DHW Tank Wrap	Single Family	9.10	0.96	0.00	Water Heating
113	Heat Pump Water Heater - Energy Star	Single Family	23.02	0.85	0.00	Water Heating

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
113	Solar Domestic Water Heating	Single Family	62.64	0.39	0.00	Water Heating
113	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	0.19	0.01	0.00	Water Heating
113	Energy Star Dishwasher (EF=0.72)	Single Family	0.15	0.01	0.00	Water Heating
113	Heat Pump Water Heater - Energy Star - Early Replacement	Single Family	4.76	0.86	0.00	Water Heating
113	Energy Star CW CEE Tier 2 (MEF=2.0)	Single Family	0.81	0.05	0.00	Clothes Washer
113	Heat Pump Dryer	Single Family	20.73	0.09	0.00	Clothes Dryer
113	Energy Star Dishwasher (EF=0.72)	Single Family	0.24	0.04	0.00	Dishwashers
113	PV-Powered Pool Pumps	Single Family	3.58	0.07	0.00	Pool Pump
113	Plug Load Controls - Smart Power Strip (base plasma TV)	Single Family	0.06	0.01	0.00	Electronics
113	Plug Load Controls - Smart Power Strip (base LCD TV)	Single Family	0.15	0.01	0.00	Electronics
113	Plug Load Controls - Smart Power Strip (base CRT TV)	Single Family	0.31	0.04	0.00	Electronics
113	Plug Load Controls - Smart Power Strip (base DVD player)	Single Family	0.70	0.07	0.00	Electronics
113	Plug Load Controls - Smart Power Strip (base Desktop PC)	Single Family	4.39	0.65	0.00	Miscellaneous
113	Door Weatherization (CAC)	Multi-Family	0.37	0.97	0.00	Cooling
113	Proper Refrigerant Charging and Air Flow (CAC)	Multi-Family	0.52	0.68	0.00	Cooling
113	Duct Insulation (CAC)	Multi-Family	0.01	0.62	0.00	Cooling
113	Programmable Thermostat (CAC)	Multi-Family	0.05	0.60	0.00	Cooling
113	14 SEER (12.15 EER) Split-System Air Conditioner (CAC)	Multi-Family	0.43	0.50	0.00	Cooling
113	Return Duct Modification (CAC)	Multi-Family	0.04	0.45	0.00	Cooling
113	15 SEER (12.72 EER) Split-System Air Conditioner (CAC)	Multi-Family	0.37	0.42	0.00	Cooling
113	Ceiling Fans (CAC)	Multi-Family	0.31	0.35	0.00	Cooling
113	Crawlspace insulation (CAC)	Multi-Family	0.02	0.33	0.00	Cooling
113	17 SEER (12.28 EER) Split-System Air Conditioner (CAC)	Multi-Family	0.58	0.30	0.00	Cooling
113	Ceiling R-0 to R-38 Insulation (CAC)	Multi-Family	0.41	0.17	0.00	Cooling
113	Comprehensive Shell Air Sealing - Inf. Reduction (CAC)	Multi-Family	0.21	0.16	0.00	Cooling
113	WINDOWS - Double-Glazed Clear to Energy Star (CAC)	Multi-Family	0.10	0.15	0.00	Cooling
113	Proper Sizing and Quality Install (CAC)	Multi-Family	0.41	0.13	0.00	Cooling
113	Duct Testing and Sealing (CAC)	Multi-Family	0.10	0.11	0.00	Cooling
113	Ceiling R-0 to R-49 Insulation (CAC)	Multi-Family	0.00	0.01	0.00	Cooling
113	WINDOWS - Default With Sunscreen (CAC)	Multi-Family	0.26	0.08	0.00	Cooling
113	Ceiling R-11 to R-38 Insulaton (CAC)	Multi-Family	0.05	0.05	0.00	Cooling
113	Cool Roof (CAC)	Multi-Family	0.11	0.05	0.00	Cooling
113	Wall Blow-in R-0 to R-13 Insulation (CAC)	Multi-Family	0.03	0.04	0.00	Cooling
113	Window Film (CAC)	Multi-Family	0.19	0.04	0.00	Cooling
113	Whole House Fans (CAC)	Multi-Family	0.18	0.04	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
113	Ceiling R-11 to R-49 Insulation (CAC)	Multi-Family	0.00	0.01	0.00	Cooling
113	Ceiling R-19 to R-38 Insulation (CAC)	Multi-Family	0.01	0.03	0.00	Cooling
113	Ceiling R-19 to R-49 Insulation (CAC)	Multi-Family	0.00	0.01	0.00	Cooling
113	Floor R-0 to R-19 Insulation-Batts (CAC)	Multi-Family	0.02	0.02	0.00	Cooling
113	Basement insulation R-13 (CAC)	Multi-Family	0.01	0.02	0.00	Cooling
113	AC Filter Changes (CAC)	Multi-Family	0.01	0.01	0.00	Cooling
113	AC Maintenance and/or tune-up (CAC)	Multi-Family	0.01	0.01	0.00	Cooling
113	Programmable Thermostat (CAC early replacement)	Multi-Family	0.02	1.00	0.00	Cooling
113	Return Duct Modification (CAC early replacement)	Multi-Family	0.01	0.79	0.00	Cooling
113	Crawlspace insulation (CAC early replacement)	Multi-Family	0.01	0.66	0.00	Cooling
113	Cool Roof (CAC early replacement)	Multi-Family	0.22	0.59	0.00	Cooling
113	Whole House Fans (CAC early replacement)	Multi-Family	0.34	0.44	0.00	Cooling
113	WINDOWS - Double-Glazed Clear to Energy Star (CAC early replacement)	Multi-Family	0.03	0.30	0.00	Cooling
113	Ceiling R-0 to R-38 Insulation (CAC early replacement)	Multi-Family	0.11	0.27	0.00	Cooling
113	Duct Testing and Sealing (CAC early replacement)	Multi-Family	0.04	0.24	0.00	Cooling
113	Comprehensive Shell Air Sealing - Inf. Reduction (CAC early replacement)	Multi-Family	0.05	0.24	0.00	Cooling
113	Proper Sizing and Quality Install (CAC early replacement)	Multi-Family	0.13	0.19	0.00	Cooling
113	Ceiling Fans (CAC early replacement)	Multi-Family	0.03	0.17	0.00	Cooling
113	Ceiling R-0 to R-49 Insulation (CAC early replacement)	Multi-Family	0.00	0.02	0.00	Cooling
113	Basement insulation R-13 (CAC early replacement)	Multi-Family	0.01	0.16	0.00	Cooling
113	Ceiling R-11 to R-38 Insulaton (CAC early replacement)	Multi-Family	0.01	0.09	0.00	Cooling
113	WINDOWS - Default With Sunscreen (CAC early replacement)	Multi-Family	0.05	0.08	0.00	Cooling
113	Wall Blow-in R-0 to R-13 Insulation (CAC early replacement)	Multi-Family	0.01	0.07	0.00	Cooling
113	Ceiling R-11 to R-49 Insulation (CAC early replacement)	Multi-Family	0.00	0.02	0.00	Cooling
113	Window Film (CAC early replacement)	Multi-Family	0.04	0.05	0.00	Cooling
113	Ceiling R-19 to R-38 Insulation (CAC early replacement)	Multi-Family	0.00	0.05	0.00	Cooling
113	Ceiling R-19 to R-49 Insulation (CAC early replacement)	Multi-Family	0.00	0.02	0.00	Cooling
113	14 SEER (12.15 EER) Split-System Air Conditioner w/ Quality Install - Early	Multi-Family	0.04	0.03	0.00	Cooling
113	Floor R-0 to R-19 Insulation-Batts (CAC early replacement)	Multi-Family	0.00	0.03	0.00	Cooling
113	AC Filter Changes (CAC early replacement)	Multi-Family	0.00	0.01	0.00	Cooling
113	AC Maintenance and/or tune-up (CAC early replacement)	Multi-Family	0.00	0.01	0.00	Cooling
113	Proper Refrigerant Charging and Air Flow (HP cooling)	Multi-Family	0.66	0.78	0.00	Cooling
113	Crawlspace insulation (HP cooling)	Multi-Family	0.03	0.47	0.00	Cooling
113	Programmable Thermostat (HP cooling)	Multi-Family	0.17	0.43	0.00	Cooling
113	Cool Roof (HP cooling)	Multi-Family	0.93	0.41	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
113	Whole House Fans (HP cooling)	Multi-Family	1.44	0.30	0.00	Cooling
113	Ceiling R-0 to R-38 Insulation (HP cooling)	Multi-Family	0.50	0.19	0.00	Cooling
113	Duct Testing and Sealing (HP cooling)	Multi-Family	0.16	0.17	0.00	Cooling
113	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling)	Multi-Family	0.24	0.17	0.00	Cooling
113	Proper Sizing and Quality Install (HP cooling)	Multi-Family	0.49	0.14	0.00	Cooling
113	Ceiling R-0 to R-49 Insulation (HP cooling)	Multi-Family	0.01	0.03	0.00	Cooling
113	Ceiling Fans (HP cooling)	Multi-Family	0.12	0.12	0.00	Cooling
113	Basement insulation R-13 (HP cooling)	Multi-Family	0.05	0.12	0.00	Cooling
113	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling)	Multi-Family	0.11	0.10	0.00	Cooling
113	Ceiling R-11 to R-38 Insulaton (HP cooling)	Multi-Family	0.07	0.06	0.00	Cooling
113	Ceiling R-11 to R-49 Insulation (HP cooling)	Multi-Family	0.01	0.03	0.00	Cooling
113	Floor R-0 to R-19 Insulation-Batts (HP cooling)	Multi-Family	0.04	0.05	0.00	Cooling
113	Ceiling R-19 to R-38 Insulation (HP cooling)	Multi-Family	0.01	0.04	0.00	Cooling
113	Ceiling R-19 to R-49 Insulation (HP cooling)	Multi-Family	0.00	0.03	0.00	Cooling
113	Wall Blow-in R-0 to R-13 Insulation (HP cooling)	Multi-Family	0.03	0.01	0.00	Cooling
113	Heat Pump Filter Replacement	Multi-Family	0.01	0.01	0.00	Cooling
113	Heat pump tune up	Multi-Family	0.01	0.01	0.00	Cooling
113	Proper Refrigerant Charging and Air Flow (HP cooling Early Replacement)	Multi-Family	0.12	0.80	0.00	Cooling
113	Crawlspace insulation (HP cooling Early Replacement)	Multi-Family	0.01	0.48	0.00	Cooling
113	Programmable Thermostat (HP cooling Early Replacement)	Multi-Family	0.03	0.45	0.00	Cooling
113	Cool Roof (HP cooling Early Replacement)	Multi-Family	0.17	0.42	0.00	Cooling
113	Whole House Fans (HP cooling early replacement)	Multi-Family	0.26	0.31	0.00	Cooling
113	Ceiling R-0 to R-38 Insulation (HP cooling Early Replacement)	Multi-Family	0.09	0.20	0.00	Cooling
113	Duct Testing and Sealing (HP cooling Early Replacement)	Multi-Family	0.03	0.18	0.00	Cooling
113	Comprehensive Shell Air Sealing - Inf. Reduction (HP cooling Early	Multi-Family	0.04	0.17	0.00	Cooling
113	Proper Sizing and Quality Install (HP cooling Early Replacement)	Multi-Family	0.09	0.15	0.00	Cooling
113	Ceiling R-0 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	0.00	0.03	0.00	Cooling
113	Ceiling Fans (HP cooling early replacement)	Multi-Family	0.02	0.13	0.00	Cooling
113	Basement insulation R-13 (HP cooling Early Replacement)	Multi-Family	0.01	0.12	0.00	Cooling
113	WINDOWS - Double-Glazed Clear to Energy Star (HP cooling Early	Multi-Family	0.02	0.10	0.00	Cooling
113	Ceiling R-11 to R-38 Insulaton (HP cooling Early Replacement)	Multi-Family	0.01	0.06	0.00	Cooling
113	Ceiling R-11 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	0.00	0.03	0.00	Cooling
113	Floor R-0 to R-19 Insulation-Batts (HP cooling Early Replacement)	Multi-Family	0.01	0.05	0.00	Cooling
113	Ceiling R-19 to R-38 Insulation (HP cooling Early Replacement)	Multi-Family	0.00	0.04	0.00	Cooling
113	Ceiling R-19 to R-49 Insulation (HP cooling Early Replacement)	Multi-Family	0.00	0.03	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
113	Wall Blow-in R-0 to R-13 Insulation (HP cooling Early Replacement)	Multi-Family	0.01	0.01	0.00	Cooling
113	Heat Pump Filter Replacement	Multi-Family	0.00	0.01	0.00	Cooling
113	Heat pump tune up	Multi-Family	0.00	0.01	0.00	Cooling
113	Cool Roof (RAC)	Multi-Family	0.07	0.79	0.00	Cooling
113	Whole House Fans (RAC)	Multi-Family	0.11	0.58	0.00	Cooling
113	Comprehensive Shell Air Sealing - Inf. Reduction (RAC)	Multi-Family	0.02	0.43	0.00	Cooling
113	HE Room Air Conditioner - CEE Tier 1 EER 11.3	Multi-Family	0.03	0.40	0.00	Cooling
113	WINDOWS - Double-Glazed Clear to Energy Star (RAC)	Multi-Family	0.01	0.35	0.00	Cooling
113	Ceiling R-0 to R-38 Insulation (RAC)	Multi-Family	0.03	0.30	0.00	Cooling
113	Ceiling Fans (RAC)	Multi-Family	0.01	0.25	0.00	Cooling
113	Ceiling R-0 to R-49 Insulation (RAC)	Multi-Family	0.00	0.05	0.00	Cooling
113	Window Film (RAC)	Multi-Family	0.03	0.17	0.00	Cooling
113	Wall Blow-in R-0 to R-13 Insulation (RAC)	Multi-Family	0.00	0.11	0.00	Cooling
113	WINDOWS - Default With Sunscreen (RAC)	Multi-Family	0.01	0.11	0.00	Cooling
113	Ceiling R-11 to R-38 Insulaton (RAC)	Multi-Family	0.00	0.10	0.00	Cooling
113	Ceiling R-11 to R-49 Insulation (RAC)	Multi-Family	0.00	0.04	0.00	Cooling
113	Ceiling R-19 to R-38 Insulation (RAC)	Multi-Family	0.00	0.06	0.00	Cooling
113	Ceiling R-19 to R-49 Insulation (RAC)	Multi-Family	0.00	0.04	0.00	Cooling
113	Room AC Filter Replacement	Multi-Family	0.00	0.03	0.00	Cooling
113	EER 8.5 RAC Early Replacement, CEE Tier 1 EER 11.3 (early replacement)	Multi-Family	0.01	0.08	0.00	Cooling
113	10% better than Energy Star Dehumidifier ROB (35-45 pints/day)	Multi-Family	0.03	0.50	0.00	Cooling
113	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating)	Multi-Family	1.52	0.57	0.00	Space Heating
113	Crawlspace insulation (HP heating)	Multi-Family	0.04	0.47	0.00	Space Heating
113	Programmable Thermostat (HP heating)	Multi-Family	0.30	0.45	0.00	Space Heating
113	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating)	Multi-Family	0.67	0.28	0.00	Space Heating
113	Ceiling R-0 to R-38 Insulation (HP heating)	Multi-Family	1.18	0.26	0.00	Space Heating
113	Duct Testing and Sealing (HP heating)	Multi-Family	0.38	0.23	0.00	Space Heating
113	Ceiling R-0 to R-49 Insulation (HP heating)	Multi-Family	0.03	0.05	0.00	Space Heating
113	Basement insulation R-13 (HP heating)	Multi-Family	0.11	0.18	0.00	Space Heating
113	Heat Recovery Ventilators (HP heating)	Multi-Family	2.66	0.17	0.00	Space Heating
113	WINDOWS - Double-Glazed Clear to Energy Star (HP heating)	Multi-Family	0.23	0.12	0.00	Space Heating
113	Ceiling R-11 to R-38 Insulaton (HP heating)	Multi-Family	0.14	0.08	0.00	Space Heating
113	Ceiling R-11 to R-49 Insulation (HP heating)	Multi-Family	0.01	0.04	0.00	Space Heating
113	Floor R-0 to R-19 Insulation-Batts (HP heating)	Multi-Family	0.08	0.06	0.00	Space Heating
113	Ground Source Heat Pump with Desuperheater (HP heating)	Multi-Family	0.84	0.03	0.00	Space Heating

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
113	Ceiling R-19 to R-38 Insulation (HP heating)	Multi-Family	0.01	0.04	0.00	Space Heating
113	Ceiling R-19 to R-49 Insulation (HP heating)	Multi-Family	0.00	0.03	0.00	Space Heating
113	Wall Blow-in R-0 to R-13 Insulation (HP heating)	Multi-Family	0.07	0.02	0.00	Space Heating
113	Heat Pump Filter Replacement	Multi-Family	0.02	0.01	0.00	Space Heating
113	Heat pump tune up	Multi-Family	0.03	0.01	0.00	Space Heating
113	Heat pump upgrade to 16+ SEER/8.7+ HSPF (HP heating early replacement)	Multi-Family	0.37	0.79	0.00	Space Heating
113	Crawlspace insulation (HP heating early replacement)	Multi-Family	0.06	0.64	0.00	Space Heating
113	Programmable Thermostat (HP heating early replacement)	Multi-Family	0.07	0.62	0.00	Space Heating
113	Comprehensive Shell Air Sealing - Inf. Reduction (HP heating early	Multi-Family	0.16	0.38	0.00	Space Heating
113	Ceiling R-0 to R-38 Insulation (HP heating early replacement)	Multi-Family	0.28	0.35	0.00	Space Heating
113	Duct Testing and Sealing (HP heating early replacement)	Multi-Family	0.09	0.32	0.00	Space Heating
113	Ceiling R-0 to R-49 Insulation (HP heating early replacement)	Multi-Family	0.01	0.06	0.00	Space Heating
113	Basement insulation R-13 (HP heating early replacement)	Multi-Family	0.15	0.25	0.00	Space Heating
113	Heat Recovery Ventilators (HP heating early replacement)	Multi-Family	0.61	0.22	0.00	Space Heating
113	WINDOWS - Double-Glazed Clear to Energy Star (HP heating early	Multi-Family	0.05	0.16	0.00	Space Heating
113	Ceiling R-11 to R-38 Insulaton (HP heating early replacement)	Multi-Family	0.03	0.10	0.00	Space Heating
113	Ceiling R-11 to R-49 Insulation (HP heating early replacement)	Multi-Family	0.00	0.05	0.00	Space Heating
113	Floor R-0 to R-19 Insulation-Batts (HP heating early replacement)	Multi-Family	0.10	0.07	0.00	Space Heating
113	Ground Source Heat Pump with Desuperheater (HP heating early	Multi-Family	0.19	0.03	0.00	Space Heating
113	Ceiling R-19 to R-38 Insulation (HP heating early replacement)	Multi-Family	0.00	0.05	0.00	Space Heating
113	Ceiling R-19 to R-49 Insulation (HP heating early replacement)	Multi-Family	0.00	0.04	0.00	Space Heating
113	Wall Blow-in R-0 to R-13 Insulation (HP heating early replacement)	Multi-Family	0.02	0.02	0.00	Space Heating
113	Heat Pump Filter Replacement (heating)	Multi-Family	0.01	0.02	0.00	Space Heating
113	Heat pump tune up (heating)	Multi-Family	0.01	0.01	0.00	Space Heating
113	Programmable Thermostat (resistance heating)	Multi-Family	0.26	0.87	0.00	Space Heating
113	Crawlspace insulation (resistance heating)	Multi-Family	0.07	0.75	0.00	Space Heating
113	Ceiling R-0 to R-38 Insulation (resistance heating)	Multi-Family	1.18	0.42	0.00	Space Heating
113	Comprehensive Shell Air Sealing - Inf. Reduction (resistance heating)	Multi-Family	0.53	0.37	0.00	Space Heating
113	Ceiling R-0 to R-49 Insulation (resistance heating)	Multi-Family	0.03	0.06	0.00	Space Heating
113	Basement insulation R-13 (resistance heating)	Multi-Family	0.25	0.27	0.00	Space Heating
113	WINDOWS - Double-Glazed Clear to Energy Star (resistance heating)	Multi-Family	0.30	0.25	0.00	Space Heating
113	Heat Recovery Ventilators (resistance heating)	Multi-Family	2.31	0.24	0.00	Space Heating
113	Ceiling R-11 to R-38 Insulaton (resistance heating)	Multi-Family	0.14	0.12	0.00	Space Heating
113	Floor R-0 to R-19 Insulation-Batts (resistance heating)	Multi-Family	0.16	0.12	0.00	Space Heating
113	Ceiling R-11 to R-49 Insulation (resistance heating)	Multi-Family	0.01	0.04	0.00	Space Heating

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Residential: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
113	Ground Source Heat Pump with Desuperheater (resistance heating)	Multi-Family	-0.01	0.00	0.00	Space Heating
113	Ceiling R-19 to R-38 Insulation (resistance heating)	Multi-Family	0.02	0.07	0.00	Space Heating
113	Ceiling R-19 to R-49 Insulation (resistance heating)	Multi-Family	0.00	0.04	0.00	Space Heating
113	Wall Blow-in R-0 to R-13 Insulation (resistance heating)	Multi-Family	0.09	0.04	0.00	Space Heating
113	LEDs (base CFL 0.5 hrs/day) 2020	Multi-Family	0.05	0.29	0.00	Lighting
113	Refrigerator - Early Replacement (Energy Star)	Multi-Family	0.76	0.42	0.00	Refrigeration
113	DHW Tank Wrap	Multi-Family	1.81	0.86	0.00	Water Heating
113	Heat Pump Water Heater - Energy Star	Multi-Family	4.20	0.83	0.00	Water Heating
113	Solar Domestic Water Heating	Multi-Family	4.11	0.35	0.00	Water Heating
113	Energy Star CW CEE Tier 2 (MEF=2.0)	Multi-Family	0.09	0.03	0.00	Water Heating
113	Energy Star Dishwasher (EF=0.72)	Multi-Family	0.05	0.02	0.00	Water Heating
113	Heat Pump Water Heater - Energy Star - Early Replacement	Multi-Family	0.90	0.82	0.00	Water Heating
113	Energy Star CW CEE Tier 2 (MEF=2.0)	Multi-Family	0.19	0.06	0.00	Clothes Washer
113	Heat Pump Dryer	Multi-Family	5.11	0.13	0.00	Clothes Dryer
113	Energy Star Dishwasher (EF=0.72)	Multi-Family	0.10	0.05	0.00	Dishwashers
113	Plug Load Controls - Smart Power Strip (base plasma TV)	Multi-Family	0.01	0.02	0.00	Electronics
113	Plug Load Controls - Smart Power Strip (base LCD TV)	Multi-Family	0.05	0.02	0.00	Electronics
113	Plug Load Controls - Smart Power Strip (base CRT TV)	Multi-Family	0.06	0.06	0.00	Electronics
113	Plug Load Controls - Smart Power Strip (base DVD player)	Multi-Family	0.15	0.06	0.00	Electronics
113	Direct Feedback	Multi-Family	9.16	0.75	0.00	Whole Bldg (Retrofit)

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
1	LEDs (base incandescent flood) 2020	Office	415.40	11876.08	415.40	Indoor Lighting
2	LEDs (base incandescent flood) 2020	Retail	262.66	6666.83	262.66	Indoor Lighting
3	DX Packaged System, EER=13.4, 10 tons	Office	210.96	4.61	210.96	Cooling
4	LEDs (base incandescent flood) 2020	Misc	201.80	10238.97	201.80	Indoor Lighting
5	DX Packaged System, EER=13.4, 10 tons	Retail	184.68	3.08	184.68	Cooling
6	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	169.08	1.56	169.08	Indoor Lighting
7	DX Packaged System, EER=13.4, 10 tons	School	164.06	1.65	164.06	Cooling
8	Variable Speed Drive Control, 5 HP	Retail	155.79	3.41	155.79	Ventilation
9	ROB 4L4' High Performance T8 (86 W), 2020	Office	150.71	3.25	150.71	Indoor Lighting
10	LEDs (base incandescent A-line 72W) 2020	Office	145.74	8333.39	145.74	Indoor Lighting
11	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	119.99	5.76	119.99	Indoor Lighting
12	LEDs (base incandescent flood) 2020	on-Jurisdiction	110.64	10492.37	110.64	Indoor Lighting
13	Variable Speed Drive Control, 15 HP	School	101.22	1.02	101.22	Ventilation
14	Variable Speed Drive Control, 5 HP	Office	98.38	4.59	98.38	Ventilation
15	Variable Speed Drive Control, 5 HP	Misc	97.88	1.27	97.88	Ventilation
16	DX Packaged System, EER=13.4, 10 tons	Restaurant	97.12	5.70	97.12	Cooling
17	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	School	95.60	1.19	95.60	Indoor Lighting
18	LEDs (base incandescent A-line 53W) 2020	Office	94.76	5418.15	94.76	Indoor Lighting
19	ROB 4L4' High Performance T8 (86 W), 2020	School	92.98	2.68	92.98	Indoor Lighting
20	LEDs (base incandescent A-line 72W) 2020	Retail	92.80	4710.80	92.80	Indoor Lighting
21	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Retail	88.39	1.10	88.39	Indoor Lighting
22	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Office	85.99	1.00	85.99	Indoor Lighting
23	T5 (240W) (base metal halide)	Warehouse	85.98	6.92	85.98	Indoor Lighting
24	ROB 4L4' High Performance T8 (86 W), 2020	Retail	80.64	2.30	80.64	Indoor Lighting
25	DX Packaged System, EER=13.4, 10 tons	on-Jurisdiction	79.22	3.47	79.22	Cooling
26	DX Packaged System, EER=13.4, 10 tons	Lodging	78.69	2.22	78.69	Cooling
27	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	77.45	6.45	77.45	Cooling
28	DX Packaged System, EER=13.4, 10 tons	Misc	71.27	3.41	71.27	Cooling
29	LEDs (base incandescent A-line 72W) 2020	Misc	70.96	7200.52	70.96	Indoor Lighting
30	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	69.46	1.96	69.46	Cooling
31	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Retail	63.58	3.84	63.58	Indoor Lighting
32	Electronically Commutated Motors (ECM) on an Air Handler Unit	School	63.09	1.37	63.09	Ventilation
33	LEDs (base incandescent A-line 53W) 2020	Retail	62.28	3161.81	62.28	Indoor Lighting
34	Variable Speed Drive Control, 15 HP	Health	60.86	13.15	60.86	Ventilation
35	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	School	60.82	2.17	60.82	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
36	Solar Water Heater	Office	56.13	1.46	56.13	Water Heating
37	LEDs (base incandescent flood) 2020	Restaurant	54.42	6141.55	54.42	Indoor Lighting
38	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	on-Jurisdiction	54.02	1.47	54.02	Indoor Lighting
39	Data Center Best Practices	Data Centers	52.27	46.96	52.27	Office Equipment
40	Variable Speed Drive Control, 40 HP	School	49.06	8.34	49.06	Ventilation
41	ROB 4L4' High Performance T8 (86 W), 2020	on-Jurisdiction	48.61	3.06	48.61	Indoor Lighting
42	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	48.39	1.31	48.39	Indoor Lighting
43	DX Packaged System, EER=13.4, 10 tons	Health	48.24	3.37	48.24	Cooling
44	LEDs (base incandescent A-line 53W) 2020	Misc	46.60	4728.39	46.60	Indoor Lighting
45	Data Center Improved Operations	Data Centers	45.65	115.35	45.65	Office Equipment
46	T5 (240W) (base metal halide)	School	44.31	4.07	44.31	Indoor Lighting
47	Variable Speed Drive Control, 5 HP	on-Jurisdiction	43.99	3.34	43.99	Ventilation
48	Variable Speed Drive Control, 5 HP	School	43.97	1.44	43.97	Ventilation
49	Economizer Repair - DX	Retail	43.20	1.11	43.20	Cooling
50	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Misc	43.09	1.39	43.09	Indoor Lighting
51	LEDs (base incandescent flood) 2020	Lodging	42.49	6200.76	42.49	Indoor Lighting
52	Electronically Commutated Motors (ECM) on an Air Handler Unit	Misc	40.04	2.54	40.04	Ventilation
53	ROB 4L4' High Performance T8 (86 W), 2020	Misc	39.15	2.89	39.15	Indoor Lighting
54	LEDs (base incandescent A-line 72W) 2020	on-Jurisdiction	38.78	7355.84	38.78	Indoor Lighting
55	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	on-Jurisdiction	38.57	4.31	38.57	Indoor Lighting
56	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	36.88	4.32	36.88	Cooling
57	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	36.40	3.18	36.40	Cooling
58	Variable Speed Drive Control, 5 HP	Grocery	35.26	2.07	35.26	Ventilation
59	ROB 4L4' High Performance T8 (86 W), 2020	Warehouse	35.12	2.78	35.12	Indoor Lighting
60	Variable Speed Drive Control, 5 HP	Warehouse	34.77	1.74	34.77	Ventilation
61	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	34.56	3.83	34.56	Cooling
62	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Misc	33.33	1.11	33.33	Indoor Lighting
63	Electronically commutated evaporator fan motor	Grocery	32.81	3.15	32.81	Refrigeration
64	Economizer Repair - DX	Office	31.78	1.67	31.78	Cooling
65	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Misc	30.97	3.42	30.97	Indoor Lighting
66	T5 (240W) (base metal halide)	Misc	28.60	8.00	28.60	Indoor Lighting
67	Heat Recovery Unit	Restaurant	28.06	5.33	28.06	Water Heating
68	PC Network Power Management Enabling	Office	27.44	4.64	27.44	Office Equipment
69	ROB 2L4' High Performance T8 (86 W), 2020	Misc	27.33	2.31	27.33	Indoor Lighting
70	Night covers for display cases (self-contained)	Restaurant	27.03	13.28	27.03	Refrigeration
71	DX Packaged System, EER=13.4, 10 tons	Grocery	26.91	3.35	26.91	Cooling
72	LEDs (base incandescent flood) 2020	Grocery	26.05	8849.41	26.05	Indoor Lighting
73	Data Center Best Practices	School	25.44	42.93	25.44	Office Equipment

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
74	Centrifugal Chiller, 0.51 kW/ton, 500 tons	School	25.40	1.57	25.40	Cooling
75	LEDs (base incandescent A-line 53W) 2020	on-Jurisdiction	25.11	4763.43	25.11	Indoor Lighting
76	HE PTAC, EER=9.6, 1 ton	Misc	25.11	1.38	25.11	Cooling
77	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Warehouse	24.97	1.25	24.97	Indoor Lighting
78	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Misc	23.71	2.78	23.71	Indoor Lighting
79	Centrifugal Chiller, 0.51 kW/ton, 500 tons	on-Jurisdiction	23.67	3.29	23.67	Cooling
80	Window Film (Standard) - DX	Restaurant	23.58	3.95	23.58	Cooling
81	Variable Speed Drive Control, 15 HP	on-Jurisdiction	22.93	12.10	22.93	Ventilation
82	Data Center Improved Operations	School	22.21	105.45	22.21	Office Equipment
83	Outdoor Lighting Controls (Photocell/Timeclock)	School	21.53	1.59	21.53	Outdoor Lighting
84	Electronically Commutated Motors (ECM) on an Air Handler Unit	Health	21.50	2.86	21.50	Ventilation
85	LEDs (base incandescent flood) 2020	eligious Worshi	21.44	3978.10	21.44	Indoor Lighting
86	DX Packaged System, EER=13.4, 10 tons	eligious Worshi	20.95	1.70	20.95	Cooling
87	Data Center State of the Art practices	Data Centers	20.08	24.35	20.08	Office Equipment
88	LEDs (base incandescent A-line 72W) 2020	Restaurant	19.15	4322.55	19.15	Indoor Lighting
89	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	on-Jurisdiction	18.51	4.86	18.51	Cooling
90	Window Film (Standard) - DX	Lodging	18.47	2.77	18.47	Cooling
91	Variable Speed Drive Control, 5 HP	Health	17.51	4.54	17.51	Ventilation
92	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	17.18	4.38	17.18	Cooling
93	Variable Speed Drive Control, 15 HP	Office	17.04	16.60	17.04	Ventilation
94	Outdoor Lighting Controls (Photocell/Timeclock)	Retail	16.94	1.71	16.94	Outdoor Lighting
95	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	16.53	3.93	16.53	Cooling
96	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	16.37	7.99	16.37	Cooling
97	Air Handler Optimization, 15 HP	Misc	16.26	1.34	16.26	Ventilation
98	Variable Speed Drive Control, 40 HP	on-Jurisdiction	16.20	2.21	16.20	Ventilation
99	ROB 2L4' High Performance T8 (86 W), 2020	Retail	16.11	1.82	16.11	Indoor Lighting
100	Outdoor Lighting Controls (Photocell/Timeclock)	Restaurant	15.88	1.20	15.88	Outdoor Lighting
101	Outdoor Lighting Controls (Photocell/Timeclock)	Office	15.60	1.70	15.60	Outdoor Lighting
102	Air Handler Optimization, 40 HP	Misc	15.08	1.56	15.08	Ventilation
103	LEDs (base incandescent A-line 72W) 2020	Lodging	14.98	4373.16	14.98	Indoor Lighting
104	PC Network Power Management Enabling	School	14.96	3.60	14.96	Office Equipment
105	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Warehouse	14.30	2.71	14.30	Cooling
106	ROB 4L4' High Performance T8 (86 W), 2020	Health	13.77	1.70	13.77	Indoor Lighting
107	ROB 4L4' High Performance T8 (86 W), 2020	Grocery	12.87	1.59	12.87	Indoor Lighting
108	EMS - Chiller	Office	12.72	1.46	12.72	Cooling
109	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Retail	12.70	2.25	12.70	Indoor Lighting
110	LEDs (base incandescent A-line 53W) 2020	Restaurant	12.62	2849.02	12.62	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
111	Lighting Control Tuneup (base 4L4'T8), 2020	Office	12.52	6.42	12.52	Indoor Lighting
112	Data Center Best Practices	Office	12.26	55.52	12.26	Office Equipment
113	High Performance Lighting R/R - 25% Savings (base metal halide)	Warehouse	12.26	1.40	12.26	Indoor Lighting
114	Oversized Air Cooled Condenser	Warehouse	12.13	2.29	12.13	Refrigeration
115	PC Network Power Management Enabling	Misc	11.85	4.05	11.85	Office Equipment
116	Demand Hot Gas Defrost	Grocery	11.83	3.45	11.83	Refrigeration
117	Variable Speed Drive Control, 40 HP	Warehouse	11.74	3.40	11.74	Ventilation
118	Air Handler Optimization, 40 HP	Grocery	11.63	2.52	11.63	Ventilation
119	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Lodging	11.62	2.15	11.62	Cooling
120	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Health	10.99	2.18	10.99	Indoor Lighting
121	New Economizer - Chiller	Office	10.92	1.10	10.92	Cooling
122	Data Center Improved Operations	Office	10.71	136.37	10.71	Office Equipment
123	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Grocery	10.43	4.85	10.43	Indoor Lighting
124	PC Network Power Management Enabling	on-Jurisdiction	10.41	4.07	10.41	Office Equipment
125	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	on-Jurisdiction	10.30	1.16	10.30	Indoor Lighting
126	LEDs (base incandescent A-line 53W) 2020	Lodging	9.97	2909.49	9.97	Indoor Lighting
127	Ceiling/roof Insulation - DX	Warehouse	9.83	2.62	9.83	Cooling
128	Data Center State of the Art practices	School	9.77	22.27	9.77	Office Equipment
129	Variable Speed Drive Control, 40 HP	Office	9.72	2.98	9.72	Ventilation
130	Electronically Commutated Motors (ECM) on an Air Handler Unit	on-Jurisdiction	9.64	2.36	9.64	Ventilation
131	T5 (240W) (base metal halide)	Lodging	9.50	3.79	9.50	Indoor Lighting
132	EMS - Chiller	on-Jurisdiction	9.46	1.08	9.46	Cooling
133	Freezer-Cooler Replacement Gaskets (self-contained)	Retail	9.18	1.46	9.18	Refrigeration
134	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	eligious Worshi	9.17	1.59	9.17	Cooling
135	LEDs (base incandescent A-line 72W) 2020	Grocery	9.01	6122.90	9.01	Indoor Lighting
136	Energy-Star Freezer, glass door	Restaurant	9.00	7.19	9.00	Refrigeration
137	ROB 2L4' High Performance T8 (86 W), 2020	on-Jurisdiction	8.92	2.42	8.92	Indoor Lighting
138	Energy-Star Refrigerator, solid door	Restaurant	8.89	2.30	8.89	Refrigeration
139	Fan Motor, 5hp, 1800rpm, 89.5%	Retail	8.61	3.61	8.61	Ventilation
140	Tankless Water Heater	Office	8.55	1.71	8.55	Water Heating
141	LED Exit Sign	Office	8.37	2.49	8.37	Indoor Lighting
142	Night covers for display cases (self-contained)	Retail	8.17	5.64	8.17	Refrigeration
143	Freezer-Cooler Replacement Gaskets (self-contained)	Restaurant	8.13	8.34	8.13	Refrigeration
144	PC Network Power Management Enabling	Warehouse	7.98	3.67	7.98	Office Equipment
145	ROB 2L4' High Performance T8 (86 W), 2020	Restaurant	7.97	1.43	7.97	Indoor Lighting
146	HE PTAC, EER=9.6, 1 ton	Lodging	7.95	1.30	7.95	Cooling
147	Electronically Commutated Motors (ECM) on an Air Handler Unit	eligious Worshi	7.89	1.27	7.89	Ventilation
148	T5 (240W) (base metal halide)	on-Jurisdiction	7.87	7.50	7.87	Indoor Lighting
149	PC Network Power Management Enabling	Retail	7.73	2.84	7.73	Office Equipment

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
150	Outdoor Lighting Controls (Photocell/Timeclock)	Misc	7.73	2.24	7.73	Outdoor Lighting
151	LEDs (base incandescent A-line 72W) 2020	eligious Worshi	7.57	2809.92	7.57	Indoor Lighting
152	Energy Star or Better Monitor - CRT	School	7.56	39.01	7.56	Office Equipment
153	Night covers for display cases (self-contained)	Misc	7.45	38.29	7.45	Refrigeration
154	Lighting Control Tuneup (base 4L4'T8), 2020	School	7.41	2.76	7.41	Indoor Lighting
155	Night covers for display cases (self-contained)	School	7.35	22.13	7.35	Refrigeration
156	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	on-Jurisdiction	7.33	2.87	7.33	Indoor Lighting
157	Heat Recovery Unit	Lodging	7.23	3.37	7.23	Water Heating
158	Air Handler Optimization, 40 HP	on-Jurisdiction	7.22	2.59	7.22	Ventilation
159	Energy Star or Better PC	Office	7.14	2.30	7.14	Office Equipment
160	ENERGY STAR Printer	Office	7.12	48.72	7.12	Office Equipment
161	LEDs (base incandescent flood) 2020	Health	6.89	4873.80	6.89	Indoor Lighting
162	Data Center Best Practices	Misc	6.80	45.26	6.80	Office Equipment
163	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Misc	6.78	3.22	6.78	Cooling
164	ROB 4L4' High Performance T8 (86 W), 2020	eligious Worshi	6.74	1.57	6.74	Indoor Lighting
165	Solar Water Heater	on-Jurisdiction	6.69	1.48	6.69	Water Heating
166	Air Handler Optimization, 15 HP	on-Jurisdiction	6.62	1.83	6.62	Ventilation
167	High Performance Lighting R/R - 25% Savings (base metal halide)	School	6.50	2.58	6.50	Indoor Lighting
168	Fan Motor, 5hp, 1800rpm, 89.5%	Office	6.48	3.61	6.48	Ventilation
169	Tankless Water Heater	Misc	6.38	1.61	6.38	Water Heating
170	Lighting Control Tuneup (base 4L4'T8), 2020	Warehouse	6.36	1.62	6.36	Indoor Lighting
171	Heat Trap	Office	6.36	4.49	6.36	Water Heating
172	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Restaurant	6.31	5.04	6.31	Cooling
173	Data Center Best Practices	Warehouse	6.31	46.14	6.31	Office Equipment
174	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Restaurant	6.27	2.76	6.27	Indoor Lighting
175	Window Film (Standard) - DX	Grocery	6.27	1.06	6.27	Cooling
176	Air Handler Optimization, 15 HP	Office	6.12	2.67	6.12	Ventilation
177	Fan Motor, 5hp, 1800rpm, 89.5%	Misc	6.00	1.34	6.00	Ventilation
178	LED Exit Sign	Retail	5.99	1.38	5.99	Indoor Lighting
179	Data Center Improved Operations	Misc	5.94	111.17	5.94	Office Equipment
180	Heat Recovery Unit	Grocery	5.92	1.04	5.92	Water Heating
181	Solar Water Heater	Lodging	5.91	1.23	5.91	Water Heating
182	Anti-sweat (humidistat) controls	Grocery	5.91	1.38	5.91	Refrigeration
183	ROB 2L4' High Performance T8 (86 W), 2020	School	5.86	2.13	5.86	Indoor Lighting
184	Tankless Water Heater	Retail	5.82	1.16	5.82	Water Heating
185	Ceiling/roof Insulation - Chiller	Restaurant	5.80	7.47	5.80	Cooling
186	Night covers for display cases (self-contained)	Lodging	5.77	73.03	5.77	Refrigeration
187	EMS - Chiller	Restaurant	5.73	1.75	5.73	Cooling
188	Lighting Control Tuneup (base 4L4'T8), 2020	on-Jurisdiction	5.66	4.87	5.66	Indoor Lighting
189	Outdoor Lighting Controls (Photocell/Timeclock)	on-Jurisdiction	5.59	1.90	5.59	Outdoor Lighting
190	Data Center Best Practices	on-Jurisdiction	5.59	44.84	5.59	Office Equipment

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
191	LEDs (base incandescent A-line 53W) 2020	Grocery	5.51	3746.84	5.51	Indoor Lighting
192	Data Center Improved Operations	Warehouse	5.51	113.34	5.51	Office Equipment
193	EMS - Chiller	Health	5.41	1.19	5.41	Cooling
194	Energy Star or Better Monitor - CRT	Office	5.37	65.45	5.37	Office Equipment
195	Occupancy Sensor, High Bay T5	Warehouse	5.35	1.79	5.35	Indoor Lighting
196	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Health	5.35	3.21	5.35	Cooling
197	Energy Star or Better PC	School	5.30	1.85	5.30	Office Equipment
198	Optimize Controls - DX	Restaurant	5.27	1.20	5.27	Cooling
199	Air Handler Optimization, 40 HP	Office	5.19	3.59	5.19	Ventilation
200	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	5.13	3.48	5.13	Heating
201	VSD for Chiller Pumps and Towers	on-Jurisdiction	5.11	1.88	5.11	Cooling
202	Window Film (Standard) - Chiller	Lodging	5.10	2.83	5.10	Cooling
203	LEDs (base incandescent A-line 53W) 2020	eligious Worshi	5.07	1882.79	5.07	Indoor Lighting
204	Variable Speed Drive Control, 40 HP	Retail	4.97	1.10	4.97	Ventilation
205	Data Center Improved Operations	on-Jurisdiction	4.88	110.15	4.88	Office Equipment
206	Heat Trap	Misc	4.74	4.22	4.74	Water Heating
207	Data Center State of the Art practices	Office	4.71	28.79	4.71	Office Equipment
208	ROB 2L4' High Performance T8 (86 W), 2020	eligious Worshi	4.70	1.25	4.70	Indoor Lighting
209	Electronically Commutated Motors (ECM) on an Air Handler Unit	Office	4.54	3.52	4.54	Ventilation
210	Energy Star or Better PC	Misc	4.50	2.06	4.50	Office Equipment
211	Data Center Best Practices	Lodging	4.45	44.69	4.45	Office Equipment
212	Heat Trap	Retail	4.33	3.02	4.33	Water Heating
213	PC Network Power Management Enabling	Health	4.32	2.61	4.32	Office Equipment
214	Data Center Best Practices	Health	4.32	44.45	4.32	Office Equipment
215	LED Exit Sign	Misc	4.30	2.06	4.30	Indoor Lighting
216	Energy Star Ice Machines	Misc	4.29	4.27	4.29	Refrigeration
217	Air Handler Optimization, 40 HP	Lodging	4.26	2.13	4.26	Ventilation
218	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Office	4.23	2.59	4.23	Indoor Lighting
219	Freezer-Cooler Replacement Gaskets (self-contained)	Misc	4.21	36.05	4.21	Refrigeration
220	Duct Testing/Sealing - Chiller	Data Centers	4.17	1.36	4.17	Cooling
221	Energy-Star Refrigerator, glass door	Restaurant	4.12	2.36	4.12	Refrigeration
222	High Performance Lighting R/R - 25% Savings (base metal halide)	Misc	4.10	1.47	4.10	Indoor Lighting
223	Fan Motor, 5hp, 1800rpm, 89.5%	Lodging	4.07	2.52	4.07	Ventilation
224	Energy Star Ice Machines	School	4.05	1.91	4.05	Refrigeration
225	PC Network Power Management Enabling	eligious Worshi	4.04	2.03	4.04	Office Equipment
226	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Lodging	4.01	1.02	4.01	Indoor Lighting
227	Heat Trap	School	3.93	1.37	3.93	Water Heating
228	LED Exit Sign	School	3.90	1.54	3.90	Indoor Lighting
229	Data Center Improved Operations	Lodging	3.89	109.76	3.89	Office Equipment
230	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	School	3.82	1.47	3.82	Indoor Lighting
231	Night covers for display cases (self-contained)	on-Jurisdiction	3.79	80.03	3.79	Refrigeration

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
232	Data Center Improved Operations	Health	3.77	109.18	3.77	Office Equipment
233	Energy-Star Freezer, solid door	Restaurant	3.74	2.89	3.74	Refrigeration
234	Strip curtains for walk-ins (built-up)	Grocery	3.71	1.40	3.71	Refrigeration
235	ROB 2L4' High Performance T8 (86 W), 2020	Lodging	3.66	2.12	3.66	Indoor Lighting
236	Outdoor Lighting Controls (Photocell/Timeclock)	Warehouse	3.61	1.47	3.61	Outdoor Lighting
237	DX Packaged System, EER=13.4, 10 tons	Data Centers	3.53	7.92	3.53	Cooling
238	Tankless Water Heater	Lodging	3.43	1.43	3.43	Water Heating
239	Energy Star or Better Monitor - CRT	Misc	3.41	44.83	3.41	Office Equipment
240	Vending Misers (Refrigerated units)	Office	3.36	2.01	3.36	Vending
241	Solar Water Heater	Restaurant	3.35	1.60	3.35	Water Heating
242	Outdoor Lighting Controls (Photocell/Timeclock)	Lodging	3.35	1.37	3.35	Outdoor Lighting
243	Energy Star or Better PC	on-Jurisdiction	3.31	2.04	3.31	Office Equipment
244	Energy Star or Better PC	Warehouse	3.29	1.88	3.29	Office Equipment
245	ENERGY STAR Printer	School	3.22	38.09	3.22	Office Equipment
246	Energy-Star Refrigerator, solid door	Misc	3.16	11.68	3.16	Refrigeration
247	PC Network Power Management Enabling	Lodging	3.13	2.96	3.13	Office Equipment
248	Energy Star or Better PC	Retail	3.06	3.61	3.06	Office Equipment
249	Heat Trap	Lodging	3.04	4.50	3.04	Water Heating
250	Heat Trap	Restaurant	3.01	10.16	3.01	Water Heating
251	Vending Misers (Refrigerated units)	School	2.95	1.93	2.95	Vending
252	LED Exit Sign	on-Jurisdiction	2.95	2.12	2.95	Indoor Lighting
253	Vending Misers (Refrigerated units)	Retail	2.94	2.11	2.94	Vending
254	Fan Motor, 5hp, 1800rpm, 89.5%	on-Jurisdiction	2.93	2.54	2.93	Ventilation
255	Chiller Tune Up/Diagnostics	Lodging	2.87	1.81	2.87	Cooling
256	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Office	2.85	1.23	2.85	Indoor Lighting
257	Lighting Control Tuneup (base other fluorescent fixture)	Office	2.83	18.04	2.83	Indoor Lighting
258	Energy-Star Freezer, glass door	Grocery	2.81	2.31	2.81	Refrigeration
259	VSD for Chiller Pumps and Towers	Misc	2.80	1.79	2.80	Cooling
260	Freezer-Cooler Replacement Gaskets (self-contained)	School	2.80	13.65	2.80	Refrigeration
261	LED Exit Sign	Lodging	2.74	1.91	2.74	Indoor Lighting
262	Electronically Commutated Motors (ECM) on an Air Handler Unit	Retail	2.73	2.58	2.73	Ventilation
263	Vending Misers (Refrigerated units)	Misc	2.68	1.91	2.68	Vending
264	LEDs (base incandescent flood) 2020	School	2.66	7612.76	2.66	Indoor Lighting
265	Freezer-Cooler Replacement Gaskets (self-contained)	Office	2.65	24.92	2.65	Refrigeration
266	ENERGY STAR Printer	Misc	2.64	43.63	2.64	Office Equipment
267	Data Center State of the Art practices	Misc	2.61	23.47	2.61	Office Equipment
268	ENERGY STAR Printer	on-Jurisdiction	2.61	43.26	2.61	Office Equipment
269	ROB 2L4' High Performance T8 (86 W), 2020	Office	2.60	2.56	2.60	Indoor Lighting
270	Energy Star or Better Monitor - CRT	Retail	2.59	37.31	2.59	Office Equipment
271	Energy-Star Refrigerator, solid door	School	2.58	5.27	2.58	Refrigeration
272	LEDs (base incandescent flood) 2020	Data Centers	2.54	7768.61	2.54	Indoor Lighting
273	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	2.53	2.03	2.53	Heating
274	Heat Recovery Unit	Misc	2.51	1.17	2.51	Water Heating

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
275	Energy Star or Better Monitor - CRT	on-Jurisdiction	2.47	50.37	2.47	Office Equipment
276	LEDs (base incandescent A-line 72W) 2020	Health	2.43	3442.48	2.43	Indoor Lighting
277	Printer Power Management Enabling	Office	2.43	1.10	2.43	Office Equipment
278	Data Center State of the Art practices	Warehouse	2.42	23.93	2.42	Office Equipment
279	PC Network Power Management Enabling	Restaurant	2.40	2.61	2.40	Office Equipment
280	Centrifugal Chiller, 0.51 kW/ton, 500 tons	eligious Worshi	2.38	1.61	2.38	Cooling
281	Freezer-Cooler Replacement Gaskets (self-contained)	on-Jurisdiction	2.38	32.97	2.38	Refrigeration
282	High Efficiency Water Heater (electric)	Office	2.33	2.40	2.33	Water Heating
283	LED Exit Sign	Restaurant	2.32	1.03	2.32	Indoor Lighting
284	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Data Centers	2.29	7.42	2.29	Cooling
285	Ceiling/roof Insulation - Chiller	on-Jurisdiction	2.27	14.48	2.27	Cooling
286	Energy Star or Better Monitor - CRT	Lodging	2.26	40.15	2.26	Office Equipment
287	T5 (240W) (base metal halide)	Grocery	2.23	5.54	2.23	Indoor Lighting
288	Vending Misers (Refrigerated units)	Lodging	2.21	2.01	2.21	Vending
289	Energy Star Ice Machines	on-Jurisdiction	2.20	6.56	2.20	Refrigeration
290	Data Center State of the Art practices	on-Jurisdiction	2.15	23.26	2.15	Office Equipment
291	Fan Motor, 5hp, 1800rpm, 89.5%	School	2.14	1.04	2.14	Ventilation
292	Lighting Control Tuneup (base 4L4'T8), 2020	Misc	2.13	3.89	2.13	Indoor Lighting
293	Energy Star or Better Monitor - CRT	Warehouse	2.08	41.45	2.08	Office Equipment
294	Fan Motor, 5hp, 1800rpm, 89.5%	Warehouse	2.08	1.94	2.08	Ventilation
295	Energy Star or Better Copier	Office	2.06	38.91	2.06	Office Equipment
296	Tankless Water Heater	on-Jurisdiction	2.04	1.72	2.04	Water Heating
297	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Office	2.03	3.35	2.03	Indoor Lighting
298	Energy-Star Refrigerator, glass door	on-Jurisdiction	1.98	8.65	1.98	Refrigeration
299	Lighting Control Tuneup (base 4L4'T8), 2020	Retail	1.97	4.32	1.97	Indoor Lighting
300	Energy Star Ice Machines	eligious Worshi	1.97	2.15	1.97	Refrigeration
301	Energy-Star Refrigerator, solid door	on-Jurisdiction	1.95	18.24	1.95	Refrigeration
302	Tankless Water Heater	Restaurant	1.94	1.87	1.94	Water Heating
303	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Retail	1.93	2.92	1.93	Cooling
304	Energy-Star Freezer, glass door	Lodging	1.92	21.14	1.92	Refrigeration
305	Air Handler Optimization, 40 HP	Retail	1.89	2.31	1.89	Ventilation
306	Data Center Best Practices	Retail	1.85	46.26	1.85	Office Equipment
307	Occupancy Sensor, High Bay T5	Misc	1.83	2.14	1.83	Indoor Lighting
308	Vending Misers (Refrigerated glass-front units)	Office	1.82	1.09	1.82	Vending
309	Demand controlled circulating systems	Lodging	1.82	2.32	1.82	Water Heating
310	ROB 2L4' High Performance T8 (86 W), 2020	Health	1.80	1.45	1.80	Indoor Lighting
311	Energy Star or Better PC	Lodging	1.79	3.85	1.79	Office Equipment
312	Energy-Star Freezer, glass door	Retail	1.77	1.64	1.77	Refrigeration
313	High Efficiency Water Heater (electric)	Misc	1.74	2.26	1.74	Water Heating
314	Data Center State of the Art practices	Lodging	1.71	23.18	1.71	Office Equipment
315	New Economizer - Chiller	Data Centers	1.71	2.86	1.71	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
316	Data Center State of the Art practices	Health	1.66	23.05	1.66	Office Equipment
317	Lighting Control Tuneup (base 2L4'T8), 2020	Misc	1.64	3.16	1.64	Indoor Lighting
318	Monitor Power Management Enabling - CRT	School	1.64	2.47	1.64	Office Equipment
319	LEDs (base incandescent A-line 53W) 2020	Health	1.63	2306.27	1.63	Indoor Lighting
320	Air Handler Optimization, 15 HP	Retail	1.62	1.97	1.62	Ventilation
321	Data Center Improved Operations	Retail	1.61	113.63	1.61	Office Equipment
322	Freezer-Cooler Replacement Gaskets (self-contained)	Lodging	1.61	27.75	1.61	Refrigeration
323	Vending Misers (Refrigerated glass-front units)	School	1.61	1.05	1.61	Vending
324	Vending Misers (Refrigerated units)	Grocery	1.61	2.07	1.61	Vending
325	Energy Star or Better Monitor - CRT	Restaurant	1.60	29.38	1.60	Office Equipment
326	ENERGY STAR Printer	Warehouse	1.60	40.36	1.60	Office Equipment
327	Vending Misers (Refrigerated glass-front units)	Retail	1.59	1.14	1.59	Vending
328	Energy Star or Better PC	Health	1.59	1.24	1.59	Office Equipment
329	Vending Misers (Refrigerated units)	Warehouse	1.57	2.39	1.57	Vending
330	High Efficiency Water Heater (electric)	Retail	1.56	1.62	1.56	Water Heating
331	Energy Star or Better PC	eligious Worshi	1.53	1.03	1.53	Office Equipment
332	ENERGY STAR Printer	Retail	1.52	36.32	1.52	Office Equipment
333	Heat Trap	on-Jurisdiction	1.52	4.53	1.52	Water Heating
334	Energy-Star Refrigerator, solid door	eligious Worshi	1.51	5.91	1.51	Refrigeration
335	Energy Star or Better Monitor - LCD	Office	1.48	7.77	1.48	Office Equipment
336	Vending Misers (Refrigerated glass-front units)	Misc	1.47	1.05	1.47	Vending
337	Chiller Tune Up/Diagnostics	on-Jurisdiction	1.46	2.59	1.46	Cooling
338	Energy Star or Better Copier	Retail	1.43	27.60	1.43	Office Equipment
339	High Performance Lighting R/R - 25% Savings (base metal halide)	Lodging	1.43	1.33	1.43	Indoor Lighting
340	Energy Star or Better Monitor - CRT	Health	1.41	28.73	1.41	Office Equipment
341	Vending Misers (Refrigerated units)	on-Jurisdiction	1.41	1.28	1.41	Vending
342	Economizer - DX	Data Centers	1.37	2.07	1.37	Cooling
343	Hot Water Pipe Insulation	Misc	1.36	1.25	1.36	Water Heating
344	Fan Motor, 5hp, 1800rpm, 89.5%	Grocery	1.36	1.39	1.36	Ventilation
345	Variable Speed Drive Control, 40 HP	Data Centers	1.35	6.40	1.35	Ventilation
346	ROB 4L4' High Performance T8 (86 W), 2020	Restaurant	1.34	1.80	1.34	Indoor Lighting
347	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	1.32	2.26	1.32	Heating
348	Heat Trap	eligious Worshi	1.32	2.11	1.32	Water Heating
349	Night covers for display cases (self-contained)	Grocery	1.30	168.80	1.30	Refrigeration
350	Energy Star or Better Copier	Misc	1.30	33.51	1.30	Office Equipment
351	Freezer-Cooler Replacement Gaskets (self-contained)	eligious Worshi	1.30	18.30	1.30	Refrigeration
352	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	1.29	3.85	1.29	Cooling
353	Variable Speed Drive Control, 15 HP	Data Centers	1.27	32.21	1.27	Ventilation
354	Air Handler Optimization, 40 HP	Data Centers	1.25	5.48	1.25	Ventilation
355	Energy Star or Better Monitor - LCD	School	1.23	5.74	1.23	Office Equipment
356	Energy-Star Refrigerator, glass door	Misc	1.23	11.89	1.23	Refrigeration
357	VSD for Chiller Pumps and Towers	Office	1.20	2.58	1.20	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
358	Vending Misers (Refrigerated glass-front units)	Lodging	1.20	1.09	1.20	Vending
359	T5 (240W) (base metal halide)	eligious Worshi	1.12	2.57	1.12	Indoor Lighting
360	High Efficiency Water Heater (electric)	Restaurant	1.10	5.45	1.10	Water Heating
361	Lighting Control Tuneup (base 2L4'T8), 2020	on-Jurisdiction	1.09	3.25	1.09	Indoor Lighting
362	Air Handler Optimization, 15 HP	Data Centers	1.09	5.09	1.09	Ventilation
363	Energy-Star Freezer, glass door	School	1.09	8.71	1.09	Refrigeration
364	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	1.08	1.26	1.08	Indoor Lighting
365	Floating head pressure controls	Grocery	1.06	2.92	1.06	Refrigeration
366	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Restaurant	1.06	5.76	1.06	Indoor Lighting
367	LED Exit Sign	Warehouse	1.03	1.10	1.03	Indoor Lighting
368	Energy Star or Better Laptop	Office	1.02	6.28	1.02	Office Equipment
369	Ceiling/roof Insulation - Chiller	Misc	1.00	6.27	1.00	Cooling
370	Energy Star Ice Machines	Lodging	1.00	2.48	1.00	Refrigeration
371	Energy Star or Better Monitor - LCD	Misc	0.99	6.57	0.99	Office Equipment
372	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Lodging	0.99	1.29	0.99	Indoor Lighting
373	Night covers for display cases (self-contained)	Office	0.99	52.72	0.99	Refrigeration
374	PC Network Power Management Enabling	Grocery	0.97	2.24	0.97	Office Equipment
375	Monitor Power Management Enabling - CRT	Office	0.97	5.54	0.97	Office Equipment
376	Energy Star or Better PC	Restaurant	0.97	1.32	0.97	Office Equipment
377	ROB 4L4' High Performance T8 (86 W), 2020	Data Centers	0.96	2.62	0.96	Indoor Lighting
378	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	on-Jurisdiction	0.96	1.53	0.96	Indoor Lighting
379	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	0.95	3.20	0.95	Heating
380	Fan Motor, 15hp, 1800rpm, 92.4%	on-Jurisdiction	0.94	5.58	0.94	Ventilation
381	LEDs (base incandescent A-line 72W) 2020	School	0.94	5365.62	0.94	Indoor Lighting
382	High Efficiency Water Heater (electric)	Lodging	0.93	2.02	0.93	Water Heating
383	Vending Misers (Refrigerated units)	Health	0.92	1.96	0.92	Vending
384	Efficient compressor motor	Grocery	0.92	3.73	0.92	Refrigeration
385	Lighting Control Tuneup (base other fluorescent fixture)	on-Jurisdiction	0.91	10.96	0.91	Indoor Lighting
386	ROB 4L4' High Performance T8 (86 W), 2020	Lodging	0.90	2.69	0.90	Indoor Lighting
387	Ceiling/roof Insulation - Chiller	Office	0.90	19.26	0.90	Cooling
388	Night covers for display cases (self-contained)	eligious Worshi	0.90	19.07	0.90	Refrigeration
389	LEDs (base incandescent A-line 72W) 2020	Data Centers	0.89	5476.96	0.89	Indoor Lighting
390	Data Center Best Practices	eligious Worshi	0.89	31.12	0.89	Office Equipment
391	Energy Star or Better Monitor - CRT	eligious Worshi	0.88	22.42	0.88	Office Equipment
392	ENERGY STAR Multi-Function Printer	Office	0.88	10.60	0.88	Office Equipment
393	LED Exit Sign	eligious Worshi	0.88	1.07	0.88	Indoor Lighting
394	Vending Misers (Refrigerated glass-front units)	Grocery	0.87	1.12	0.87	Vending
395	Vending Misers (Refrigerated glass-front units)	Warehouse	0.84	1.27	0.84	Vending
396	Energy Star or Better Monitor - LCD	on-Jurisdiction	0.82	6.70	0.82	Office Equipment

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
397	Energy-Star Refrigerator, glass door	Office	0.81	8.94	0.81	Refrigeration
398	Electronically Commutated Motors (ECM) on an Air Handler Unit	Data Centers	0.81	6.42	0.81	Ventilation
399	Energy-Star Refrigerator, glass door	School	0.79	2.89	0.79	Refrigeration
400	Energy-Star Freezer, solid door	Lodging	0.79	8.42	0.79	Refrigeration
401	Data Center Improved Operations	eligious Worshi	0.78	76.43	0.78	Office Equipment
402	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Data Centers	0.75	4.57	0.75	Indoor Lighting
403	Heat Trap	Health	0.75	1.55	0.75	Water Heating
404	Energy Star or Better Copier	on-Jurisdiction	0.74	33.87	0.74	Office Equipment
405	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	0.74	1.37	0.74	Heating
406	Fan Motor, 5hp, 1800rpm, 89.5%	Health	0.73	2.99	0.73	Ventilation
407	ENERGY STAR Printer	Health	0.73	27.28	0.73	Office Equipment
408	Data Center State of the Art practices	Retail	0.71	23.99	0.71	Office Equipment
409	Energy Star or Better Laptop	School	0.70	4.91	0.70	Office Equipment
410	Freezer-Cooler Replacement Gaskets (self-contained)	Grocery	0.69	3.88	0.69	Refrigeration
411	Chiller Tune Up/Diagnostics	School	0.69	1.26	0.69	Cooling
412	Night covers for display cases (self-contained)	Health	0.68	12.57	0.68	Refrigeration
413	Vending Misers (Refrigerated units)	eligious Worshi	0.68	1.91	0.68	Vending
414	Monitor Power Management Enabling - CRT	Misc	0.67	2.93	0.67	Office Equipment
415	Efficient Steamer	School	0.65	1.10	0.65	Cooking
416	Freezer-Cooler Replacement Gaskets (self-contained)	Health	0.64	10.86	0.64	Refrigeration
417	Heat Trap	Grocery	0.63	2.53	0.63	Water Heating
418	Data Center Best Practices	Restaurant	0.63	41.07	0.63	Office Equipment
419	EMS - Chiller	Data Centers	0.62	3.64	0.62	Cooling
420	LEDs (base incandescent A-line 53W) 2020	School	0.62	3559.53	0.62	Indoor Lighting
421	Vending Misers (Refrigerated units)	Restaurant	0.62	1.94	0.62	Vending
422	Energy Star or Better Monitor - LCD	Warehouse	0.60	5.91	0.60	Office Equipment
423	LEDs (base incandescent A-line 53W) 2020	Data Centers	0.59	3637.94	0.59	Indoor Lighting
424	Occupancy Sensor, High Bay T5	Lodging	0.59	1.01	0.59	Indoor Lighting
425	Energy-Star Refrigerator, glass door	eligious Worshi	0.58	6.03	0.58	Refrigeration
426	Demand controlled circulating systems	Health	0.57	1.76	0.57	Water Heating
427	Duct Testing/Sealing - DX	Data Centers	0.56	1.01	0.56	Cooling
428	High Efficiency Water Heater (electric)	on-Jurisdiction	0.55	2.42	0.55	Water Heating
429	Chiller Tune Up/Diagnostics	Office	0.55	3.52	0.55	Cooling
430	Data Center Improved Operations	Restaurant	0.55	100.89	0.55	Office Equipment
431	High Performance Lighting R/R - 25% Savings (base metal halide)	Grocery	0.55	11.19	0.55	Indoor Lighting
432	Energy Star or Better Copier	Warehouse	0.55	31.50	0.55	Office Equipment
433	High Efficiency Chiller Motors	on-Jurisdiction	0.54	2.12	0.54	Cooling
434	Energy-Star Refrigerator, solid door	Lodging	0.54	6.69	0.54	Refrigeration
435	Monitor Power Management Enabling - CRT	Warehouse	0.52	2.26	0.52	Office Equipment
436	LED Exit Sign	Health	0.52	2.10	0.52	Indoor Lighting
437	ENERGY STAR Printer	eligious Worshi	0.51	21.82	0.51	Office Equipment
438	Energy Star or Better Copier	School	0.51	31.84	0.51	Office Equipment

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
439	Vending Misers (Refrigerated glass-front units)	Health	0.50	1.07	0.50	Vending
440	Energy Star Ice Machines	Office	0.50	3.16	0.50	Refrigeration
441	Occupancy Sensor, High Bay T5	on-Jurisdiction	0.49	1.95	0.49	Indoor Lighting
442	Monitor Power Management Enabling - CRT	on-Jurisdiction	0.49	3.71	0.49	Office Equipment
443	Energy Star or Better Copier	eligious Worshi	0.49	16.75	0.49	Office Equipment
444	Lighting Control Tuneup (base 2L4'T8), 2020	School	0.48	1.68	0.48	Indoor Lighting
445	VSD for Chiller Pumps and Towers	Lodging	0.48	1.24	0.48	Cooling
446	High Efficiency Water Heater (electric)	eligious Worshi	0.48	1.13	0.48	Water Heating
447	Prog. Thermostat - DX	Data Centers	0.48	1.45	0.48	Cooling
448	Energy-Star Refrigerator, solid door	Health	0.46	3.59	0.46	Refrigeration
449	Energy-Star Freezer, solid door	School	0.45	3.48	0.45	Refrigeration
450	Outdoor Lighting Controls (Photocell/Timeclock)	eligious Worshi	0.45	1.26	0.45	Outdoor Lighting
451	Energy-Star Freezer, glass door	on-Jurisdiction	0.44	19.38	0.44	Refrigeration
452	Energy Star or Better Copier	Health	0.44	20.12	0.44	Office Equipment
453	Ceiling/roof Insulation - DX	School	0.43	4.05	0.43	Cooling
454	Energy Star Ice Machines	Health	0.43	1.31	0.43	Refrigeration
455	Monitor Power Management Enabling - CRT	Lodging	0.43	2.83	0.43	Office Equipment
456	Fan Motor, 15hp, 1800rpm, 92.4%	Office	0.41	7.96	0.41	Ventilation
457	Energy Star or Better Monitor - LCD	Retail	0.40	5.75	0.40	Office Equipment
458	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	on-Jurisdiction	0.40	2.75	0.40	Heating
459	Lighting Control Tuneup (base 2L4'T8), 2020	Retail	0.39	2.53	0.39	Indoor Lighting
460	Energy Star or Better PC	Grocery	0.38	1.12	0.38	Office Equipment
461	ENERGY STAR Multi-Function Printer	Retail	0.38	7.90	0.38	Office Equipment
462	Chiller Tune Up/Diagnostics	Misc	0.38	2.49	0.38	Cooling
463	Energy Star or Better Laptop	on-Jurisdiction	0.38	5.58	0.38	Office Equipment
464	ENERGY STAR Printer	Lodging	0.38	39.14	0.38	Office Equipment
465	Monitor Power Management Enabling - CRT	Health	0.38	1.69	0.38	Office Equipment
466	Vending Misers (Refrigerated glass-front units)	eligious Worshi	0.37	1.05	0.37	Vending
467	Variable Speed Drive Control, 5 HP	Data Centers	0.37	8.90	0.37	Ventilation
468	ENERGY STAR Multi-Function Printer	Misc	0.36	9.49	0.36	Office Equipment
469	Energy-Star Refrigerator, solid door	Office	0.36	8.53	0.36	Refrigeration
470	Ceiling/roof Insulation - Chiller	eligious Worshi	0.35	3.14	0.35	Cooling
471	Fan Motor, 15hp, 1800rpm, 92.4%	Health	0.34	5.28	0.34	Ventilation
472	Data Center State of the Art practices	eligious Worshi	0.34	16.14	0.34	Office Equipment
473	Vending Misers (Refrigerated glass-front units)	Restaurant	0.34	1.06	0.34	Vending
474	VSD for Chiller Pumps and Towers	Grocery	0.34	1.76	0.34	Cooling
475	ENERGY STAR Printer	Restaurant	0.34	28.59	0.34	Office Equipment
476	Energy Star or Better Monitor - LCD	eligious Worshi	0.34	3.29	0.34	Office Equipment
477	DX Tune Up/ Advanced Diagnostics	Restaurant	0.33	1.05	0.33	Cooling
478	High Efficiency Chiller Motors	Office	0.33	2.86	0.33	Cooling
479	Energy Star or Better Copier	Restaurant	0.33	21.61	0.33	Office Equipment
480	Monitor Power Management Enabling - CRT	Retail	0.33	2.86	0.33	Office Equipment
481	Energy Star or Better Monitor - LCD	Health	0.32	4.03	0.32	Office Equipment

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
482	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Grocery	0.32	3.20	0.32	Cooling
483	Energy-Star Refrigerator, glass door	Health	0.32	3.70	0.32	Refrigeration
484	Hot Water Pipe Insulation	Restaurant	0.31	1.25	0.31	Water Heating
485	Monitor Power Management Enabling - CRT	Restaurant	0.31	1.91	0.31	Office Equipment
486	Lighting Control Tuneup (base 4L4'T8), 2020	eligious Worshi	0.30	1.12	0.30	Indoor Lighting
487	Fan Motor, 40hp, 1800rpm, 94.1%	School	0.30	2.30	0.30	Ventilation
488	ROB 2L4' High Performance T8 (86 W), 2020	Warehouse	0.30	2.15	0.30	Indoor Lighting
489	Energy Star or Better Laptop	Misc	0.28	5.63	0.28	Office Equipment
490	High Efficiency Chiller Motors	School	0.27	1.01	0.27	Cooling
491	ENERGY STAR Multi-Function Printer	School	0.27	8.29	0.27	Office Equipment
492	Economizer Repair - DX	Data Centers	0.26	2.49	0.26	Cooling
493	ENERGY STAR Multi-Function Printer	Warehouse	0.26	8.78	0.26	Office Equipment
494	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Data Centers	0.24	11.09	0.24	Cooling
495	Energy Star or Better Laptop	Warehouse	0.24	5.21	0.24	Office Equipment
496	Energy Star or Better Copier	Lodging	0.24	31.34	0.24	Office Equipment
497	Data Center State of the Art practices	Restaurant	0.24	21.30	0.24	Office Equipment
498	Energy Star or Better Monitor - LCD	Restaurant	0.24	4.20	0.24	Office Equipment
499	Energy-Star Freezer, glass door	Office	0.24	26.55	0.24	Refrigeration
500	High Efficiency Water Heater (electric)	Grocery	0.23	1.35	0.23	Water Heating
501	ENERGY STAR Multi-Function Printer	on-Jurisdiction	0.23	9.41	0.23	Office Equipment
502	Energy Star or Better Monitor - CRT	Grocery	0.23	24.86	0.23	Office Equipment
503	Lighting Control Tuneup (base 2L4'T8), 2020	Office	0.22	3.73	0.22	Indoor Lighting
504	Optimize Controls - DX	Data Centers	0.22	2.40	0.22	Cooling
505	Outdoor Lighting Controls (Photocell/Timeclock)	Data Centers	0.21	2.90	0.21	Outdoor Lighting
506	Lighting Control Tuneup (base 4L4'T8), 2020	Health	0.21	2.53	0.21	Indoor Lighting
507	ENERGY STAR Multi-Function Printer	Restaurant	0.21	6.22	0.21	Office Equipment
508	Window Film (Standard) - Chiller	Grocery	0.21	1.09	0.21	Cooling
509	Window Film (Standard) - DX	Data Centers	0.21	1.49	0.21	Cooling
510	Lighting Control Tuneup (base other fluorescent fixture)	School	0.20	2.28	0.20	Indoor Lighting
511	Ceiling/roof Insulation - Chiller	Retail	0.20	4.77	0.20	Cooling
512	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Warehouse	0.19	1.35	0.19	Indoor Lighting
513	High Efficiency Chiller Motors	Health	0.19	2.07	0.19	Cooling
514	Energy-Star Freezer, solid door	on-Jurisdiction	0.18	7.69	0.18	Refrigeration
515	Energy Star or Better Monitor - LCD	Lodging	0.18	6.47	0.18	Office Equipment
516	Monitor Power Management Enabling - CRT	eligious Worshi	0.17	1.46	0.17	Office Equipment
517	VSD for Chiller Pumps and Towers	Data Centers	0.17	5.44	0.17	Cooling
518	Energy Star or Better Laptop	Retail	0.16	4.69	0.16	Office Equipment
519	Ceiling/roof Insulation - DX	Grocery	0.15	3.88	0.15	Cooling
520	Occupancy Sensor, High Bay T5	Grocery	0.15	1.57	0.15	Indoor Lighting
521	Lighting Control Tuneup (base 4L4'T8), 2020	Grocery	0.14	5.63	0.14	Indoor Lighting
522	Chiller Tune Up/Diagnostics	Retail	0.14	2.21	0.14	Cooling
523	Lighting Control Tuneup (base other fluorescent fixture)	Misc	0.13	4.97	0.13	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
524	Energy Star or Better Monitor - LCD	Grocery	0.13	3.55	0.13	Office Equipment
525	VSD for Chiller Pumps and Towers	Health	0.13	2.10	0.13	Cooling
526	Lighting Control Tuneup (base 2L4'T8), 2020	Restaurant	0.13	3.07	0.13	Indoor Lighting
527	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	eligious Worshi	0.13	1.02	0.13	Heating
528	Chiller Tune Up/Diagnostics	Restaurant	0.13	4.19	0.13	Cooling
529	PC Network Power Management Enabling	Data Centers	0.13	3.68	0.13	Office Equipment
530	Ceiling/roof Insulation - DX	Restaurant	0.12	8.05	0.12	Cooling
531	Ceiling/roof Insulation - Chiller	Data Centers	0.12	32.66	0.12	Cooling
532	ENERGY STAR Multi-Function Printer	eligious Worshi	0.12	4.75	0.12	Office Equipment
533	Energy Star or Better Laptop	eligious Worshi	0.12	2.82	0.12	Office Equipment
534	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Warehouse	0.11	1.77	0.11	Heating
535	High Efficiency Chiller Motors	Grocery	0.11	2.04	0.11	Cooling
536	T5 (240W) (base metal halide)	Restaurant	0.11	5.02	0.11	Indoor Lighting
537	ENERGY STAR Multi-Function Printer	Health	0.11	5.94	0.11	Office Equipment
538	Energy Star or Better Copier	Grocery	0.11	17.09	0.11	Office Equipment
539	Energy-Star Freezer, solid door	Office	0.10	10.62	0.10	Refrigeration
540	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Retail	0.10	1.14	0.10	Indoor Lighting
541	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	0.10	1.13	0.10	Heating
542	ENERGY STAR Multi-Function Printer	Lodging	0.10	8.52	0.10	Office Equipment
543	Energy Star or Better Laptop	Health	0.09	3.52	0.09	Office Equipment
544	Chiller Tune Up/Diagnostics	Health	0.09	2.81	0.09	Cooling
545	Energy Star or Better Laptop	Lodging	0.08	5.05	0.08	Office Equipment
546	Fan Motor, 15hp, 1800rpm, 92.4%	Data Centers	0.07	14.59	0.07	Ventilation
547	LED Exit Sign	Data Centers	0.07	2.00	0.07	Indoor Lighting
548	Monitor Power Management Enabling - CRT	Grocery	0.07	1.16	0.07	Office Equipment
549	Energy Star or Better Monitor - CRT	Data Centers	0.07	55.28	0.07	Office Equipment
550	High Efficiency Chiller Motors	Misc	0.06	2.07	0.06	Cooling
551	ENERGY STAR Printer	Grocery	0.06	24.20	0.06	Office Equipment
552	Fan Motor, 5hp, 1800rpm, 89.5%	Data Centers	0.06	6.62	0.06	Ventilation
553	Fan Motor, 40hp, 1800rpm, 94.1%	Data Centers	0.05	1.64	0.05	Ventilation
554	ENERGY STAR Multi-Function Printer	Grocery	0.05	5.27	0.05	Office Equipment
555	Window Film (Standard) - Chiller	Office	0.05	1.03	0.05	Cooling
556	Data Center Best Practices	Grocery	0.05	46.25	0.05	Office Equipment
557	High Efficiency Chiller Motors	Data Centers	0.04	4.82	0.04	Cooling
558	ROB 2L4' High Performance T8 (86 W), 2020	Grocery	0.04	1.26	0.04	Indoor Lighting
559	Lighting Control Tuneup (base other fluorescent fixture)	Warehouse	0.04	16.05	0.04	Indoor Lighting
560	Lighting Control Tuneup (base 2L4'T8), 2020	Warehouse	0.04	1.53	0.04	Indoor Lighting
561	Data Center Improved Operations	Grocery	0.04	113.60	0.04	Office Equipment
562	Energy Star or Better Laptop	Restaurant	0.04	3.69	0.04	Office Equipment
563	Freezer-Cooler Replacement Gaskets (self-contained)	Data Centers	0.04	27.07	0.04	Refrigeration
564	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Grocery	0.04	4.06	0.04	Indoor Lighting
565	Energy Star or Better PC	Data Centers	0.04	2.03	0.04	Office Equipment
566	Lighting Control Tuneup (base 4L4'T8), 2020	Data Centers	0.03	4.98	0.03	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
567	Lighting Control Tuneup (base 4L4'T8), 2020	Lodging	0.03	1.06	0.03	Indoor Lighting
568	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	0.03	1.53	0.03	Heating
569	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Warehouse	0.03	2.16	0.03	Indoor Lighting
570	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Data Centers	0.03	2.11	0.03	Indoor Lighting
571	Lighting Control Tuneup (base other fluorescent fixture)	Health	0.02	6.81	0.02	Indoor Lighting
572	Vending Misers (Refrigerated units)	Data Centers	0.02	5.70	0.02	Vending
573	Lighting Control Tuneup (base 2L4'T8), 2020	Health	0.02	1.07	0.02	Indoor Lighting
574	High Efficiency Chiller Motors	eligious Worshi	0.02	1.04	0.02	Cooling
575	Lighting Control Tuneup (base other fluorescent fixture)	eligious Worshi	0.02	1.60	0.02	Indoor Lighting
576	Lighting Control Tuneup (base 4L4'T8), 2020	Restaurant	0.02	6.44	0.02	Indoor Lighting
577	Lighting Control Tuneup (base other fluorescent fixture)	Lodging	0.02	2.57	0.02	Indoor Lighting
578	Lighting Control Tuneup (base other fluorescent fixture)	Retail	0.02	7.82	0.02	Indoor Lighting
579	Data Center State of the Art practices	Grocery	0.02	23.99	0.02	Office Equipment
580	Chiller Tune Up/Diagnostics	eligious Worshi	0.02	1.25	0.02	Cooling
581	ROB 2L4' High Performance T8 (86 W), 2020	Data Centers	0.02	2.06	0.02	Indoor Lighting
582	Chiller Tune Up/Diagnostics	Data Centers	0.01	8.37	0.01	Cooling
583	Vending Misers (Refrigerated glass-front units)	Data Centers	0.01	3.14	0.01	Vending
584	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Data Centers	0.01	2.66	0.01	Indoor Lighting
585	Energy Star or Better Laptop	Grocery	0.01	3.13	0.01	Office Equipment
586	Monitor Power Management Enabling - CRT	Data Centers	0.01	4.27	0.01	Office Equipment
587	Energy Star or Better Monitor - LCD	Data Centers	0.01	6.57	0.01	Office Equipment
588	ENERGY STAR Printer	Data Centers	0.01	41.08	0.01	Office Equipment
589	Ceiling/roof Insulation - DX	Misc	0.01	6.44	0.01	Cooling
590	Window Film (Standard) - Chiller	Data Centers	0.01	1.92	0.01	Cooling
591	Lighting Control Tuneup (base other fluorescent fixture)	Data Centers	0.01	13.99	0.01	Indoor Lighting
592	Occupancy Sensor, High Bay T5	Restaurant	0.01	1.31	0.01	Indoor Lighting
593	Chiller Tune Up/Diagnostics	Grocery	0.01	2.64	0.01	Cooling
594	Energy Star or Better Copier	Data Centers	0.01	32.79	0.01	Office Equipment
595	LED Exit Sign	Grocery	0.01	2.00	0.01	Indoor Lighting
596	High Efficiency Chiller Motors	Lodging	0.01	1.38	0.01	Cooling
597	Energy Star or Better Laptop	Data Centers	0.00	5.31	0.00	Office Equipment
598	DX Tune Up/ Advanced Diagnostics	Data Centers	0.00	1.65	0.00	Cooling
599	Ceiling/roof Insulation - DX	on-Jurisdiction	0.00	14.82	0.00	Cooling
600	Ceiling/roof Insulation - DX	eligious Worshi	0.00	3.22	0.00	Cooling
601	Energy-Star Refrigerator, glass door	Data Centers	0.00	9.73	0.00	Refrigeration
602	ENERGY STAR Multi-Function Printer	Data Centers	0.00	8.94	0.00	Office Equipment
603	Energy Star Ice Machines	Data Centers	0.00	3.46	0.00	Refrigeration
604	Energy-Star Refrigerator, solid door	Data Centers	0.00	9.32	0.00	Refrigeration
605	Energy-Star Freezer, glass door	Data Centers	0.00	28.79	0.00	Refrigeration
606	Lighting Control Tuneup (base 2L4'T8), 2020	Data Centers	0.00	2.89	0.00	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
607	Lighting Control Tuneup (base 2L4'T8), 2020	Grocery	0.00	4.70	0.00	Indoor Lighting
608	Energy-Star Freezer, solid door	Data Centers	0.00	11.53	0.00	Refrigeration
609	ROB 4L4' LED Tube, 2020	Office	173.03	0.29	0.00	Indoor Lighting
609	LED Troffer (base 4L4'T8), 2020	Office	76.90	0.35	0.00	Indoor Lighting
609	ROB 2L4' LED Tube, 2020	Office	0.95	0.38	0.00	Indoor Lighting
609	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Office	1.38	0.54	0.00	Indoor Lighting
609	LED Troffer (base 2L4'T8), 2020	Office	1.47	0.28	0.00	Indoor Lighting
609	ROB High Performance T8 (base other fluorescent)	Office	5.42	0.77	0.00	Indoor Lighting
609	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	6.23	0.56	0.00	Indoor Lighting
609	ROB Low Watt High Performance T8 (base other fluorescent)	Office	5.15	0.32	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 18W) 2020	Office	9.91	0.80	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 23W) 2020	Office	11.88	0.95	0.00	Indoor Lighting
609	LED Outdoor Area Lighting	Office	59.75	0.66	0.00	Outdoor Lighting
609	Bi-Level LED Outdoor Lighting	Office	16.29	0.10	0.00	Outdoor Lighting
609	Duct Testing/Sealing - Chiller	Office	30.08	0.77	0.00	Cooling
609	Cool Roof - Chiller	Office	0.40	0.41	0.00	Cooling
609	Duct/Pipe Insulation - Chiller	Office	0.39	0.05	0.00	Cooling
609	Optimize Controls - DX	Office	11.52	0.95	0.00	Cooling
609	Window Film (Standard) - DX	Office	13.71	0.92	0.00	Cooling
609	DX Tune Up/ Advanced Diagnostics	Office	1.18	0.83	0.00	Cooling
609	Economizer - DX	Office	71.25	0.82	0.00	Cooling
609	Duct Testing/Sealing - DX	Office	35.07	0.62	0.00	Cooling
609	Prog. Thermostat - DX	Office	11.52	0.56	0.00	Cooling
609	Cool Roof - DX	Office	4.52	0.37	0.00	Cooling
609	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Office	0.13	0.30	0.00	Cooling
609	Duct/Pipe Insulation - DX	Office	3.41	0.04	0.00	Cooling
609	Demand Controlled Ventilation	Office	21.29	0.17	0.00	Ventilation
609	Energy Recovery Ventilation (ERV)	Office	1.35	0.48	0.00	Ventilation
609	Demand Controlled Ventilation	Office	3.07	0.14	0.00	Ventilation
609	Fan Motor, 40hp, 1800rpm, 94.1%	Office	0.17	0.90	0.00	Ventilation
609	Demand Controlled Ventilation	Office	2.13	0.16	0.00	Ventilation
609	Reach-in unit occupancy sensors	Office	0.01	0.22	0.00	Refrigeration
609	Bi-level LED Case Lighting (self-contained units) 2014	Office	0.03	0.18	0.00	Refrigeration
609	Strip curtains for walk-ins (self-contained)	Office	0.09	0.01	0.00	Refrigeration
609	Laptop Network Power Management Enabling	Office	0.09	0.05	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Office	0.49	0.46	0.00	Office Equipment
609	Monitor Power Management Enabling - LCD	Office	0.73	0.75	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Office	0.71	0.26	0.00	Office Equipment
609	Copier Power Management Enabling	Office	0.80	0.70	0.00	Office Equipment
609	Multifunction Power Management Enabling	Office	0.48	0.24	0.00	Office Equipment
609	Hot Water Pipe Insulation	Office	0.53	0.62	0.00	Water Heating
609	Heat Recovery Unit	Office	3.18	0.54	0.00	Water Heating

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	Demand controlled circulating systems	Office	1.37	0.20	0.00	Water Heating
609	Vending Misers (Non-Refrigerated)	Office	0.25	0.12	0.00	Vending
609	Xmisc	Office	0.00	0.00	0.00	Miscellaneous
609	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	1.47	0.87	0.00	Indoor Lighting
609	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Restaurant	0.14	0.42	0.00	Indoor Lighting
609	ROB 4L4' LED Tube, 2020	Restaurant	1.60	0.17	0.00	Indoor Lighting
609	LED Troffer (base 4L4'T8), 2020	Restaurant	0.71	0.20	0.00	Indoor Lighting
609	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Restaurant	8.73	0.68	0.00	Indoor Lighting
609	ROB 2L4' LED Tube, 2020	Restaurant	2.90	0.21	0.00	Indoor Lighting
609	LED Troffer (base 2L4'T8), 2020	Restaurant	4.87	0.17	0.00	Indoor Lighting
609	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Restaurant	0.74	0.20	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 18W) 2020	Restaurant	3.27	0.47	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 23W) 2020	Restaurant	3.92	0.56	0.00	Indoor Lighting
609	High Performance Lighting R/R - 25% Savings (base metal halide)	Restaurant	0.02	0.06	0.00	Indoor Lighting
609	LED Outdoor Area Lighting	Restaurant	41.93	0.36	0.00	Outdoor Lighting
609	Bi-Level LED Outdoor Lighting	Restaurant	11.38	0.05	0.00	Outdoor Lighting
609	Duct Testing/Sealing - Chiller	Restaurant	10.92	0.95	0.00	Cooling
609	Prog. Thermostat - DX	Restaurant	6.59	0.87	0.00	Cooling
609	Duct Testing/Sealing - DX	Restaurant	16.38	0.84	0.00	Cooling
609	Economizer Repair - DX	Restaurant	12.66	0.71	0.00	Cooling
609	Cool Roof - DX	Restaurant	8.23	0.63	0.00	Cooling
609	Economizer - DX	Restaurant	5.16	0.39	0.00	Cooling
609	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Restaurant	0.14	0.38	0.00	Cooling
609	Duct/Pipe Insulation - DX	Restaurant	3.01	0.06	0.00	Cooling
609	Fan Motor, 5hp, 1800rpm, 89.5%	Restaurant	2.44	0.74	0.00	Ventilation
609	Variable Speed Drive Control, 5 HP	Restaurant	41.69	0.72	0.00	Ventilation
609	Demand Controlled Ventilation	Restaurant	13.08	0.11	0.00	Ventilation
609	Energy Star Ice Machines	Restaurant	8.09	0.84	0.00	Refrigeration
609	Reach-in unit occupancy sensors	Restaurant	0.23	0.21	0.00	Refrigeration
609	Bi-level LED Case Lighting (self-contained units) 2014	Restaurant	1.03	0.17	0.00	Refrigeration
609	Strip curtains for walk-ins (self-contained)	Restaurant	2.06	0.14	0.00	Refrigeration
609	Laptop Network Power Management Enabling	Restaurant	0.00	0.03	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Restaurant	0.07	0.18	0.00	Office Equipment
609	Monitor Power Management Enabling - LCD	Restaurant	0.08	0.38	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Restaurant	0.07	0.13	0.00	Office Equipment
609	Copier Power Management Enabling	Restaurant	0.18	0.35	0.00	Office Equipment
609	Multifunction Power Management Enabling	Restaurant	0.23	0.09	0.00	Office Equipment
609	Printer Power Management Enabling	Restaurant	0.23	0.42	0.00	Office Equipment
609	Demand controlled circulating systems	Restaurant	0.76	0.40	0.00	Water Heating
609	Vending Misers (Non-Refrigerated)	Restaurant	0.03	0.12	0.00	Vending
609	Convection Oven	Restaurant	6.16	0.13	0.00	Cooking

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	Efficient Fryer	Restaurant	2.15	0.04	0.00	Cooking
609	Efficient Steamer	Restaurant	29.72	0.28	0.00	Cooking
609	Xmisc	Restaurant	0.00	0.00	0.00	Miscellaneous
609	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Retail	8.49	0.54	0.00	Indoor Lighting
609	ROB 4L4' LED Tube, 2020	Retail	96.33	0.22	0.00	Indoor Lighting
609	LED Troffer (base 4L4'T8), 2020	Retail	42.81	0.26	0.00	Indoor Lighting
609	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Retail	17.66	0.87	0.00	Indoor Lighting
609	ROB 2L4' LED Tube, 2020	Retail	5.85	0.27	0.00	Indoor Lighting
609	LED Troffer (base 2L4'T8), 2020	Retail	9.84	0.21	0.00	Indoor Lighting
609	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Retail	1.48	0.26	0.00	Indoor Lighting
609	ROB High Performance T8 (base other fluorescent)	Retail	0.12	0.56	0.00	Indoor Lighting
609	Occupancy Sensor, 4L8' Fluorescent Fixtures	Retail	0.04	0.45	0.00	Indoor Lighting
609	ROB Low Watt High Performance T8 (base other fluorescent)	Retail	0.13	0.26	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 18W) 2020	Retail	25.83	0.61	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 23W) 2020	Retail	30.97	0.74	0.00	Indoor Lighting
609	LED Outdoor Area Lighting	Retail	80.02	0.50	0.00	Outdoor Lighting
609	Bi-Level LED Outdoor Lighting	Retail	21.70	0.08	0.00	Outdoor Lighting
609	EMS - Chiller	Retail	1.71	0.88	0.00	Cooling
609	Duct Testing/Sealing - Chiller	Retail	3.57	0.54	0.00	Cooling
609	Cool Roof - DX	Retail	25.55	0.84	0.00	Cooling
609	Optimize Controls - DX	Retail	9.04	0.54	0.00	Cooling
609	DX Tune Up/ Advanced Diagnostics	Retail	2.19	0.50	0.00	Cooling
609	Economizer - DX	Retail	45.84	0.47	0.00	Cooling
609	Duct Testing/Sealing - DX	Retail	29.94	0.40	0.00	Cooling
609	Prog. Thermostat - DX	Retail	12.79	0.33	0.00	Cooling
609	Window Film (Standard) - DX	Retail	1.65	0.26	0.00	Cooling
609	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Retail	0.19	0.22	0.00	Cooling
609	Duct/Pipe Insulation - DX	Retail	3.29	0.03	0.00	Cooling
609	Demand Controlled Ventilation	Retail	39.87	0.09	0.00	Ventilation
609	Variable Speed Drive Control, 15 HP	Retail	4.25	0.92	0.00	Ventilation
609	Fan Motor, 15hp, 1800rpm, 92.4%	Retail	0.03	0.42	0.00	Ventilation
609	Energy Recovery Ventilation (ERV)	Retail	0.71	0.24	0.00	Ventilation
609	Demand Controlled Ventilation	Retail	1.01	0.06	0.00	Ventilation
609	Fan Motor, 40hp, 1800rpm, 94.1%	Retail	0.03	0.31	0.00	Ventilation
609	Demand Controlled Ventilation	Retail	1.27	0.08	0.00	Ventilation
609	Energy-Star Freezer, solid door	Retail	0.72	0.65	0.00	Refrigeration
609	Energy-Star Refrigerator, glass door	Retail	7.05	0.55	0.00	Refrigeration
609	Energy-Star Refrigerator, solid door	Retail	1.14	0.52	0.00	Refrigeration
609	Reach-in unit occupancy sensors	Retail	1.11	0.22	0.00	Refrigeration
609	Energy Star Ice Machines	Retail	0.76	0.19	0.00	Refrigeration
609	Bi-level LED Case Lighting (self-contained units) 2014	Retail	2.01	0.18	0.00	Refrigeration
609	Strip curtains for walk-ins (self-contained)	Retail	0.41	0.03	0.00	Refrigeration
609	Laptop Network Power Management Enabling	Retail	0.01	0.04	0.00	Office Equipment

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Retail	0.13	0.26	0.00	Office Equipment
609	Monitor Power Management Enabling - LCD	Retail	0.10	0.56	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Retail	0.18	0.19	0.00	Office Equipment
609	Copier Power Management Enabling	Retail	0.41	0.48	0.00	Office Equipment
609	Multifunction Power Management Enabling	Retail	0.16	0.18	0.00	Office Equipment
609	Printer Power Management Enabling	Retail	0.40	0.84	0.00	Office Equipment
609	Solar Water Heater	Retail	2.01	0.99	0.00	Water Heating
609	Hot Water Pipe Insulation	Retail	1.15	0.87	0.00	Water Heating
609	Heat Recovery Unit	Retail	2.23	0.68	0.00	Water Heating
609	Demand controlled circulating systems	Retail	1.02	0.53	0.00	Water Heating
609	Vending Misers (Non-Refrigerated)	Retail	0.04	0.13	0.00	Vending
609	Convection Oven	Retail	3.05	0.25	0.00	Cooking
609	Efficient Fryer	Retail	0.16	0.08	0.00	Cooking
609	Efficient Steamer	Retail	6.12	0.63	0.00	Cooking
609	Xmisc	Retail	0.00	0.00	0.00	Miscellaneous
609	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Grocery	14.35	0.76	0.00	Indoor Lighting
609	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Grocery	1.46	0.54	0.00	Indoor Lighting
609	ROB 4L4' LED Tube, 2020	Grocery	15.63	0.14	0.00	Indoor Lighting
609	LED Troffer (base 4L4'T8), 2020	Grocery	6.94	0.17	0.00	Indoor Lighting
609	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Grocery	0.05	0.61	0.00	Indoor Lighting
609	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Grocery	0.01	0.31	0.00	Indoor Lighting
609	ROB 2L4' LED Tube, 2020	Grocery	0.02	0.17	0.00	Indoor Lighting
609	LED Troffer (base 2L4'T8), 2020	Grocery	0.03	0.14	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 18W) 2020	Grocery	0.83	0.38	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 23W) 2020	Grocery	0.99	0.46	0.00	Indoor Lighting
609	Outdoor Lighting Controls (Photocell/Timeclock)	Grocery	0.24	0.87	0.00	Outdoor Lighting
609	LED Outdoor Area Lighting	Grocery	1.00	0.22	0.00	Outdoor Lighting
609	Bi-Level LED Outdoor Lighting	Grocery	0.27	0.03	0.00	Outdoor Lighting
609	EMS - Chiller	Grocery	0.28	0.88	0.00	Cooling
609	Cool Roof - Chiller	Grocery	0.19	0.72	0.00	Cooling
609	Duct Testing/Sealing - Chiller	Grocery	0.44	0.44	0.00	Cooling
609	Duct/Pipe Insulation - Chiller	Grocery	0.03	0.02	0.00	Cooling
609	New Economizer - Chiller	Grocery	0.00	0.00	0.00	Cooling
609	Cool Roof - DX	Grocery	6.48	0.78	0.00	Cooling
609	DX Tune Up/ Advanced Diagnostics	Grocery	0.09	0.58	0.00	Cooling
609	Optimize Controls - DX	Grocery	1.35	0.53	0.00	Cooling
609	Prog. Thermostat - DX	Grocery	1.13	0.47	0.00	Cooling
609	Duct Testing/Sealing - DX	Grocery	4.55	0.45	0.00	Cooling
609	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Grocery	0.02	0.08	0.00	Cooling
609	Economizer Repair - DX	Grocery	0.76	0.06	0.00	Cooling
609	Economizer - DX	Grocery	0.01	0.03	0.00	Cooling
609	Duct/Pipe Insulation - DX	Grocery	1.04	0.03	0.00	Cooling
609	Demand Controlled Ventilation	Grocery	10.99	0.08	0.00	Ventilation

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	Demand Controlled Ventilation	Grocery	14.37	0.11	0.00	Ventilation
609	Freezer-Cooler Replacement Gaskets	Grocery	14.25	0.96	0.00	Refrigeration
609	Oversized Air Cooled Condenser	Grocery	16.99	0.90	0.00	Refrigeration
609	Night covers for display cases	Grocery	20.37	0.75	0.00	Refrigeration
609	High-efficiency fan motors	Grocery	12.90	0.68	0.00	Refrigeration
609	Compressor VSD retrofit	Grocery	21.90	0.59	0.00	Refrigeration
609	Refrigeration Commissioning	Grocery	1.70	0.29	0.00	Refrigeration
609	Evaporator fan controller for MT walk-ins	Grocery	0.23	0.26	0.00	Refrigeration
609	Multiplex Compressor System	Grocery	5.80	0.26	0.00	Refrigeration
609	LED Display Lighting	Grocery	24.69	0.13	0.00	Refrigeration
609	High R-Value Glass Doors	Grocery	4.62	0.03	0.00	Refrigeration
609	Energy-Star Freezer, solid door	Grocery	1.11	0.88	0.00	Refrigeration
609	Energy-Star Refrigerator, glass door	Grocery	0.06	0.69	0.00	Refrigeration
609	Energy-Star Refrigerator, solid door	Grocery	0.02	0.66	0.00	Refrigeration
609	Energy Star Ice Machines	Grocery	0.01	0.26	0.00	Refrigeration
609	Reach-in unit occupancy sensors	Grocery	0.01	0.21	0.00	Refrigeration
609	Bi-level LED Case Lighting (self-contained units) 2014	Grocery	0.32	0.17	0.00	Refrigeration
609	Strip curtains for walk-ins (self-contained)	Grocery	0.16	0.08	0.00	Refrigeration
609	Laptop Network Power Management Enabling	Grocery	0.00	0.03	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Grocery	0.01	0.12	0.00	Office Equipment
609	Monitor Power Management Enabling - LCD	Grocery	0.07	0.30	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Grocery	0.03	0.10	0.00	Office Equipment
609	Copier Power Management Enabling	Grocery	0.06	0.26	0.00	Office Equipment
609	Multifunction Power Management Enabling	Grocery	0.04	0.09	0.00	Office Equipment
609	Printer Power Management Enabling	Grocery	0.03	0.43	0.00	Office Equipment
609	Tankless Water Heater	Grocery	0.41	0.46	0.00	Water Heating
609	Solar Water Heater	Grocery	0.71	0.40	0.00	Water Heating
609	Demand controlled circulating systems	Grocery	0.16	0.32	0.00	Water Heating
609	Hot Water Pipe Insulation	Grocery	0.08	0.30	0.00	Water Heating
609	Vending Misers (Non-Refrigerated)	Grocery	0.01	0.12	0.00	Vending
609	Efficient Steamer	Grocery	15.29	0.46	0.00	Cooking
609	Xmisc	Grocery	0.00	0.00	0.00	Miscellaneous
609	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Warehouse	6.26	0.61	0.00	Indoor Lighting
609	ROB 4L4' LED Tube, 2020	Warehouse	48.45	0.24	0.00	Indoor Lighting
609	LED Troffer (base 4L4'T8), 2020	Warehouse	21.53	0.28	0.00	Indoor Lighting
609	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	0.30	0.94	0.00	Indoor Lighting
609	ROB 2L4' LED Tube, 2020	Warehouse	0.10	0.29	0.00	Indoor Lighting
609	LED Troffer (base 2L4'T8), 2020	Warehouse	0.17	0.23	0.00	Indoor Lighting
609	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Warehouse	0.04	0.29	0.00	Indoor Lighting
609	Occupancy Sensor, 4L8' Fluorescent Fixtures	Warehouse	0.02	0.58	0.00	Indoor Lighting
609	ROB High Performance T8 (base other fluorescent)	Warehouse	0.04	0.53	0.00	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	ROB Low Watt High Performance T8 (base other fluorescent)	Warehouse	0.04	0.25	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 18W) 2020	Warehouse	4.88	0.64	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 23W) 2020	Warehouse	5.85	0.77	0.00	Indoor Lighting
609	LED Outdoor Area Lighting	Warehouse	47.16	0.55	0.00	Outdoor Lighting
609	Bi-Level LED Outdoor Lighting	Warehouse	12.87	0.08	0.00	Outdoor Lighting
609	Cool Roof - DX	Warehouse	15.16	0.89	0.00	Cooling
609	Optimize Controls - DX	Warehouse	2.80	0.38	0.00	Cooling
609	DX Packaged System, EER=13.4, 10 tons	Warehouse	42.73	0.27	0.00	Cooling
609	Duct Testing/Sealing - DX	Warehouse	8.51	0.04	0.00	Cooling
609	Window Film (Standard) - DX	Warehouse	5.79	0.04	0.00	Cooling
609	Prog. Thermostat - DX	Warehouse	3.86	0.03	0.00	Cooling
609	Duct/Pipe Insulation - DX	Warehouse	0.25	0.02	0.00	Cooling
609	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Warehouse	0.07	0.02	0.00	Cooling
609	Demand Controlled Ventilation	Warehouse	1.07	0.06	0.00	Ventilation
609	Air Handler Optimization, 40 HP	Warehouse	2.76	0.83	0.00	Ventilation
609	Demand Controlled Ventilation	Warehouse	0.33	0.05	0.00	Ventilation
609	Refrigeration Commissioning	Warehouse	1.42	0.86	0.00	Refrigeration
609	Electronically commutated evaporator fan motor	Warehouse	16.64	0.67	0.00	Refrigeration
609	Evaporator fan controller for MT walk-ins	Warehouse	0.05	0.34	0.00	Refrigeration
609	Strip curtains for walk-ins (built-up)	Warehouse	1.10	0.30	0.00	Refrigeration
609	High-efficiency fan motors	Warehouse	7.87	0.17	0.00	Refrigeration
609	Strip curtains for walk-ins (self-contained)	Warehouse	0.12	0.35	0.00	Refrigeration
609	Laptop Network Power Management Enabling	Warehouse	0.02	0.04	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Warehouse	0.09	0.23	0.00	Office Equipment
609	Monitor Power Management Enabling - LCD	Warehouse	0.03	0.60	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Warehouse	0.17	0.19	0.00	Office Equipment
609	Copier Power Management Enabling	Warehouse	0.14	0.55	0.00	Office Equipment
609	Multifunction Power Management Enabling	Warehouse	0.08	0.21	0.00	Office Equipment
609	Printer Power Management Enabling	Warehouse	0.30	0.97	0.00	Office Equipment
609	Heat Recovery Unit	Warehouse	1.32	0.25	0.00	Water Heating
609	Heat Trap	Warehouse	0.99	0.14	0.00	Water Heating
609	High Efficiency Water Heater (electric)	Warehouse	0.36	0.07	0.00	Water Heating
609	Tankless Water Heater	Warehouse	1.33	0.05	0.00	Water Heating
609	Solar Water Heater	Warehouse	5.62	0.05	0.00	Water Heating
609	Hot Water Pipe Insulation	Warehouse	0.04	0.03	0.00	Water Heating
609	Demand controlled circulating systems	Warehouse	0.21	0.02	0.00	Water Heating
609	Vending Misers (Non-Refrigerated)	Warehouse	0.19	0.14	0.00	Vending
609	Xmisc	Warehouse	0.00	0.00	0.00	Miscellaneous
609	ROB 4L4' LED Tube, 2020	School	105.66	0.21	0.00	Indoor Lighting
609	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	School	32.25	0.29	0.00	Indoor Lighting
609	LED Troffer (base 4L4'T8), 2020	School	44.21	0.24	0.00	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	School	6.00	0.94	0.00	Indoor Lighting
609	ROB 2L4' LED Tube, 2020	School	1.99	0.26	0.00	Indoor Lighting
609	LED Troffer (base 2L4'T8), 2020	School	3.34	0.21	0.00	Indoor Lighting
609	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	School	2.10	0.17	0.00	Indoor Lighting
609	ROB High Performance T8 (base other fluorescent)	School	0.36	0.65	0.00	Indoor Lighting
609	ROB Low Watt High Performance T8 (base other fluorescent)	School	0.49	0.31	0.00	Indoor Lighting
609	Occupancy Sensor, 4L8' Fluorescent Fixtures	School	0.55	0.29	0.00	Indoor Lighting
609	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	School	0.21	0.20	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 18W) 2020	School	18.39	0.62	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 23W) 2020	School	22.06	0.74	0.00	Indoor Lighting
609	Occupancy Sensor, High Bay T5	School	2.51	0.99	0.00	Indoor Lighting
609	LED Outdoor Area Lighting	School	99.89	0.67	0.00	Outdoor Lighting
609	Bi-Level LED Outdoor Lighting	School	27.19	0.10	0.00	Outdoor Lighting
609	VSD for Chiller Pumps and Towers	School	0.48	0.94	0.00	Cooling
609	EMS - Chiller	School	14.63	0.52	0.00	Cooling
609	Cool Roof - Chiller	School	4.93	0.40	0.00	Cooling
609	Window Film (Standard) - Chiller	School	1.26	0.35	0.00	Cooling
609	Duct Testing/Sealing - Chiller	School	41.42	0.30	0.00	Cooling
609	New Economizer - Chiller	School	22.19	0.15	0.00	Cooling
609	Duct/Pipe Insulation - Chiller	School	1.11	0.01	0.00	Cooling
609	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	School	0.78	0.34	0.00	Cooling
609	DX Tune Up/ Advanced Diagnostics	School	0.85	0.32	0.00	Cooling
609	Window Film (Standard) - DX	School	5.03	0.32	0.00	Cooling
609	Optimize Controls - DX	School	8.30	0.29	0.00	Cooling
609	Duct Testing/Sealing - DX	School	28.34	0.27	0.00	Cooling
609	Prog. Thermostat - DX	School	4.41	0.24	0.00	Cooling
609	Cool Roof - DX	School	8.85	0.19	0.00	Cooling
609	Economizer Repair - DX	School	9.70	0.08	0.00	Cooling
609	Economizer - DX	School	2.36	0.04	0.00	Cooling
609	Duct/Pipe Insulation - DX	School	5.73	0.02	0.00	Cooling
609	HE PTAC, EER=9.6, 1 ton	School	69.26	0.77	0.00	Cooling
609	Demand Controlled Ventilation	School	18.28	0.04	0.00	Ventilation
609	Air Handler Optimization, 15 HP	School	27.86	0.68	0.00	Ventilation
609	Fan Motor, 15hp, 1800rpm, 92.4%	School	2.50	0.40	0.00	Ventilation
609	Energy Recovery Ventilation (ERV)	School	13.42	0.13	0.00	Ventilation
609	Demand Controlled Ventilation	School	36.27	0.03	0.00	Ventilation
609	Air Handler Optimization, 40 HP	School	13.47	0.79	0.00	Ventilation
609	Demand Controlled Ventilation	School	18.69	0.04	0.00	Ventilation
609	Reach-in unit occupancy sensors	School	0.04	0.21	0.00	Refrigeration
609	Bi-level LED Case Lighting (self-contained units) 2014	School	0.17	0.17	0.00	Refrigeration
609	Strip curtains for walk-ins (self-contained)	School	0.16	0.05	0.00	Refrigeration
609	Laptop Network Power Management Enabling	School	0.06	0.04	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	School	0.34	0.23	0.00	Office Equipment

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	Monitor Power Management Enabling - LCD	School	0.14	0.59	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base monitor LCD)	School	0.42	0.20	0.00	Office Equipment
609	Copier Power Management Enabling	School	0.34	0.57	0.00	Office Equipment
609	Multifunction Power Management Enabling	School	0.15	0.18	0.00	Office Equipment
609	Printer Power Management Enabling	School	1.12	0.84	0.00	Office Equipment
609	High Efficiency Water Heater (electric)	School	1.40	0.72	0.00	Water Heating
609	Heat Recovery Unit	School	6.88	0.67	0.00	Water Heating
609	Demand controlled circulating systems	School	2.39	0.56	0.00	Water Heating
609	Tankless Water Heater	School	4.60	0.44	0.00	Water Heating
609	Solar Water Heater	School	3.97	0.38	0.00	Water Heating
609	Hot Water Pipe Insulation	School	0.53	0.32	0.00	Water Heating
609	Vending Misers (Non-Refrigerated)	School	0.13	0.11	0.00	Vending
609	Convection Oven	School	4.90	0.42	0.00	Cooking
609	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	0.77	0.77	0.00	Heating
609	Xmisc	School	0.00	0.00	0.00	Miscellaneous
609	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Health	15.09	0.81	0.00	Indoor Lighting
609	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Health	7.67	0.42	0.00	Indoor Lighting
609	ROB 4L4' LED Tube, 2020	Health	15.45	0.15	0.00	Indoor Lighting
609	LED Troffer (base 4L4'T8), 2020	Health	6.87	0.18	0.00	Indoor Lighting
609	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Health	1.19	0.93	0.00	Indoor Lighting
609	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Health	1.82	0.64	0.00	Indoor Lighting
609	ROB 2L4' LED Tube, 2020	Health	0.60	0.20	0.00	Indoor Lighting
609	LED Troffer (base 2L4'T8), 2020	Health	1.01	0.16	0.00	Indoor Lighting
609	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Health	0.80	0.21	0.00	Indoor Lighting
609	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Health	0.35	0.82	0.00	Indoor Lighting
609	ROB High Performance T8 (base other fluorescent)	Health	0.44	0.42	0.00	Indoor Lighting
609	Occupancy Sensor, 4L8' Fluorescent Fixtures	Health	0.74	0.36	0.00	Indoor Lighting
609	ROB Low Watt High Performance T8 (base other fluorescent)	Health	0.39	0.16	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 18W) 2020	Health	0.78	0.44	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 23W) 2020	Health	0.94	0.53	0.00	Indoor Lighting
609	Outdoor Lighting Controls (Photocell/Timeclock)	Health	0.94	0.96	0.00	Outdoor Lighting
609	LED Outdoor Area Lighting	Health	5.65	0.37	0.00	Outdoor Lighting
609	Bi-Level LED Outdoor Lighting	Health	1.54	0.06	0.00	Outdoor Lighting
609	Duct Testing/Sealing - Chiller	Health	9.79	0.59	0.00	Cooling
609	New Economizer - Chiller	Health	4.73	0.42	0.00	Cooling
609	Window Film (Standard) - Chiller	Health	0.06	0.28	0.00	Cooling
609	Cool Roof - Chiller	Health	0.10	0.11	0.00	Cooling
609	Duct/Pipe Insulation - Chiller	Health	0.42	0.03	0.00	Cooling
609	DX Tune Up/ Advanced Diagnostics	Health	0.15	0.71	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	Optimize Controls - DX	Health	2.95	0.69	0.00	Cooling
609	Prog. Thermostat - DX	Health	3.27	0.60	0.00	Cooling
609	Duct Testing/Sealing - DX	Health	9.43	0.53	0.00	Cooling
609	Window Film (Standard) - DX	Health	0.78	0.33	0.00	Cooling
609	Cool Roof - DX	Health	0.46	0.13	0.00	Cooling
609	Duct/Pipe Insulation - DX	Health	1.59	0.03	0.00	Cooling
609	Economizer Repair - DX	Health	0.00	0.00	0.00	Cooling
609	Economizer - DX	Health	0.00	0.00	0.00	Cooling
609	Demand Controlled Ventilation	Health	3.99	0.11	0.00	Ventilation
609	Energy Recovery Ventilation (ERV)	Health	8.19	0.37	0.00	Ventilation
609	Demand Controlled Ventilation	Health	11.24	0.09	0.00	Ventilation
609	Demand Controlled Ventilation	Health	21.14	0.15	0.00	Ventilation
609	Reach-in unit occupancy sensors	Health	0.01	0.22	0.00	Refrigeration
609	Bi-level LED Case Lighting (self-contained units) 2014	Health	0.04	0.18	0.00	Refrigeration
609	Laptop Network Power Management Enabling	Health	0.01	0.03	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Health	0.06	0.16	0.00	Office Equipment
609	Monitor Power Management Enabling - LCD	Health	0.07	0.41	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Health	0.10	0.14	0.00	Office Equipment
609	Copier Power Management Enabling	Health	0.14	0.35	0.00	Office Equipment
609	Multifunction Power Management Enabling	Health	0.05	0.14	0.00	Office Equipment
609	Printer Power Management Enabling	Health	0.20	0.66	0.00	Office Equipment
609	High Efficiency Water Heater (electric)	Health	0.28	0.83	0.00	Water Heating
609	Heat Recovery Unit	Health	7.01	0.80	0.00	Water Heating
609	Tankless Water Heater	Health	0.49	0.28	0.00	Water Heating
609	Solar Water Heater	Health	0.84	0.24	0.00	Water Heating
609	Hot Water Pipe Insulation	Health	0.05	0.19	0.00	Water Heating
609	Vending Misers (Non-Refrigerated)	Health	0.05	0.12	0.00	Vending
609	Efficient Fryer	Health	0.56	0.57	0.00	Cooking
609	Xmisc	Health	0.00	0.00	0.00	Miscellaneous
609	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Lodging	0.52	0.90	0.00	Indoor Lighting
609	ROB 4L4' LED Tube, 2020	Lodging	1.01	0.20	0.00	Indoor Lighting
609	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Lodging	0.15	0.29	0.00	Indoor Lighting
609	LED Troffer (base 4L4'T8), 2020	Lodging	0.43	0.23	0.00	Indoor Lighting
609	Lighting Control Tuneup (base 2L4'T8), 2020	Lodging	0.13	0.76	0.00	Indoor Lighting
609	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Lodging	2.10	0.65	0.00	Indoor Lighting
609	ROB 2L4' LED Tube, 2020	Lodging	1.22	0.24	0.00	Indoor Lighting
609	LED Troffer (base 2L4'T8), 2020	Lodging	2.05	0.19	0.00	Indoor Lighting
609	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Lodging	0.62	0.17	0.00	Indoor Lighting
609	ROB High Performance T8 (base other fluorescent)	Lodging	0.07	0.65	0.00	Indoor Lighting
609	ROB Low Watt High Performance T8 (base other fluorescent)	Lodging	0.08	0.31	0.00	Indoor Lighting
609	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Lodging	0.04	0.28	0.00	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	Occupancy Sensor, 4L8' Fluorescent Fixtures	Lodging	0.04	0.26	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 18W) 2020	Lodging	3.04	0.52	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 23W) 2020	Lodging	3.64	0.62	0.00	Indoor Lighting
609	LED Outdoor Area Lighting	Lodging	19.46	0.65	0.00	Outdoor Lighting
609	Bi-Level LED Outdoor Lighting	Lodging	5.31	0.10	0.00	Outdoor Lighting
609	New Economizer - Chiller	Lodging	44.54	0.92	0.00	Cooling
609	EMS - Chiller	Lodging	6.33	0.49	0.00	Cooling
609	Duct Testing/Sealing - Chiller	Lodging	13.34	0.25	0.00	Cooling
609	Cool Roof - Chiller	Lodging	0.11	0.04	0.00	Cooling
609	Duct/Pipe Insulation - Chiller	Lodging	0.28	0.02	0.00	Cooling
609	Optimize Controls - DX	Lodging	4.83	0.62	0.00	Cooling
609	DX Tune Up/ Advanced Diagnostics	Lodging	3.63	0.45	0.00	Cooling
609	Prog. Thermostat - DX	Lodging	7.49	0.38	0.00	Cooling
609	Duct Testing/Sealing - DX	Lodging	15.05	0.34	0.00	Cooling
609	Economizer Repair - DX	Lodging	1.20	0.09	0.00	Cooling
609	Cool Roof - DX	Lodging	0.45	0.07	0.00	Cooling
609	Economizer - DX	Lodging	3.79	0.06	0.00	Cooling
609	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Lodging	0.01	0.03	0.00	Cooling
609	Duct/Pipe Insulation - DX	Lodging	2.47	0.03	0.00	Cooling
609	Occupancy Sensor (hotels)	Lodging	5.50	0.38	0.00	Cooling
609	Demand Controlled Ventilation	Lodging	32.14	0.09	0.00	Ventilation
609	Demand Controlled Ventilation	Lodging	5.06	0.09	0.00	Ventilation
609	Bi-level LED Case Lighting (self-contained units) 2014	Lodging	0.03	0.18	0.00	Refrigeration
609	Strip curtains for walk-ins (self-contained)	Lodging	0.53	0.15	0.00	Refrigeration
609	Laptop Network Power Management Enabling	Lodging	0.01	0.04	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Lodging	0.11	0.25	0.00	Office Equipment
609	Monitor Power Management Enabling - LCD	Lodging	0.18	0.59	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Lodging	0.11	0.20	0.00	Office Equipment
609	Copier Power Management Enabling	Lodging	0.09	0.57	0.00	Office Equipment
609	Multifunction Power Management Enabling	Lodging	0.05	0.19	0.00	Office Equipment
609	Printer Power Management Enabling	Lodging	0.13	0.89	0.00	Office Equipment
609	Hot Water Pipe Insulation	Lodging	0.62	0.96	0.00	Water Heating
609	Vending Misers (Non-Refrigerated)	Lodging	0.04	0.12	0.00	Vending
609	Xmisc	Lodging	0.00	0.00	0.00	Miscellaneous
609	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Data Centers	0.56	0.74	0.00	Indoor Lighting
609	ROB 4L4' LED Tube, 2020	Data Centers	1.10	0.23	0.00	Indoor Lighting
609	LED Troffer (base 4L4'T8), 2020	Data Centers	0.49	0.28	0.00	Indoor Lighting
609	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	0.02	0.99	0.00	Indoor Lighting
609	ROB 2L4' LED Tube, 2020	Data Centers	0.01	0.31	0.00	Indoor Lighting
609	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Data Centers	0.01	0.40	0.00	Indoor Lighting
609	LED Troffer (base 2L4'T8), 2020	Data Centers	0.01	0.23	0.00	Indoor Lighting
609	ROB High Performance T8 (base other fluorescent)	Data Centers	0.04	0.63	0.00	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	Occupancy Sensor, 4L8' Fluorescent Fixtures	Data Centers	0.04	0.41	0.00	Indoor Lighting
609	ROB Low Watt High Performance T8 (base other fluorescent)	Data Centers	0.03	0.26	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 18W) 2020	Data Centers	0.18	0.64	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 23W) 2020	Data Centers	0.21	0.77	0.00	Indoor Lighting
609	LED Outdoor Area Lighting	Data Centers	1.13	0.58	0.00	Outdoor Lighting
609	Bi-Level LED Outdoor Lighting	Data Centers	0.30	0.09	0.00	Outdoor Lighting
609	Cool Roof - Chiller	Data Centers	0.05	0.77	0.00	Cooling
609	Duct/Pipe Insulation - Chiller	Data Centers	0.05	0.09	0.00	Cooling
609	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	Data Centers	0.00	0.73	0.00	Cooling
609	Cool Roof - DX	Data Centers	0.07	0.65	0.00	Cooling
609	Duct/Pipe Insulation - DX	Data Centers	0.06	0.08	0.00	Cooling
609	Demand Controlled Ventilation	Data Centers	0.20	0.32	0.00	Ventilation
609	Energy Recovery Ventilation (ERV)	Data Centers	0.26	0.90	0.00	Ventilation
609	Demand Controlled Ventilation	Data Centers	0.59	0.26	0.00	Ventilation
609	Demand Controlled Ventilation	Data Centers	0.69	0.29	0.00	Ventilation
609	Reach-in unit occupancy sensors	Data Centers	0.00	0.24	0.00	Refrigeration
609	Bi-level LED Case Lighting (self-contained units) 2014	Data Centers	0.00	0.20	0.00	Refrigeration
609	Laptop Network Power Management Enabling	Data Centers	0.00	0.04	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Data Centers	0.01	0.40	0.00	Office Equipment
609	Monitor Power Management Enabling - LCD	Data Centers	0.00	0.60	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Data Centers	0.00	0.19	0.00	Office Equipment
609	Copier Power Management Enabling	Data Centers	0.00	0.56	0.00	Office Equipment
609	Multifunction Power Management Enabling	Data Centers	0.00	0.19	0.00	Office Equipment
609	Printer Power Management Enabling	Data Centers	0.00	0.86	0.00	Office Equipment
609	Heat Trap	Data Centers	0.01	0.84	0.00	Water Heating
609	High Efficiency Water Heater (electric)	Data Centers	0.00	0.45	0.00	Water Heating
609	Tankless Water Heater	Data Centers	0.02	0.32	0.00	Water Heating
609	Solar Water Heater	Data Centers	0.10	0.27	0.00	Water Heating
609	Heat Recovery Unit	Data Centers	0.01	0.10	0.00	Water Heating
609	Demand controlled circulating systems	Data Centers	0.00	0.04	0.00	Water Heating
609	Vending Misers (Non-Refrigerated)	Data Centers	0.00	0.43	0.00	Vending
609	Xmisc	Data Centers	0.00	0.00	0.00	Miscellaneous
609	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	on-Jurisdiction	16.37	0.81	0.00	Indoor Lighting
609	ROB 4L4' LED Tube, 2020	on-Jurisdiction	57.06	0.26	0.00	Indoor Lighting
609	LED Troffer (base 4L4'T8), 2020	on-Jurisdiction	25.36	0.32	0.00	Indoor Lighting
609	ROB 2L4' LED Tube, 2020	on-Jurisdiction	3.42	0.34	0.00	Indoor Lighting
609	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	on-Jurisdiction	2.97	0.44	0.00	Indoor Lighting
609	LED Troffer (base 2L4'T8), 2020	on-Jurisdiction	5.49	0.26	0.00	Indoor Lighting
609	ROB High Performance T8 (base other fluorescent)	on-Jurisdiction	1.06	0.72	0.00	Indoor Lighting
609	Occupancy Sensor, 4L8' Fluorescent Fixtures	on-Jurisdiction	1.05	0.56	0.00	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	ROB Low Watt High Performance T8 (base other fluorescent)	on-Jurisdiction	1.22	0.31	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 18W) 2020	on-Jurisdiction	6.14	0.68	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 23W) 2020	on-Jurisdiction	7.37	0.81	0.00	Indoor Lighting
609	High Performance Lighting R/R - 25% Savings (base metal halide)	on-Jurisdiction	1.12	0.68	0.00	Indoor Lighting
609	LED Outdoor Area Lighting	on-Jurisdiction	37.86	0.61	0.00	Outdoor Lighting
609	Bi-Level LED Outdoor Lighting	on-Jurisdiction	10.29	0.09	0.00	Outdoor Lighting
609	Duct Testing/Sealing - Chiller	on-Jurisdiction	44.31	0.63	0.00	Cooling
609	Window Film (Standard) - Chiller	on-Jurisdiction	3.26	0.35	0.00	Cooling
609	New Economizer - Chiller	on-Jurisdiction	15.21	0.27	0.00	Cooling
609	Cool Roof - Chiller	on-Jurisdiction	0.64	0.18	0.00	Cooling
609	Duct/Pipe Insulation - Chiller	on-Jurisdiction	1.44	0.04	0.00	Cooling
609	Optimize Controls - DX	on-Jurisdiction	4.47	0.72	0.00	Cooling
609	DX Tune Up/ Advanced Diagnostics	on-Jurisdiction	0.91	0.65	0.00	Cooling
609	Economizer Repair - DX	on-Jurisdiction	3.78	0.60	0.00	Cooling
609	Duct Testing/Sealing - DX	on-Jurisdiction	15.32	0.55	0.00	Cooling
609	Prog. Thermostat - DX	on-Jurisdiction	8.10	0.48	0.00	Cooling
609	Window Film (Standard) - DX	on-Jurisdiction	3.38	0.35	0.00	Cooling
609	Economizer - DX	on-Jurisdiction	10.22	0.27	0.00	Cooling
609	Cool Roof - DX	on-Jurisdiction	1.17	0.19	0.00	Cooling
609	Dual Enthalpy Economizer Replaces Dry Bulb Economizer - DX	on-Jurisdiction	0.02	0.12	0.00	Cooling
609	Duct/Pipe Insulation - DX	on-Jurisdiction	1.40	0.04	0.00	Cooling
609	Demand Controlled Ventilation	on-Jurisdiction	6.67	0.12	0.00	Ventilation
609	Energy Recovery Ventilation (ERV)	on-Jurisdiction	1.51	0.33	0.00	Ventilation
609	Demand Controlled Ventilation	on-Jurisdiction	2.81	0.10	0.00	Ventilation
609	Fan Motor, 40hp, 1800rpm, 94.1%	on-Jurisdiction	0.27	0.64	0.00	Ventilation
609	Demand Controlled Ventilation	on-Jurisdiction	2.49	0.11	0.00	Ventilation
609	Reach-in unit occupancy sensors	on-Jurisdiction	0.03	0.21	0.00	Refrigeration
609	Bi-level LED Case Lighting (self-contained units) 2014	on-Jurisdiction	0.06	0.18	0.00	Refrigeration
609	Strip curtains for walk-ins (self-contained)	on-Jurisdiction	0.08	0.00	0.00	Refrigeration
609	Laptop Network Power Management Enabling	on-Jurisdiction	0.03	0.05	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	on-Jurisdiction	0.15	0.33	0.00	Office Equipment
609	Monitor Power Management Enabling - LCD	on-Jurisdiction	0.24	0.66	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base monitor LCD)	on-Jurisdiction	0.33	0.22	0.00	Office Equipment
609	Copier Power Management Enabling	on-Jurisdiction	0.26	0.60	0.00	Office Equipment
609	Multifunction Power Management Enabling	on-Jurisdiction	0.12	0.21	0.00	Office Equipment
609	Printer Power Management Enabling	on-Jurisdiction	0.85	0.97	0.00	Office Equipment
609	Hot Water Pipe Insulation	on-Jurisdiction	0.24	0.98	0.00	Water Heating
609	Heat Recovery Unit	on-Jurisdiction	0.89	0.86	0.00	Water Heating
609	Demand controlled circulating systems	on-Jurisdiction	0.58	0.32	0.00	Water Heating
609	Vending Misers (Refrigerated glass-front units)	on-Jurisdiction	0.76	0.69	0.00	Vending
609	Vending Misers (Non-Refrigerated)	on-Jurisdiction	0.08	0.07	0.00	Vending
609	Efficient Fryer	on-Jurisdiction	0.58	0.05	0.00	Cooking

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	Xmisc	on-Jurisdiction	0.00	0.00	0.00	Miscellaneous
609	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	eligious Worshi	4.39	0.99	0.00	Indoor Lighting
609	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	eligious Worshi	6.82	0.69	0.00	Indoor Lighting
609	ROB 4L4' LED Tube, 2020	eligious Worshi	7.54	0.13	0.00	Indoor Lighting
609	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	eligious Worshi	1.05	0.19	0.00	Indoor Lighting
609	LED Troffer (base 4L4'T8), 2020	eligious Worshi	3.26	0.15	0.00	Indoor Lighting
609	Lighting Control Tuneup (base 2L4'T8), 2020	eligious Worshi	0.23	0.92	0.00	Indoor Lighting
609	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	eligious Worshi	3.40	0.81	0.00	Indoor Lighting
609	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	eligious Worshi	5.27	0.55	0.00	Indoor Lighting
609	ROB 2L4' LED Tube, 2020	eligious Worshi	1.75	0.16	0.00	Indoor Lighting
609	LED Troffer (base 2L4'T8), 2020	eligious Worshi	2.94	0.13	0.00	Indoor Lighting
609	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	eligious Worshi	0.84	0.11	0.00	Indoor Lighting
609	ROB High Performance T8 (base other fluorescent)	eligious Worshi	0.05	0.39	0.00	Indoor Lighting
609	ROB Low Watt High Performance T8 (base other fluorescent)	eligious Worshi	0.08	0.19	0.00	Indoor Lighting
609	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	eligious Worshi	0.04	0.18	0.00	Indoor Lighting
609	Occupancy Sensor, 4L8' Fluorescent Fixtures	eligious Worshi	0.04	0.17	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 18W) 2020	eligious Worshi	1.08	0.36	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 23W) 2020	eligious Worshi	1.29	0.43	0.00	Indoor Lighting
609	Occupancy Sensor, High Bay T5	eligious Worshi	0.07	0.69	0.00	Indoor Lighting
609	High Performance Lighting R/R - 25% Savings (base metal halide)	eligious Worshi	0.16	0.47	0.00	Indoor Lighting
609	LED Outdoor Area Lighting	eligious Worshi	12.07	0.44	0.00	Outdoor Lighting
609	Bi-Level LED Outdoor Lighting	eligious Worshi	3.27	0.07	0.00	Outdoor Lighting
609	VSD for Chiller Pumps and Towers	eligious Worshi	0.99	0.90	0.00	Cooling
609	EMS - Chiller	eligious Worshi	1.18	0.50	0.00	Cooling
609	Duct Testing/Sealing - Chiller	eligious Worshi	4.29	0.30	0.00	Cooling
609	Window Film (Standard) - Chiller	eligious Worshi	0.12	0.07	0.00	Cooling
609	Cool Roof - Chiller	eligious Worshi	0.04	0.02	0.00	Cooling
609	Duct/Pipe Insulation - Chiller	eligious Worshi	0.25	0.01	0.00	Cooling
609	New Economizer - Chiller	eligious Worshi	0.00	0.00	0.00	Cooling
609	DX Tune Up/ Advanced Diagnostics	eligious Worshi	0.03	0.32	0.00	Cooling
609	Duct Testing/Sealing - DX	eligious Worshi	4.12	0.28	0.00	Cooling
609	Prog. Thermostat - DX	eligious Worshi	1.49	0.24	0.00	Cooling
609	Optimize Controls - DX	eligious Worshi	1.07	0.21	0.00	Cooling
609	Window Film (Standard) - DX	eligious Worshi	0.25	0.08	0.00	Cooling
609	Cool Roof - DX	eligious Worshi	0.12	0.02	0.00	Cooling
609	Duct/Pipe Insulation - DX	eligious Worshi	0.40	0.01	0.00	Cooling
609	HE PTAC, EER=9.6, 1 ton	eligious Worshi	9.96	0.69	0.00	Cooling
609	Fan Motor, 5hp, 1800rpm, 89.5%	eligious Worshi	1.18	0.67	0.00	Ventilation
609	Variable Speed Drive Control, 5 HP	eligious Worshi	19.99	0.63	0.00	Ventilation
609	Demand Controlled Ventilation	eligious Worshi	0.93	0.03	0.00	Ventilation
609	Air Handler Optimization, 15 HP	eligious Worshi	3.20	0.67	0.00	Ventilation
609	Variable Speed Drive Control, 15 HP	eligious Worshi	12.92	0.46	0.00	Ventilation

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	Fan Motor, 15hp, 1800rpm, 92.4%	eligious Worshi	0.46	0.20	0.00	Ventilation
609	Energy Recovery Ventilation (ERV)	eligious Worshi	0.39	0.13	0.00	Ventilation
609	Demand Controlled Ventilation	eligious Worshi	0.58	0.03	0.00	Ventilation
609	Air Handler Optimization, 40 HP	eligious Worshi	2.97	0.78	0.00	Ventilation
609	Variable Speed Drive Control, 40 HP	eligious Worshi	11.98	0.30	0.00	Ventilation
609	Fan Motor, 40hp, 1800rpm, 94.1%	eligious Worshi	0.11	0.08	0.00	Ventilation
609	Demand Controlled Ventilation	eligious Worshi	0.55	0.03	0.00	Ventilation
609	Reach-in unit occupancy sensors	eligious Worshi	0.01	0.22	0.00	Refrigeration
609	Bi-level LED Case Lighting (self-contained units) 2014	eligious Worshi	0.07	0.18	0.00	Refrigeration
609	Laptop Network Power Management Enabling	eligious Worshi	0.01	0.02	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	eligious Worshi	0.04	0.14	0.00	Office Equipment
609	Monitor Power Management Enabling - LCD	eligious Worshi	0.05	0.33	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base monitor LCD)	eligious Worshi	0.11	0.11	0.00	Office Equipment
609	Copier Power Management Enabling	eligious Worshi	0.16	0.29	0.00	Office Equipment
609	Multifunction Power Management Enabling	eligious Worshi	0.06	0.11	0.00	Office Equipment
609	Printer Power Management Enabling	eligious Worshi	0.16	0.49	0.00	Office Equipment
609	Tankless Water Heater	eligious Worshi	1.77	0.81	0.00	Water Heating
609	Hot Water Pipe Insulation	eligious Worshi	0.42	0.62	0.00	Water Heating
609	Heat Recovery Unit	eligious Worshi	0.70	0.58	0.00	Water Heating
609	Demand controlled circulating systems	eligious Worshi	0.78	0.22	0.00	Water Heating
609	Vending Misers (Non-Refrigerated)	eligious Worshi	0.00	0.11	0.00	Vending
609	Efficient Fryer	eligious Worshi	0.08	0.02	0.00	Cooking
609	Xmisc	eligious Worshi	0.00	0.00	0.00	Miscellaneous
609	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Misc	7.87	0.69	0.00	Indoor Lighting
609	ROB 4L4' LED Tube, 2020	Misc	46.36	0.27	0.00	Indoor Lighting
609	LED Troffer (base 4L4'T8), 2020	Misc	20.60	0.32	0.00	Indoor Lighting
609	ROB 2L4' LED Tube, 2020	Misc	11.05	0.34	0.00	Indoor Lighting
609	LED Troffer (base 2L4'T8), 2020	Misc	18.57	0.27	0.00	Indoor Lighting
609	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Misc	5.30	0.34	0.00	Indoor Lighting
609	ROB High Performance T8 (base other fluorescent)	Misc	0.32	0.78	0.00	Indoor Lighting
609	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Misc	0.29	0.66	0.00	Indoor Lighting
609	Occupancy Sensor, 4L8' Fluorescent Fixtures	Misc	0.25	0.60	0.00	Indoor Lighting
609	ROB Low Watt High Performance T8 (base other fluorescent)	Misc	0.42	0.32	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 18W) 2020	Misc	13.54	0.75	0.00	Indoor Lighting
609	LED screw-in replacement (base CFL 23W) 2020	Misc	16.24	0.90	0.00	Indoor Lighting
609	LED Outdoor Area Lighting	Misc	41.83	0.59	0.00	Outdoor Lighting
609	Bi-Level LED Outdoor Lighting	Misc	11.34	0.09	0.00	Outdoor Lighting
609	EMS - Chiller	Misc	6.12	0.96	0.00	Cooling
609	Duct Testing/Sealing - Chiller	Misc	11.63	0.57	0.00	Cooling
609	Window Film (Standard) - Chiller	Misc	0.33	0.13	0.00	Cooling
609	Cool Roof - Chiller	Misc	0.10	0.03	0.00	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
609	Duct/Pipe Insulation - Chiller	Misc	0.68	0.02	0.00	Cooling
609	New Economizer - Chiller	Misc	0.00	0.00	0.00	Cooling
609	DX Tune Up/ Advanced Diagnostics	Misc	0.76	0.64	0.00	Cooling
609	Duct Testing/Sealing - DX	Misc	13.99	0.56	0.00	Cooling
609	Prog. Thermostat - DX	Misc	4.27	0.48	0.00	Cooling
609	Optimize Controls - DX	Misc	3.65	0.42	0.00	Cooling
609	Window Film (Standard) - DX	Misc	0.84	0.16	0.00	Cooling
609	Cool Roof - DX	Misc	0.42	0.03	0.00	Cooling
609	Duct/Pipe Insulation - DX	Misc	1.37	0.03	0.00	Cooling
609	Demand Controlled Ventilation	Misc	4.77	0.07	0.00	Ventilation
609	Variable Speed Drive Control, 15 HP	Misc	63.29	0.93	0.00	Ventilation
609	Fan Motor, 15hp, 1800rpm, 92.4%	Misc	2.36	0.42	0.00	Ventilation
609	Energy Recovery Ventilation (ERV)	Misc	1.99	0.26	0.00	Ventilation
609	Demand Controlled Ventilation	Misc	3.00	0.05	0.00	Ventilation
609	Variable Speed Drive Control, 40 HP	Misc	58.69	0.60	0.00	Ventilation
609	Fan Motor, 40hp, 1800rpm, 94.1%	Misc	0.58	0.17	0.00	Ventilation
609	Demand Controlled Ventilation	Misc	2.85	0.06	0.00	Ventilation
609	Reach-in unit occupancy sensors	Misc	0.01	0.22	0.00	Refrigeration
609	Bi-level LED Case Lighting (self-contained units) 2014	Misc	0.06	0.18	0.00	Refrigeration
609	Laptop Network Power Management Enabling	Misc	0.03	0.05	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base Monitor CRT)	Misc	0.16	0.27	0.00	Office Equipment
609	Monitor Power Management Enabling - LCD	Misc	0.16	0.66	0.00	Office Equipment
609	Plug-load controls - Commercial Smart Strip (base monitor LCD)	Misc	0.33	0.22	0.00	Office Equipment
609	Copier Power Management Enabling	Misc	0.42	0.58	0.00	Office Equipment
609	Multifunction Power Management Enabling	Misc	0.18	0.21	0.00	Office Equipment
609	Printer Power Management Enabling	Misc	0.81	0.98	0.00	Office Equipment
609	Demand controlled circulating systems	Misc	2.81	0.45	0.00	Water Heating
609	Vending Misers (Non-Refrigerated)	Misc	0.08	0.11	0.00	Vending
609	Efficient Fryer	Misc	0.68	0.02	0.00	Cooking
609	Xmisc	Misc	0.00	0.00	0.00	Miscellaneous

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

VA Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
1	LEDs (base incandescent flood) 2020	Misc	20.22	7910.67	20.22	Indoor Lighting
2	LEDs (base incandescent flood) 2020	Office	11.35	8259.12	11.35	Indoor Lighting
3	LEDs (base incandescent A-line 72W) 2020	Misc	7.15	5592.75	7.15	Indoor Lighting
4	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Office	6.02	1.50	6.02	Indoor Lighting
5	DX Packaged System, EER=13.4, 10 tons	School	5.71	1.82	5.71	Cooling
6	DX Packaged System, EER=13.4, 10 tons	Retail	5.58	3.08	5.58	Cooling
7	ROB 4L4' High Performance T8 (86 W), 2020	Office	5.36	3.14	5.36	Indoor Lighting
8	LEDs (base incandescent A-line 53W) 2020	Misc	4.81	3763.29	4.81	Indoor Lighting
9	Variable Speed Drive Control, 5 HP	Retail	4.53	3.37	4.53	Ventilation
10	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Retail	4.33	1.10	4.33	Indoor Lighting
11	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Office	4.27	5.57	4.27	Indoor Lighting
12	LEDs (base incandescent A-line 72W) 2020	Office	4.01	5836.28	4.01	Indoor Lighting
13	ROB 4L4' High Performance T8 (86 W), 2020	Retail	3.95	2.30	3.95	Indoor Lighting
14	DX Packaged System, EER=13.4, 10 tons	Office	3.80	4.42	3.80	Cooling
15	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	3.76	2.40	3.76	Indoor Lighting
16	PC Network Power Management Enabling	Office	3.76	4.46	3.76	Office Equipment
17	Variable Speed Drive Control, 5 HP	Office	3.23	4.01	3.23	Ventilation
18	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Retail	3.11	3.84	3.11	Indoor Lighting
19	Variable Speed Drive Control, 5 HP	Misc	2.90	1.25	2.90	Ventilation
20	LEDs (base incandescent A-line 53W) 2020	Office	2.69	3918.32	2.69	Indoor Lighting
21	ROB 4L4' High Performance T8 (86 W), 2020	Warehouse	2.68	5.00	2.68	Indoor Lighting
22	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	2.31	6.20	2.31	Cooling
23	DX Packaged System, EER=13.4, 10 tons	Lodging	2.26	2.00	2.26	Cooling
24	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	2.20	2.15	2.20	Cooling
25	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	2.14	3.18	2.14	Cooling
26	LEDs (base incandescent flood) 2020	Retail	2.11	6471.89	2.11	Indoor Lighting
27	Variable Speed Drive Control, 15 HP	School	2.04	1.51	2.04	Ventilation
28	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Warehouse	1.94	2.29	1.94	Indoor Lighting
29	Variable Speed Drive Control, 5 HP	Warehouse	1.77	3.13	1.77	Ventilation
30	Electronically Commutated Motors (ECM) on an Air Handler Unit	School	1.67	1.28	1.67	Ventilation
31	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	1.61	4.32	1.61	Cooling
32	DX Packaged System, EER=13.4, 10 tons	Restaurant	1.59	5.70	1.59	Cooling
33	Variable Speed Drive Control, 15 HP	Health	1.58	10.92	1.58	Ventilation
34	Data Center Best Practices	Data Centers	1.57	49.89	1.57	Office Equipment
35	ENERGY STAR Printer	Office	1.49	46.78	1.49	Office Equipment

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NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
36	Solar Water Heater	Office	1.44	1.41	1.44	Water Heating
37	Heat Recovery Unit	Restaurant	1.44	5.33	1.44	Water Heating
38	Outdoor Lighting Controls (Photocell/Timeclock)	School	1.38	1.56	1.38	Outdoor Lighting
39	Data Center Improved Operations	Data Centers	1.37	122.55	1.37	Office Equipment
40	Data Center Best Practices	School	1.36	42.93	1.36	Office Equipment
41	Centrifugal Chiller, 0.51 kW/ton, 500 tons	School	1.36	1.73	1.36	Cooling
42	Economizer Repair - DX	Retail	1.30	1.11	1.30	Cooling
43	Energy Star or Better Monitor - CRT	Office	1.24	62.83	1.24	Office Equipment
44	T5 (240W) (base metal halide)	Misc	1.20	8.00	1.20	Indoor Lighting
45	Data Center Improved Operations	School	1.19	105.45	1.19	Office Equipment
46	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	1.18	3.44	1.18	Cooling
47	HE PTAC, EER=9.6, 1 ton	Lodging	1.18	1.17	1.18	Cooling
48	LEDs (base incandescent flood) 2020	eligious Worshi	1.17	3110.09	1.17	Indoor Lighting
49	Electronically Commutated Motors (ECM) on an Air Handler Unit	Misc	1.13	2.54	1.13	Ventilation
50	PC Network Power Management Enabling	School	0.99	3.97	0.99	Office Equipment
51	LEDs (base incandescent flood) 2020	Restaurant	0.98	5705.63	0.98	Indoor Lighting
52	Energy Star or Better PC	Office	0.98	2.21	0.98	Office Equipment
53	LEDs (base incandescent flood) 2020	Lodging	0.92	5388.51	0.92	Indoor Lighting
54	DX Packaged System, EER=13.4, 10 tons	eligious Worshi	0.92	1.43	0.92	Cooling
55	Electronically commutated evaporator fan motor	Grocery	0.85	2.83	0.85	Refrigeration
56	Variable Speed Drive Control, 40 HP	School	0.85	10.60	0.85	Ventilation
57	Variable Speed Drive Control, 5 HP	Grocery	0.83	1.72	0.83	Ventilation
58	ROB 2L4' High Performance T8 (86 W), 2020	Retail	0.79	1.82	0.79	Indoor Lighting
59	Variable Speed Drive Control, 5 HP	School	0.76	1.83	0.76	Ventilation
60	DX Packaged System, EER=13.4, 10 tons	Misc	0.75	3.41	0.75	Cooling
61	LEDs (base incandescent A-line 72W) 2020	Retail	0.74	4575.55	0.74	Indoor Lighting
62	Energy Star or Better Monitor - CRT	School	0.72	42.92	0.72	Office Equipment
63	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Warehouse	0.67	1.04	0.67	Indoor Lighting
64	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	0.65	3.37	0.65	Cooling
65	Economizer Repair - DX	Office	0.62	1.60	0.62	Cooling
66	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Retail	0.62	2.25	0.62	Indoor Lighting
67	DX Packaged System, EER=13.4, 10 tons	Health	0.61	2.89	0.61	Cooling
68	Data Center State of the Art practices	Data Centers	0.60	25.88	0.60	Office Equipment
69	T5 (240W) (base metal halide)	eligious Worshi	0.60	2.11	0.60	Indoor Lighting
70	Variable Speed Drive Control, 40 HP	Warehouse	0.60	6.12	0.60	Ventilation
71	HE PTAC, EER=9.6, 1 ton	Misc	0.58	1.38	0.58	Cooling
72	Variable Speed Drive Control, 15 HP	Office	0.57	14.76	0.57	Ventilation
73	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Misc	0.56	1.39	0.56	Indoor Lighting
74	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	School	0.55	1.31	0.55	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
75	ROB 4L4' High Performance T8 (86 W), 2020	School	0.54	2.96	0.54	Indoor Lighting
76	Window Film (Standard) - DX	Lodging	0.53	2.50	0.53	Cooling
77	Data Center State of the Art practices	School	0.52	22.27	0.52	Office Equipment
78	Printer Power Management Enabling	Office	0.51	1.06	0.51	Office Equipment
79	ROB 4L4' High Performance T8 (86 W), 2020	Misc	0.51	2.91	0.51	Indoor Lighting
80	Electronically Commutated Motors (ECM) on an Air Handler Unit	Health	0.50	2.37	0.50	Ventilation
81	LEDs (base incandescent A-line 53W) 2020	Retail	0.50	3078.83	0.50	Indoor Lighting
82	Air Handler Optimization, 40 HP	School	0.48	1.00	0.48	Ventilation
83	Air Handler Optimization, 15 HP	Misc	0.46	1.34	0.46	Ventilation
84	Variable Speed Drive Control, 5 HP	Health	0.46	3.77	0.46	Ventilation
85	ROB 2L4' High Performance T8 (86 W), 2020	Restaurant	0.45	1.43	0.45	Indoor Lighting
86	ROB 4L4' High Performance T8 (86 W), 2020	Grocery	0.44	1.33	0.44	Indoor Lighting
87	PC Network Power Management Enabling	eligious Worshi	0.44	1.69	0.44	Office Equipment
88	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Misc	0.43	1.11	0.43	Indoor Lighting
89	Air Handler Optimization, 40 HP	Misc	0.43	1.56	0.43	Ventilation
90	Night covers for display cases (self-contained)	Restaurant	0.42	13.40	0.42	Refrigeration
91	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	0.42	7.99	0.42	Cooling
92	LEDs (base incandescent A-line 72W) 2020	eligious Worshi	0.41	2198.80	0.41	Indoor Lighting
93	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	eligious Worshi	0.41	1.33	0.41	Cooling
94	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Misc	0.40	3.44	0.40	Indoor Lighting
95	Window Film (Standard) - DX	Restaurant	0.39	3.95	0.39	Cooling
96	ROB 4L4' High Performance T8 (86 W), 2020	Health	0.38	1.45	0.38	Indoor Lighting
97	LEDs (base incandescent flood) 2020	School	0.36	7189.65	0.36	Indoor Lighting
98	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Grocery	0.36	4.05	0.36	Indoor Lighting
99	ROB 2L4' High Performance T8 (86 W), 2020	Misc	0.36	2.32	0.36	Indoor Lighting
100	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Restaurant	0.35	2.76	0.35	Indoor Lighting
101	ENERGY STAR Printer	School	0.35	41.90	0.35	Office Equipment
102	Data Center Best Practices	Health	0.35	33.34	0.35	Office Equipment
103	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	School	0.35	2.40	0.35	Indoor Lighting
104	Energy Star or Better PC	School	0.35	2.03	0.35	Office Equipment
105	Tankless Water Heater	Misc	0.35	1.61	0.35	Water Heating
106	LEDs (base incandescent A-line 72W) 2020	Restaurant	0.34	4022.16	0.34	Indoor Lighting
107	DX Packaged System, EER=13.4, 10 tons	Grocery	0.34	2.79	0.34	Cooling
108	LEDs (base incandescent flood) 2020	Grocery	0.34	3668.60	0.34	Indoor Lighting
109	Energy Star or Better Copier	Office	0.33	37.36	0.33	Office Equipment
110	PC Network Power Management Enabling	Misc	0.33	4.05	0.33	Office Equipment
111	LEDs (base incandescent A-line 72W) 2020	Lodging	0.33	3809.61	0.33	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
112	Data Center Best Practices	Lodging	0.33	44.69	0.33	Office Equipment
113	Variable Speed Drive Control, 40 HP	Office	0.32	2.65	0.32	Ventilation
114	PC Network Power Management Enabling	Retail	0.31	2.84	0.31	Office Equipment
115	Vending Misers (Refrigerated units)	Office	0.31	1.91	0.31	Vending
116	Demand Hot Gas Defrost	Grocery	0.31	3.45	0.31	Refrigeration
117	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Misc	0.31	2.80	0.31	Indoor Lighting
118	Data Center Improved Operations	Health	0.31	81.88	0.31	Office Equipment
119	Strip curtains for walk-ins (built-up)	Grocery	0.31	1.35	0.31	Refrigeration
120	Outdoor Lighting Controls (Photocell/Timeclock)	Restaurant	0.31	1.20	0.31	Outdoor Lighting
121	Vending Misers (Refrigerated units)	Retail	0.30	1.94	0.30	Vending
122	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Health	0.30	1.86	0.30	Indoor Lighting
123	PC Network Power Management Enabling	Health	0.29	2.24	0.29	Office Equipment
124	Data Center Improved Operations	Lodging	0.28	109.76	0.28	Office Equipment
125	LEDs (base incandescent A-line 53W) 2020	eligious Worshi	0.28	1479.54	0.28	Indoor Lighting
126	Air Handler Optimization, 40 HP	Grocery	0.27	2.10	0.27	Ventilation
127	Heat Recovery Unit	Lodging	0.26	3.03	0.26	Water Heating
128	Heat Trap	Misc	0.26	4.22	0.26	Water Heating
129	Energy-Star Freezer, glass door	Restaurant	0.26	7.34	0.26	Refrigeration
130	Energy-Star Refrigerator, solid door	Restaurant	0.25	2.35	0.25	Refrigeration
131	Fan Motor, 5hp, 1800rpm, 89.5%	Retail	0.24	3.61	0.24	Ventilation
132	Freezer-Cooler Replacement Gaskets (self-contained)	Restaurant	0.24	8.51	0.24	Refrigeration
133	T5 (240W) (base metal halide)	School	0.23	4.48	0.23	Indoor Lighting
134	LEDs (base incandescent A-line 53W) 2020	Restaurant	0.23	2670.44	0.23	Indoor Lighting
135	Vending Misers (Refrigerated units)	School	0.23	1.90	0.23	Vending
136	LED Exit Sign	Office	0.23	2.39	0.23	Indoor Lighting
137	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Misc	0.22	2.03	0.22	Heating
138	Monitor Power Management Enabling - CRT	Office	0.22	5.32	0.22	Office Equipment
139	LEDs (base incandescent A-line 53W) 2020	Lodging	0.22	2563.44	0.22	Indoor Lighting
140	Tankless Water Heater	Office	0.22	1.64	0.22	Water Heating
141	Fan Motor, 5hp, 1800rpm, 89.5%	Office	0.22	4.33	0.22	Ventilation
142	Tankless Water Heater	Retail	0.22	1.16	0.22	Water Heating
143	Solar Water Heater	Lodging	0.21	1.11	0.21	Water Heating
144	Cool Roof - DX	Warehouse	0.21	1.61	0.21	Cooling
145	Data Center Best Practices	Misc	0.21	45.26	0.21	Office Equipment
146	LEDs (base incandescent flood) 2020	Health	0.20	3970.63	0.20	Indoor Lighting
147	Electronically Commutated Motors (ECM) on an Air Handler Unit	eligious Worshi	0.19	1.06	0.19	Ventilation
148	Data Center Improved Operations	Misc	0.18	111.17	0.18	Office Equipment
149	High Performance Lighting R/R - 25% Savings (base metal halide)	Misc	0.17	1.47	0.17	Indoor Lighting
150	Solar Water Heater	Restaurant	0.17	1.60	0.17	Water Heating
151	Vending Misers (Refrigerated glass-front units)	Office	0.17	1.04	0.17	Vending
152	Fan Motor, 5hp, 1800rpm, 89.5%	Misc	0.17	1.34	0.17	Ventilation
153	LED Exit Sign	Retail	0.17	1.38	0.17	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
154	Vending Misers (Refrigerated glass-front units)	Retail	0.17	1.06	0.17	Vending
155	Heat Trap	Office	0.16	4.31	0.16	Water Heating
156	Heat Trap	Retail	0.16	3.02	0.16	Water Heating
157	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Office	0.16	3.34	0.16	Heating
158	Energy Star or Better Monitor - LCD	Office	0.16	5.74	0.16	Office Equipment
159	Air Handler Optimization, 15 HP	Office	0.16	2.42	0.16	Ventilation
160	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Office	0.16	2.60	0.16	Indoor Lighting
161	Monitor Power Management Enabling - CRT	School	0.16	2.72	0.16	Office Equipment
162	Anti-sweat (humidistat) controls	Grocery	0.16	1.39	0.16	Refrigeration
163	PC Network Power Management Enabling	Lodging	0.15	2.66	0.15	Office Equipment
164	Heat Trap	Restaurant	0.15	10.16	0.15	Water Heating
165	Data Center Best Practices	Office	0.15	66.62	0.15	Office Equipment
166	Freezer-Cooler Replacement Gaskets (self-contained)	Misc	0.15	36.96	0.15	Refrigeration
167	Variable Speed Drive Control, 40 HP	Retail	0.14	1.09	0.14	Ventilation
168	Energy Star or Better Monitor - CRT	eligious Worshi	0.14	18.75	0.14	Office Equipment
169	Energy Star or Better Monitor - CRT	Retail	0.14	37.31	0.14	Office Equipment
170	Air Handler Optimization, 40 HP	Office	0.14	3.45	0.14	Ventilation
171	Air Handler Optimization, 40 HP	Warehouse	0.14	1.50	0.14	Ventilation
172	Energy Star or Better Copier	eligious Worshi	0.14	14.01	0.14	Office Equipment
173	Heat Recovery Unit	Misc	0.14	1.17	0.14	Water Heating
174	Ceiling/roof Insulation - DX	Warehouse	0.14	4.72	0.14	Cooling
175	Data Center State of the Art practices	Health	0.14	17.29	0.14	Office Equipment
176	Energy Star or Better Monitor - CRT	Misc	0.14	44.83	0.14	Office Equipment
177	Energy-Star Refrigerator, solid door	School	0.13	5.99	0.13	Refrigeration
178	Energy Star or Better Monitor - CRT	Lodging	0.13	36.14	0.13	Office Equipment
179	Data Center Improved Operations	Office	0.13	163.64	0.13	Office Equipment
180	Outdoor Lighting Controls (Photocell/Timeclock)	Misc	0.13	2.24	0.13	Outdoor Lighting
181	LEDs (base incandescent A-line 72W) 2020	School	0.13	5082.56	0.13	Indoor Lighting
182	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	0.13	3.20	0.13	Cooling
183	Freezer-Cooler Replacement Gaskets (self-contained)	Retail	0.13	1.48	0.13	Refrigeration
184	Data Center State of the Art practices	Lodging	0.12	23.18	0.12	Office Equipment
185	Energy Star or Better PC	Retail	0.12	3.61	0.12	Office Equipment
186	Vending Misers (Refrigerated glass-front units)	School	0.12	1.04	0.12	Vending
187	Energy Star or Better PC	Misc	0.12	2.06	0.12	Office Equipment
188	Tankless Water Heater	Lodging	0.12	1.29	0.12	Water Heating
189	LED Exit Sign	Misc	0.12	2.06	0.12	Indoor Lighting
190	LED Exit Sign	School	0.12	1.70	0.12	Indoor Lighting
191	LEDs (base incandescent A-line 72W) 2020	Grocery	0.12	2589.08	0.12	Indoor Lighting
192	Outdoor Lighting Controls (Photocell/Timeclock)	Office	0.12	1.69	0.12	Outdoor Lighting
193	Energy-Star Refrigerator, glass door	Restaurant	0.12	2.41	0.12	Refrigeration

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
194	Electronically Commutated Motors (ECM) on an Air Handler Unit	Office	0.12	3.18	0.12	Ventilation
195	Vending Misers (Refrigerated units)	Grocery	0.12	1.93	0.12	Vending
196	Energy Star Ice Machines	School	0.11	2.15	0.11	Refrigeration
197	ENERGY STAR Multi-Function Device	Office	0.11	10.18	0.11	Office Equipment
198	Heat Trap	School	0.11	1.50	0.11	Water Heating
199	Heat Trap	Lodging	0.11	4.05	0.11	Water Heating
200	Air Handler Optimization, 40 HP	Lodging	0.11	1.91	0.11	Ventilation
201	PC Network Power Management Enabling	Restaurant	0.11	2.61	0.11	Office Equipment
202	Energy Star or Better PC	Health	0.11	1.07	0.11	Office Equipment
203	Energy-Star Freezer, solid door	Restaurant	0.11	2.96	0.11	Refrigeration
204	Fan Motor, 5hp, 1800rpm, 89.5%	Warehouse	0.11	3.48	0.11	Ventilation
205	Night covers for display cases (self-contained)	Lodging	0.10	65.69	0.10	Refrigeration
206	Fan Motor, 5hp, 1800rpm, 89.5%	Lodging	0.10	2.26	0.10	Ventilation
207	Energy Star or Better Monitor - CRT	Health	0.10	24.63	0.10	Office Equipment
208	Vending Misers (Refrigerated units)	Lodging	0.10	1.93	0.10	Vending
209	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Office	0.10	1.19	0.10	Indoor Lighting
210	Tankless Water Heater	Restaurant	0.10	1.87	0.10	Water Heating
211	Freezer-Cooler Replacement Gaskets (self-contained)	School	0.10	15.54	0.10	Refrigeration
212	Vending Misers (Refrigerated units)	Misc	0.10	1.94	0.10	Vending
213	High Efficiency Water Heater (electric)	Misc	0.09	2.26	0.09	Water Heating
214	ROB 2L4' High Performance T8 (86 W), 2020	Office	0.09	2.47	0.09	Indoor Lighting
215	LED Outdoor Area Lighting	Warehouse	0.09	1.03	0.09	Outdoor Lighting
216	Vending Misers (Refrigerated units)	Health	0.09	1.92	0.09	Vending
217	Freezer-Cooler Replacement Gaskets (self-contained)	Office	0.09	24.13	0.09	Refrigeration
218	Energy Star or Better PC	Lodging	0.09	3.47	0.09	Office Equipment
219	Optimize Controls - DX	Restaurant	0.09	1.20	0.09	Cooling
220	Night covers for display cases (self-contained)	Grocery	0.09	167.60	0.09	Refrigeration
221	LEDs (base incandescent A-line 53W) 2020	School	0.09	3418.64	0.09	Indoor Lighting
222	Hot Water Pipe Insulation	Misc	0.08	1.25	0.08	Water Heating
223	ROB 4L4' High Performance T8 (86 W), 2020	eligious Worshi	0.08	1.28	0.08	Indoor Lighting
224	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Retail	0.08	1.54	0.08	Heating
225	LEDs (base incandescent A-line 53W) 2020	Grocery	0.08	1727.94	0.08	Indoor Lighting
226	Data Center State of the Art practices	Misc	0.08	23.47	0.08	Office Equipment
227	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Lodging	0.08	2.03	0.08	Heating
228	Electronically Commutated Motors (ECM) on an Air Handler Unit	Retail	0.08	2.58	0.08	Ventilation
229	Fan Motor, 5hp, 1800rpm, 89.5%	School	0.08	1.32	0.08	Ventilation
230	Occupancy Sensor, High Bay T5	Misc	0.08	2.14	0.08	Indoor Lighting
231	ROB 4L4' High Performance T8 (86 W), 2020	Restaurant	0.08	1.81	0.08	Indoor Lighting
232	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Health	0.07	2.74	0.07	Heating
233	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Office	0.07	3.24	0.07	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
234	LEDs (base incandescent A-line 72W) 2020	Health	0.07	2807.19	0.07	Indoor Lighting
235	Energy Star or Better Copier	Retail	0.07	27.60	0.07	Office Equipment
236	Energy-Star Freezer, glass door	Grocery	0.07	2.20	0.07	Refrigeration
237	LED Exit Sign	Lodging	0.07	1.72	0.07	Indoor Lighting
238	LED screw-in replacement (base CFL 23W) 2020	Warehouse	0.07	1.38	0.07	Indoor Lighting
239	Demand controlled circulating systems	Lodging	0.07	2.08	0.07	Water Heating
240	LED Exit Sign	Restaurant	0.07	1.03	0.07	Indoor Lighting
241	DX Packaged System, EER=13.4, 10 tons	Data Centers	0.07	5.18	0.07	Cooling
242	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Office	0.06	4.20	0.06	Cooling
243	Vending Misers (Refrigerated glass-front units)	Grocery	0.06	1.05	0.06	Vending
244	LEDs (base incandescent flood) 2020	Data Centers	0.06	5716.89	0.06	Indoor Lighting
245	Chiller Tune Up/Diagnostics	School	0.06	1.38	0.06	Cooling
246	Variable Speed Drive Control, 15 HP	Data Centers	0.06	16.70	0.06	Ventilation
247	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Restaurant	0.06	5.76	0.06	Indoor Lighting
248	High Efficiency Water Heater (electric)	Office	0.06	2.31	0.06	Water Heating
249	Variable Speed Drive Control, 40 HP	Data Centers	0.06	3.00	0.06	Ventilation
250	Data Center State of the Art practices	Office	0.06	34.55	0.06	Office Equipment
251	T5 (240W) (base metal halide)	Grocery	0.06	4.62	0.06	Indoor Lighting
252	Electronically commutated evaporator fan motor	Warehouse	0.06	1.07	0.06	Refrigeration
253	High Efficiency Water Heater (electric)	Retail	0.06	1.62	0.06	Water Heating
254	LED screw-in replacement (base CFL 18W) 2020	Warehouse	0.06	1.15	0.06	Indoor Lighting
255	ROB 2L4' High Performance T8 (86 W), 2020	eligious Worshi	0.06	1.03	0.06	Indoor Lighting
256	ROB 2L4' High Performance T8 (86 W), 2020	Lodging	0.06	1.91	0.06	Indoor Lighting
257	Energy-Star Freezer, glass door	School	0.06	9.91	0.06	Refrigeration
258	Energy Star or Better Laptop	School	0.06	5.40	0.06	Office Equipment
259	High Efficiency Water Heater (electric)	Restaurant	0.06	5.45	0.06	Water Heating
260	ENERGY STAR Printer	Misc	0.06	43.63	0.06	Office Equipment
261	Energy Star or Better Monitor - LCD	School	0.06	4.86	0.06	Office Equipment
262	Vending Misers (Refrigerated glass-front units)	Lodging	0.06	1.05	0.06	Vending
263	Energy Star or Better Copier	Health	0.05	17.25	0.05	Office Equipment
264	Air Handler Optimization, 40 HP	Retail	0.05	2.31	0.05	Ventilation
265	Energy-Star Freezer, glass door	Lodging	0.05	19.28	0.05	Refrigeration
266	LED Exit Sign	Warehouse	0.05	1.98	0.05	Indoor Lighting
267	Vending Misers (Refrigerated glass-front units)	Misc	0.05	1.06	0.05	Vending
268	Vending Misers (Refrigerated glass-front units)	Health	0.05	1.05	0.05	Vending
269	ROB 2L4' High Performance T8 (86 W), 2020	Health	0.05	1.25	0.05	Indoor Lighting
270	Data Center Best Practices	Warehouse	0.05	46.14	0.05	Office Equipment
271	ENERGY STAR Printer	Lodging	0.05	35.23	0.05	Office Equipment

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NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
272	LEDs (base incandescent A-line 53W) 2020	Health	0.05	1888.92	0.05	Indoor Lighting
273	EMS - Chiller	Office	0.05	1.40	0.05	Cooling
274	Air Handler Optimization, 15 HP	Retail	0.05	1.97	0.05	Ventilation
275	Energy Star or Better PC	Restaurant	0.04	1.32	0.04	Office Equipment
276	Oversized Air Cooled Condenser	Warehouse	0.04	4.12	0.04	Refrigeration
277	Data Center Improved Operations	Warehouse	0.04	113.34	0.04	Office Equipment
278	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Data Centers	0.04	4.86	0.04	Cooling
279	Freezer-Cooler Replacement Gaskets (self-contained)	Lodging	0.04	25.31	0.04	Refrigeration
280	Outdoor Lighting Controls (Photocell/Timeclock)	Lodging	0.04	1.29	0.04	Outdoor Lighting
281	Energy-Star Refrigerator, glass door	School	0.04	3.25	0.04	Refrigeration
282	New Economizer - Chiller	Office	0.04	1.06	0.04	Cooling
283	Energy Star or Better Laptop	Office	0.04	6.03	0.04	Office Equipment
284	T5 (240W) (base metal halide)	Lodging	0.04	3.41	0.04	Indoor Lighting
285	Energy Star or Better Copier	School	0.03	35.03	0.03	Office Equipment
286	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	School	0.03	1.04	0.03	Indoor Lighting
287	High Performance Lighting R/R - 25% Savings (base metal halide)	School	0.03	2.84	0.03	Indoor Lighting
288	High Efficiency Water Heater (electric)	Lodging	0.03	1.81	0.03	Water Heating
289	ROB 2L4' High Performance T8 (86 W), 2020	School	0.03	2.35	0.03	Indoor Lighting
290	Outdoor Lighting Controls (Photocell/Timeclock)	Retail	0.03	1.87	0.03	Outdoor Lighting
291	Centrifugal Chiller, 0.51 kW/ton, 500 tons	Restaurant	0.03	5.04	0.03	Cooling
292	Freezer-Cooler Replacement Gaskets (self-contained)	eligious Worshi	0.03	15.46	0.03	Refrigeration
293	Fan Motor, 5hp, 1800rpm, 89.5%	Grocery	0.03	1.16	0.03	Ventilation
294	Vending Misers (Refrigerated units)	Restaurant	0.03	1.94	0.03	Vending
295	New Economizer - Chiller	Data Centers	0.03	1.87	0.03	Cooling
296	Lighting Control Tuneup (base 4L4'T8), 2020	Office	0.03	6.16	0.03	Indoor Lighting
297	Energy Star or Better Copier	Misc	0.03	33.51	0.03	Office Equipment
298	Ceiling/roof Insulation - Chiller	Restaurant	0.03	7.47	0.03	Cooling
299	Energy Star or Better Monitor - CRT	Restaurant	0.03	29.38	0.03	Office Equipment
300	EMS - Chiller	Restaurant	0.03	1.76	0.03	Cooling
301	Floating head pressure controls	Grocery	0.03	3.14	0.03	Refrigeration
302	ENERGY STAR Printer	Retail	0.03	36.32	0.03	Office Equipment
303	PC Network Power Management Enabling	Grocery	0.03	1.87	0.03	Office Equipment
304	Heat Trap	Health	0.03	1.33	0.03	Water Heating
305	Monitor Power Management Enabling - CRT	eligious Worshi	0.03	1.22	0.03	Office Equipment
306	Monitor Power Management Enabling - CRT	Health	0.03	1.45	0.03	Office Equipment
307	Monitor Power Management Enabling - CRT	Misc	0.03	2.93	0.03	Office Equipment
308	Energy-Star Freezer, glass door	Retail	0.03	1.67	0.03	Refrigeration
309	Energy Star Ice Machines	Lodging	0.03	2.26	0.03	Refrigeration
310	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Data Centers	0.03	1.07	0.03	Indoor Lighting
311	VSD for Chiller Pumps and Towers	School	0.03	1.04	0.03	Cooling
312	Economizer - DX	Data Centers	0.03	1.36	0.03	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
313	Air Handler Optimization, 40 HP	Data Centers	0.03	3.95	0.03	Ventilation
314	Monitor Power Management Enabling - CRT	Lodging	0.03	2.55	0.03	Office Equipment
315	Efficient compressor motor	Grocery	0.02	3.73	0.02	Refrigeration
316	ENERGY STAR Printer	Health	0.02	23.39	0.02	Office Equipment
317	Energy-Star Freezer, solid door	School	0.02	3.92	0.02	Refrigeration
318	ROB 2L4' Low Watt High Performance T8 (75 W), 2020	Warehouse	0.02	1.71	0.02	Indoor Lighting
319	ROB 4L4' High Performance T8 (86 W), 2020	Data Centers	0.02	2.23	0.02	Indoor Lighting
320	ROB 2L4' High Performance T8 (86 W), 2020	Warehouse	0.02	3.86	0.02	Indoor Lighting
321	LEDs (base incandescent A-line 72W) 2020	Data Centers	0.02	4041.77	0.02	Indoor Lighting
322	Energy Star or Better Monitor - LCD	Health	0.02	2.66	0.02	Office Equipment
323	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	School	0.02	1.63	0.02	Indoor Lighting
324	Demand controlled circulating systems	Health	0.02	1.51	0.02	Water Heating
325	Energy-Star Freezer, solid door	Lodging	0.02	7.68	0.02	Refrigeration
326	Hot Water Pipe Insulation	Restaurant	0.02	1.24	0.02	Water Heating
327	Freezer-Cooler Replacement Gaskets (self-contained)	Health	0.02	9.47	0.02	Refrigeration
328	Heat Trap	eligious Worshi	0.02	1.77	0.02	Water Heating
329	Energy Star or Better Monitor - CRT	Warehouse	0.02	74.61	0.02	Office Equipment
330	ENERGY STAR Multi-Function Device	Retail	0.02	7.90	0.02	Office Equipment
331	Data Center State of the Art practices	Warehouse	0.02	23.93	0.02	Office Equipment
332	Energy Star or Better Copier	Restaurant	0.02	21.61	0.02	Office Equipment
333	High Performance Lighting R/R - 25% Savings (base 4L4'T8), 2020	Data Centers	0.02	3.89	0.02	Indoor Lighting
334	Monitor Power Management Enabling - CRT	Retail	0.02	2.86	0.02	Office Equipment
335	Energy Star or Better Monitor - LCD	Misc	0.02	5.06	0.02	Office Equipment
336	Energy Star Ice Machines	Misc	0.02	4.44	0.02	Refrigeration
337	ENERGY STAR Multi-Function Device	School	0.02	9.12	0.02	Office Equipment
338	Variable Speed Drive Control, 5 HP	Data Centers	0.02	4.54	0.02	Ventilation
339	Vending Misers (Refrigerated glass-front units)	Restaurant	0.02	1.06	0.02	Vending
340	Fan Motor, 5hp, 1800rpm, 89.5%	Health	0.02	2.48	0.02	Ventilation
341	Energy Star or Better Copier	Lodging	0.02	28.21	0.02	Office Equipment
342	Air Handler Optimization, 15 HP	Data Centers	0.02	2.77	0.02	Ventilation
343	Heat Trap	Grocery	0.02	2.11	0.02	Water Heating
344	ROB 4L4' Low Watt High Performance T8 (75 W), 2020	Lodging	0.02	1.16	0.02	Indoor Lighting
345	Freezer-Cooler Replacement Gaskets (self-contained)	Grocery	0.02	3.70	0.02	Refrigeration
346	ENERGY STAR Multi-Function Device	Health	0.02	5.09	0.02	Office Equipment
347	Ceiling/roof Insulation - DX	School	0.02	4.46	0.02	Cooling
348	LEDs (base incandescent A-line 53W) 2020	Data Centers	0.01	2719.65	0.01	Indoor Lighting
349	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Warehouse	0.01	2.47	0.01	Indoor Lighting
350	Energy-Star Refrigerator, solid door	Lodging	0.01	6.10	0.01	Refrigeration
351	Lighting Control Tuneup (base 4L4'T8), 2020	Health	0.01	2.17	0.01	Indoor Lighting
352	High Efficiency Chiller Motors	School	0.01	1.11	0.01	Cooling

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
353	High Performance Lighting R/R - 25% Savings (base metal halide)	Grocery	0.01	9.32	0.01	Indoor Lighting
354	ROB 4L4' High Performance T8 (86 W), 2020	Lodging	0.01	2.42	0.01	Indoor Lighting
355	Lighting Control Tuneup (base 4L4'T8), 2020	School	0.01	3.04	0.01	Indoor Lighting
356	Energy-Star Refrigerator, solid door	Misc	0.01	12.02	0.01	Refrigeration
357	Occupancy Sensor, High Bay T5	School	0.01	1.09	0.01	Indoor Lighting
358	Energy Star or Better Monitor - LCD	Restaurant	0.01	3.23	0.01	Office Equipment
359	ENERGY STAR Printer	Restaurant	0.01	28.59	0.01	Office Equipment
360	LED Exit Sign	Health	0.01	1.80	0.01	Indoor Lighting
361	Electronically Commutated Motors (ECM) on an Air Handler Unit	Data Centers	0.01	3.49	0.01	Ventilation
362	Energy Star or Better Monitor - CRT	Grocery	0.01	20.72	0.01	Office Equipment
363	ENERGY STAR Printer	eligious Worshi	0.01	18.25	0.01	Office Equipment
364	ENERGY STAR Printer	Warehouse	0.01	72.65	0.01	Office Equipment
365	EMS - Chiller	Data Centers	0.01	2.38	0.01	Cooling
366	Energy Star or Better Monitor - LCD	Retail	0.01	4.42	0.01	Office Equipment
367	Energy Star or Better Monitor - LCD	Lodging	0.01	4.48	0.01	Office Equipment
368	Fan Motor, 40hp, 1800rpm, 94.1%	School	0.01	2.93	0.01	Ventilation
369	ENERGY STAR Multi-Function Device	Restaurant	0.01	6.22	0.01	Office Equipment
370	Fan Motor, 15hp, 1800rpm, 92.4%	Office	0.01	7.21	0.01	Ventilation
371	Energy Star or Better Copier	Grocery	0.01	14.25	0.01	Office Equipment
372	Energy Star Ice Machines	Office	0.01	3.09	0.01	Refrigeration
373	Data Center Best Practices	eligious Worshi	0.01	26.02	0.01	Office Equipment
374	Data Center Best Practices	Retail	0.01	52.05	0.01	Office Equipment
375	Energy Star or Better Monitor - LCD	eligious Worshi	0.01	2.11	0.01	Office Equipment
376	PC Network Power Management Enabling	Data Centers	0.01	3.12	0.01	Office Equipment
377	Data Center Improved Operations	eligious Worshi	0.01	63.92	0.01	Office Equipment
378	Fan Motor, 15hp, 1800rpm, 92.4%	Health	0.01	4.39	0.01	Ventilation
379	Energy Star Ice Machines	eligious Worshi	0.01	1.86	0.01	Refrigeration
380	Data Center Improved Operations	Retail	0.01	127.84	0.01	Office Equipment
381	Night covers for display cases (self-contained)	School	0.01	24.34	0.01	Refrigeration
382	PC Network Power Management Enabling	Warehouse	0.01	6.61	0.01	Office Equipment
383	Lighting Control Tuneup (base other fluorescent fixture)	Office	0.01	17.31	0.01	Indoor Lighting
384	Energy Star Ice Machines	Health	0.01	1.16	0.01	Refrigeration
385	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Grocery	0.01	1.28	0.01	Heating
386	Data Center Best Practices	Restaurant	0.01	41.07	0.01	Office Equipment
387	Monitor Power Management Enabling - CRT	Restaurant	0.01	1.91	0.01	Office Equipment
388	ENERGY STAR Multi-Function Device	Lodging	0.01	7.66	0.01	Office Equipment
389	High Efficiency Water Heater (electric)	Grocery	0.01	1.13	0.01	Water Heating
390	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Restaurant	0.01	1.13	0.01	Heating
391	High Performance Lighting R/R - 25% Savings (base metal halide)	Lodging	0.01	1.20	0.01	Indoor Lighting
392	Energy-Star Refrigerator, glass door	Misc	0.01	12.18	0.01	Refrigeration
393	ENERGY STAR Multi-Function Device	eligious Worshi	0.01	3.97	0.01	Office Equipment

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
394	Data Center Improved Operations	Restaurant	0.01	100.89	0.01	Office Equipment
395	Refrigeration Commissioning	Warehouse	0.01	1.54	0.01	Refrigeration
396	ENERGY STAR Multi-Function Device	Misc	0.01	9.49	0.01	Office Equipment
397	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Retail	0.00	1.16	0.00	Indoor Lighting
398	Energy Star or Better Laptop	Misc	0.00	5.63	0.00	Office Equipment
399	Energy Star or Better Monitor - CRT	Data Centers	0.00	46.99	0.00	Office Equipment
400	Monitor Power Management Enabling - CRT	Warehouse	0.00	4.07	0.00	Office Equipment
401	Lighting Control Tuneup (base 2L4'T8), 2020	Restaurant	0.00	3.07	0.00	Indoor Lighting
402	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	Data Centers	0.00	7.25	0.00	Cooling
403	VSD for Chiller Pumps and Towers	Office	0.00	2.48	0.00	Cooling
404	Energy-Star Refrigerator, solid door	Health	0.00	3.15	0.00	Refrigeration
405	Optimize Controls - DX	Data Centers	0.00	1.58	0.00	Cooling
406	Occupancy Sensor, High Bay T5	Grocery	0.00	1.31	0.00	Indoor Lighting
407	Data Center State of the Art practices	eligious Worshi	0.00	13.50	0.00	Office Equipment
408	Energy Star or Better Laptop	eligious Worshi	0.00	2.35	0.00	Office Equipment
409	Economizer Repair - DX	Data Centers	0.00	1.63	0.00	Cooling
410	Data Center State of the Art practices	Retail	0.00	26.99	0.00	Office Equipment
411	Energy Star or Better Laptop	Health	0.00	3.02	0.00	Office Equipment
412	Ceiling/roof Insulation - Chiller	Office	0.00	18.49	0.00	Cooling
413	ROB High Performance T8 (base other fluorescent)	Warehouse	0.00	1.12	0.00	Indoor Lighting
414	VSD for Chiller Pumps and Towers	Data Centers	0.00	3.56	0.00	Cooling
415	Energy-Star Refrigerator, glass door	Health	0.00	3.22	0.00	Refrigeration
416	Energy Star or Better PC	Warehouse	0.00	3.39	0.00	Office Equipment
417	ENERGY STAR Printer	Grocery	0.00	20.17	0.00	Office Equipment
418	Energy Star or Better Laptop	Restaurant	0.00	3.69	0.00	Office Equipment
419	Data Center Best Practices	Grocery	0.00	28.91	0.00	Office Equipment
420	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Warehouse	0.00	4.32	0.00	Indoor Lighting
421	Energy Star or Better PC	Data Centers	0.00	1.73	0.00	Office Equipment
422	Energy Star or Better Monitor - LCD	Grocery	0.00	2.28	0.00	Office Equipment
423	Data Center State of the Art practices	Restaurant	0.00	21.30	0.00	Office Equipment
424	Data Center Improved Operations	Grocery	0.00	71.00	0.00	Office Equipment
425	Ceiling/roof Insulation - Chiller	Data Centers	0.00	21.35	0.00	Cooling
426	Printer Power Management Enabling	Warehouse	0.00	1.75	0.00	Office Equipment
427	Ceiling/roof Insulation - DX	Restaurant	0.00	8.05	0.00	Cooling
428	ENERGY STAR Multi-Function Device	Grocery	0.00	4.39	0.00	Office Equipment
429	DX Tune Up/ Advanced Diagnostics	Restaurant	0.00	1.05	0.00	Cooling
430	Energy Star or Better Laptop	Retail	0.00	4.69	0.00	Office Equipment
431	Ceiling/roof Insulation - DX	Grocery	0.00	3.23	0.00	Cooling
432	Energy Star or Better Copier	Warehouse	0.00	56.71	0.00	Office Equipment
433	Energy Star or Better Copier	Data Centers	0.00	27.87	0.00	Office Equipment
434	LED Exit Sign	Data Centers	0.00	1.70	0.00	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
435	Lighting Control Tuneup (base other fluorescent fixture)	Health	0.00	5.84	0.00	Indoor Lighting
436	ROB 2L4' High Performance T8 (86 W), 2020	Grocery	0.00	1.05	0.00	Indoor Lighting
437	Energy Star or Better Laptop	Lodging	0.00	4.54	0.00	Office Equipment
438	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Grocery	0.00	3.38	0.00	Indoor Lighting
439	High Efficiency Chiller Motors	Office	0.00	2.75	0.00	Cooling
440	Chiller Tune Up/Diagnostics	Office	0.00	3.38	0.00	Cooling
441	Fan Motor, 5hp, 1800rpm, 89.5%	Data Centers	0.00	4.77	0.00	Ventilation
442	Fan Motor, 15hp, 1800rpm, 92.4%	Data Centers	0.00	7.94	0.00	Ventilation
443	Lighting Control Tuneup (base 4L4'T8), 2020	Misc	0.00	3.89	0.00	Indoor Lighting
444	Heat Pump Upgrade (15 SEER, 8.2 HSPF)	School	0.00	1.06	0.00	Heating
445	Data Center State of the Art practices	Grocery	0.00	14.99	0.00	Office Equipment
446	Freezer-Cooler Replacement Gaskets (self-contained)	Data Centers	0.00	22.09	0.00	Refrigeration
447	Lighting Control Tuneup (base 2L4'T8), 2020	School	0.00	1.84	0.00	Indoor Lighting
448	Lighting Control Tuneup (base 2L4'T8), 2020	Misc	0.00	3.16	0.00	Indoor Lighting
449	High Efficiency Chiller Motors	Data Centers	0.00	3.15	0.00	Cooling
450	Monitor Power Management Enabling - CRT	Data Centers	0.00	3.63	0.00	Office Equipment
451	Lighting Control Tuneup (base 4L4'T8), 2020	Restaurant	0.00	6.44	0.00	Indoor Lighting
452	Energy Star or Better Monitor - LCD	Warehouse	0.00	8.19	0.00	Office Equipment
453	High Performance Lighting R/R - 25% Savings, Base Other Fluorescent	Data Centers	0.00	1.83	0.00	Indoor Lighting
454	ENERGY STAR Multi-Function Device	Data Centers	0.00	7.60	0.00	Office Equipment
455	Heat Trap	Data Centers	0.00	1.51	0.00	Water Heating
456	ENERGY STAR Multi-Function Device	Warehouse	0.00	15.81	0.00	Office Equipment
457	T5 (240W) (base metal halide)	Restaurant	0.00	5.02	0.00	Indoor Lighting
458	Lighting Control Tuneup (base 2L4'T8), 2020	Office	0.00	3.58	0.00	Indoor Lighting
459	Energy Star or Better Monitor - LCD	Data Centers	0.00	4.29	0.00	Office Equipment
460	Energy Star or Better Laptop	Data Centers	0.00	4.51	0.00	Office Equipment
461	Energy Star or Better Laptop	Warehouse	0.00	9.38	0.00	Office Equipment
462	Lighting Control Tuneup (base 4L4'T8), 2020	Grocery	0.00	4.69	0.00	Indoor Lighting
463	ROB 2L4' High Performance T8 (86 W), 2020	Data Centers	0.00	1.76	0.00	Indoor Lighting
464	Lighting Control Tuneup (base other fluorescent fixture)	School	0.00	2.51	0.00	Indoor Lighting
465	High Performance Lighting R/R - 25% Savings (base 2L4'T8), 2020	Data Centers	0.00	2.26	0.00	Indoor Lighting
466	Chiller Tune Up/Diagnostics	Restaurant	0.00	4.20	0.00	Cooling
467	Lighting Control Tuneup (base other fluorescent fixture)	Lodging	0.00	2.32	0.00	Indoor Lighting
468	Energy Star or Better Laptop	Grocery	0.00	2.61	0.00	Office Equipment
469	LED Exit Sign	Grocery	0.00	1.67	0.00	Indoor Lighting
470	Window Film (Standard) - Chiller	Data Centers	0.00	1.26	0.00	Cooling
471	Ceiling/roof Insulation - DX	eligious Worshi	0.00	2.69	0.00	Cooling
472	Ceiling/roof Insulation - DX	Misc	0.00	6.44	0.00	Cooling
473	Lighting Control Tuneup (base other fluorescent fixture)	Misc	0.00	4.97	0.00	Indoor Lighting

APPENDIX I: MEASURE-LEVEL RANKING BY ECONOMIC ENERGY SAVINGS POTENTIAL

NC Commercial: All Existing Measures Ranked by Economic Potential (GWh)

Rank	Measure Name	Building Type	Technical GWh	Measure TRC	Economic GWh	End Use
474	Occupancy Sensor, High Bay T5	Restaurant	0.00	1.31	0.00	Indoor Lighting
475	Lighting Control Tuneup (base other fluorescent fixture)	eligious Worshi	0.00	1.31	0.00	Indoor Lighting
476	Lighting Control Tuneup (base 2L4'T8), 2020	Grocery	0.00	3.92	0.00	Indoor Lighting
477	Occupancy Sensor, 4L4' Fluorescent Fixtures, 2020	Office	3.44	0.93	0.00	Indoor Lighting
477	ROB 4L4' LED Tube, 2020	Office	6.10	0.28	0.00	Indoor Lighting
477	LED Troffer (base 4L4'T8), 2020	Office	2.71	0.33	0.00	Indoor Lighting
477	ROB 2L4' LED Tube, 2020	Office	0.03	0.37	0.00	Indoor Lighting
477	Occupancy Sensor, 2L4' Fluorescent Fixtures, 2020	Office	0.06	0.50	0.00	Indoor Lighting
477	LED Troffer (base 2L4'T8), 2020	Office	0.05	0.27	0.00	Indoor Lighting
477	ROB High Performance T8 (base other fluorescent)	Office	0.20	0.77	0.00	Indoor Lighting
477	Occupancy Sensor, 4L8' Fluorescent Fixtures	Office	0.25	0.52	0.00	Indoor Lighting
477	LED screw-in replacement (base CFL 18W) 2020	Office	0.07	0.76	0.00	Indoor Lighting
477	LED screw-in replacement (base CFL 23W) 2020	Office	0.08	0.92	0.00	Indoor Lighting
477	LED Outdoor Area Lighting	Office	0.62	0.66	0.00	Outdoor Lighting
477	Bi-Level LED Outdoor Lighting	Office	0.17	0.10	0.00	Outdoor Lighting
477	Window Film (Standard) - Chiller	Office	0.00	0.99	0.00	Cooling
477	Duct Testing/Sealing	Office	0.11	0.74	0.00	Cooling
477	Cool Roof - Chiller	Office	0.00	0.39	0.00	Cooling
477	Duct/Pipe Insulation - Chiller	Office	0.00	0.05	0.00	Cooling
477	Optimize Controls - DX	Office	0.21	0.90	0.00	Cooling
477	Window Film (Standard) - DX	Office	0.25	0.88	0.00	Cooling
477	DX Tune Up/ Advanced Diagnostics	Office	0.01	0.79	0.00	Cooling
477	Economizer - DX	Office	1.28	0.78	0.00	Cooling

J ACHIEVABLE PROGRAM POTENTIAL

Electricity
All Segments
Total
50 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	247,007,003	521,899,420	971,886,254	1,398,005,987	1,934,721,680	2,408,799,069	3,117,062,742	3,666,209,201	4,003,106,510	4,196,971,490
Cumulative Gross Peak Demand - kW	42,128	91,323	172,973	250,725	344,853	427,830	545,688	636,642	691,845	723,017
Cumulative Net Energy Savings - kWh	150,835,003	335,066,231	576,828,670	809,488,036	1,067,760,782	1,306,118,916	1,611,066,316	1,855,200,658	2,006,766,263	2,112,314,113
Cumulative Net Peak Demand Savings - kW	26,371	60,575	105,851	149,731	195,308	237,224	286,537	326,356	351,593	370,121
New Net Energy Savings - kWh	150,835,003	184,231,228	241,762,439	232,659,367	258,272,745	238,358,134	304,947,401	244,134,342	151,565,605	105,547,850
New Net Peak Demand Savings - kW	26,371	34,203	45,276	43,880	45,578	41,916	49,312	39,820	25,237	18,528
Administration Costs	10,586,154	12,263,085	15,362,303	16,076,265	17,129,466	17,260,343	18,459,789	18,030,851	16,439,766	16,300,787
Marketing Costs	4,643,279	5,274,940	5,449,330	5,589,000	5,722,094	5,692,538	5,664,250	5,637,176	5,033,111	5,033,111
Incentives Costs	17,042,056	21,079,690	31,068,179	31,988,817	32,938,724	31,988,596	34,027,101	31,935,846	26,174,582	25,770,194
Total	32,271,490	38,617,715	51,879,812	53,654,083	55,790,284	54,941,478	58,151,141	55,603,872	47,647,459	47,104,091
PV Net Avoided Cost Benefits	72,683,621	86,672,774	112,361,677	110,026,037	140,617,445	135,013,997	196,712,995	173,634,765	140,080,988	109,908,687
PV Annual Program Marketing and Admin Costs	15,229,433	16,627,256	18,706,215	18,462,210	18,461,858	17,580,719	17,518,195	16,294,508	14,015,523	13,201,680
PV Net Measure Costs	27,721,180	33,808,668	41,040,962	41,027,008	39,923,646	37,546,365	37,096,398	33,816,626	29,378,781	27,410,418
TRC Ratio	1.69	1.72	1.88	1.85	2.41	2.45	3.60	3.46	3.23	2.71
Free Riders - kWh	96,172,000	186,833,189	395,075,124	588,557,600	867,121,627	1,103,061,294	1,506,575,682	1,811,872,964	1,844,885,328	1,828,415,888
Free Riders - kW	15,756	30,749	67,126	101,002	149,568	190,661	259,233	310,409	313,447	307,636
Other Naturally Occurring - kWh	0	0	-17,539	-39,650	-160,729	-381,140	-579,257	-864,422	151,454,919	256,241,489
Other Naturally Occurring - kW	0	0	-3	-8	-24	-55	-82	-124	26,805	45,260
Cost per First-Year Net kWh	$0.21	$0.21	$0.21	$0.23	$0.22	$0.23	$0.19	$0.23	$0.31	$0.45
PV Annual Program Costs	32,271,490	36,612,253	46,631,369	45,721,707	45,073,171	42,082,329	42,227,712	38,281,085	31,099,889	29,148,594
PV Lost Revenue	126,514,070	147,069,586	182,284,820	173,161,991	217,911,407	200,657,423	281,264,230	239,296,614	189,146,721	145,775,323
RIM	0.46	0.47	0.49	0.50	0.53	0.56	0.61	0.63	0.64	0.63

Electricity
Commercial
Total
50 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	131,238,893	256,743,943	546,870,221	808,467,911	1,139,376,571	1,421,641,062	1,846,816,891	2,145,497,229	2,262,159,349	2,269,182,164
Cumulative Gross Peak Demand - kW	20,799	41,267	91,728	137,615	196,320	246,888	323,267	377,435	400,069	402,886
Cumulative Net Energy Savings - kWh	61,051,915	122,887,105	228,448,462	320,607,126	406,519,436	486,568,431	579,959,911	642,538,207	641,048,682	622,761,509
Cumulative Net Peak Demand Savings - kW	9,936	20,470	39,155	55,800	71,582	86,656	104,268	116,625	118,319	116,994
New Net Energy Savings - kWh	61,051,915	61,835,189	105,561,357	92,158,664	85,912,309	80,048,996	93,391,480	62,578,296	-1,489,526	-18,287,173
New Net Peak Demand Savings - kW	9,936	10,533	18,685	16,645	15,782	15,074	17,612	12,357	1,694	-1,325
Administration Costs	2,853,438	3,029,913	5,038,007	5,063,811	4,818,492	4,586,644	4,629,126	4,266,210	2,792,410	2,794,052
Marketing Costs	1,483,752	1,880,066	1,846,355	1,814,091	1,783,210	1,753,654	1,725,366	1,698,292	1,094,227	1,094,227
Incentives Costs	4,432,497	4,895,918	12,681,926	12,695,632	11,753,479	10,840,425	11,127,368	9,726,268	4,583,849	4,673,660
Total Costs	8,769,687	9,805,897	19,566,288	19,573,533	18,355,181	17,180,723	17,481,860	15,690,770	8,470,487	8,561,938
PV Net Avoided Cost Benefits	27,572,058	27,336,022	41,760,377	38,848,940	36,984,200	32,811,662	35,750,798	26,392,963	7,480,268	2,683,139
PV Annual Program Marketing and Admin Costs	4,337,190	4,654,998	6,187,903	5,861,053	5,333,539	4,856,340	4,614,452	4,106,326	2,536,840	2,406,115
PV Net Measure Costs	5,303,060	5,881,880	10,709,429	10,758,455	8,681,688	8,016,752	7,726,186	6,969,851	4,723,645	4,605,500
TRC Ratio	2.86	2.59	2.47	2.34	2.64	2.55	2.90	2.38	1.03	0.38
Free Riders - kWh	70,186,977	133,856,838	318,421,767	487,865,136	732,905,186	935,245,093	1,267,187,224	1,503,533,422	1,469,280,505	1,389,613,411
Free Riders - kW	10,863	20,797	52,573	81,816	124,744	160,255	219,042	260,887	254,884	240,545
Other Naturally Occurring - kWh	0	0	-8	-4,351	-48,050	-172,463	-330,244	-574,400	151,830,162	256,807,244
Other Naturally Occurring - kW	0	0	0	-1	-6	-23	-43	-77	26,867	45,348
Cost per First-Year Net kWh	$0.14	$0.16	$0.19	$0.21	$0.21	$0.21	$0.19	$0.25	-$5.69	-$0.47
PV Annual Program Costs	8,769,687	9,296,665	17,586,856	16,679,725	14,829,217	13,159,545	12,694,832	10,802,480	5,528,756	5,298,233
PV Lost Revenue	38,712,047	36,669,377	55,827,908	49,483,996	44,817,065	38,017,344	40,169,991	28,044,878	5,971,440	724,705
RIM	0.58	0.59	0.57	0.59	0.62	0.64	0.68	0.68	0.65	0.45

Electricity
Residential
Total
50 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	115,768,110	265,155,477	425,016,033	589,538,076	795,345,108	987,158,008	1,270,245,851	1,520,711,971	1,740,947,161	1,927,789,326
Cumulative Gross Peak Demand - kW	21,329	50,057	81,245	113,110	148,533	180,943	222,421	259,207	291,776	320,131
Cumulative Net Energy Savings - kWh	89,783,087	212,179,126	348,380,208	488,880,910	661,241,346	819,550,484	1,031,106,405	1,212,662,451	1,365,717,581	1,489,552,604
Cumulative Net Peak Demand Savings - kW	16,435	40,105	66,696	93,931	123,726	150,568	182,268	209,731	233,275	253,128
New Net Energy Savings - kWh	89,783,087	122,396,039	136,201,082	140,500,702	172,360,436	158,309,138	211,555,921	181,556,046	153,055,130	123,835,023
New Net Peak Demand Savings - kW	16,435	23,670	26,590	27,235	29,795	26,842	31,701	27,463	23,543	19,853
Administration Costs	7,732,716	9,233,172	10,324,296	11,012,454	12,310,974	12,673,699	13,830,663	13,764,640	13,647,355	13,506,735
Marketing Costs	3,159,527	3,394,874	3,602,974	3,774,910	3,938,884	3,938,884	3,938,884	3,938,884	3,938,884	3,938,884
Incentives Costs	12,609,559	16,183,772	18,386,254	19,293,186	21,185,245	21,148,172	22,899,733	22,209,577	21,590,733	21,096,534
Total Costs	23,501,803	28,811,818	32,313,524	34,080,550	37,435,103	37,760,755	40,669,281	39,913,102	39,176,973	38,542,153
PV Net Avoided Cost Benefits	45,111,563	59,336,752	70,601,299	71,177,097	103,633,245	102,202,335	160,962,197	147,241,801	132,600,720	107,225,549
PV Annual Program Marketing and Admin Costs	10,892,243	11,972,257	12,518,312	12,601,157	13,128,319	12,724,379	12,903,742	12,188,182	11,478,683	10,795,565
PV Net Measure Costs	22,418,120	27,926,788	30,331,533	30,268,552	31,241,959	29,529,613	29,370,212	26,846,775	24,655,136	22,804,918
TRC Ratio	1.35	1.49	1.65	1.66	2.34	2.42	3.81	3.77	3.67	3.19
Free Riders - kWh	25,985,023	52,976,350	76,653,357	100,692,464	134,216,442	167,816,201	239,388,458	308,339,542	375,604,823	438,802,477
Free Riders - kW	4,894	9,952	14,553	19,186	24,825	30,407	40,192	49,523	58,563	67,092
Other Naturally Occurring - kWh	0	0	-17,531	-35,299	-112,679	-208,677	-249,013	-290,022	-375,243	-565,755
Other Naturally Occurring - kW	0	0	-3	-7	-18	-31	-39	-47	-61	-88
Cost per First-Year Net kWh	$0.26	$0.24	$0.24	$0.24	$0.22	$0.24	$0.19	$0.22	$0.26	$0.31
PV Annual Program Costs	23,501,803	27,315,588	29,044,513	29,041,982	30,243,955	28,922,784	29,532,880	27,478,605	25,571,133	23,850,361
PV Lost Revenue	87,802,023	110,400,209	126,456,912	123,677,995	173,094,342	162,640,080	241,094,239	211,251,736	183,175,281	145,050,618
RIM	0.41	0.43	0.45	0.47	0.51	0.53	0.59	0.62	0.64	0.63

Electricity
All Segments
Total
75 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	394,685,825	849,592,751	1,536,295,710	2,188,486,217	2,919,586,677	3,568,096,715	4,450,682,653	5,146,827,354	5,567,003,717	5,811,228,018
Cumulative Gross Peak Demand - kW	68,237	151,285	276,979	397,202	527,699	643,965	796,644	918,620	995,282	1,042,801
Cumulative Net Energy Savings - kWh	298,513,825	662,759,562	1,141,546,367	1,600,596,739	2,070,088,796	2,496,861,611	2,983,728,308	3,381,833,063	3,622,935,500	3,784,060,444
Cumulative Net Peak Demand Savings - kW	52,480	120,536	209,890	296,277	381,156	458,779	544,010	615,835	663,396	698,967
New Net Energy Savings - kWh	298,513,825	364,245,737	478,786,804	459,050,372	469,492,058	426,772,814	486,866,697	398,104,755	241,102,437	161,124,944
New Net Peak Demand Savings - kW	52,480	68,056	89,354	86,387	84,880	77,623	85,231	71,825	47,560	35,572
Administration Costs	27,717,079	32,344,938	39,384,854	41,293,021	43,104,185	43,400,012	44,769,079	43,982,224	40,656,244	40,237,802
Marketing Costs	5,096,962	7,445,787	7,637,615	7,791,253	7,937,656	7,905,144	7,874,028	7,844,246	7,179,775	7,179,775
Incentives Costs	47,801,989	59,810,884	82,347,356	84,800,314	85,429,096	83,664,862	86,750,423	83,259,170	70,994,164	69,870,803
Total	80,616,030	99,601,608	129,369,825	133,884,587	136,470,936	134,970,018	139,393,529	135,085,639	118,830,183	117,288,380
PV Net Avoided Cost Benefits	149,706,194	178,622,619	232,001,155	225,592,558	263,559,312	254,842,969	302,259,377	268,343,077	211,181,284	165,577,189
PV Annual Program Marketing and Admin Costs	32,814,042	37,724,347	42,265,421	41,827,511	41,236,887	39,297,095	38,227,934	35,680,492	31,222,963	29,342,582
PV Net Measure Costs	57,780,388	69,877,600	83,945,765	82,921,670	79,419,234	74,554,579	72,013,700	66,574,375	57,163,489	53,323,168
TRC Ratio	1.65	1.66	1.84	1.81	2.18	2.24	2.74	2.62	2.39	2.00
Free Riders - kWh	96,172,000	186,833,189	394,766,883	587,929,127	849,658,610	1,071,616,244	1,467,533,602	1,765,858,713	1,795,055,805	1,775,305,192
Free Riders - kW	15,756	30,749	67,092	100,933	146,567	185,241	252,715	302,908	305,500	299,325
Other Naturally Occurring - kWh	0	0	-17,539	-39,650	-160,729	-381,140	-579,257	-864,422	149,012,413	251,862,382
Other Naturally Occurring - kW	0	0	-3	-8	-24	-55	-82	-124	26,386	44,509
Cost per First-Year Net kWh	$0.27	$0.27	$0.27	$0.29	$0.29	$0.32	$0.29	$0.34	$0.49	$0.73
PV Annual Program Costs	80,616,030	94,429,184	116,282,072	114,090,699	110,255,361	103,380,050	101,223,636	93,001,165	77,561,439	72,579,498
PV Lost Revenue	259,308,063	299,725,337	373,068,265	350,551,405	399,202,071	368,813,015	420,355,262	359,779,196	276,943,827	211,191,907
RIM	0.44	0.45	0.47	0.49	0.52	0.54	0.58	0.59	0.60	0.58

Electricity
Commercial
Total
75 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	186,779,621	374,044,973	768,042,619	1,127,157,960	1,530,236,843	1,877,982,291	2,392,489,210	2,758,247,652	2,891,577,019	2,903,030,521
Cumulative Gross Peak Demand - kW	29,568	60,394	129,108	192,600	264,656	327,939	421,494	489,316	517,960	524,717
Cumulative Net Energy Savings - kWh	116,592,644	240,188,134	449,720,991	639,494,101	813,409,586	971,870,707	1,158,686,212	1,291,703,581	1,309,539,634	1,297,387,190
Cumulative Net Peak Demand Savings - kW	18,705	39,597	76,546	110,805	142,760	172,849	208,343	234,933	243,098	246,016
New Net Energy Savings - kWh	116,592,644	123,595,491	209,532,857	189,773,110	173,915,485	158,461,121	186,815,506	133,017,369	17,836,053	-12,152,443
New Net Peak Demand Savings - kW	18,705	20,892	36,948	34,259	31,955	30,090	35,494	26,590	8,165	2,919
Administration Costs	7,731,537	8,636,554	12,789,781	13,174,694	12,604,774	12,304,277	12,627,741	12,013,241	9,027,838	8,999,647
Marketing Costs	1,632,127	3,722,070	3,684,988	3,649,497	3,615,528	3,583,017	3,551,900	3,522,118	2,857,647	2,857,647
Incentives Costs	12,034,834	14,367,106	30,957,447	31,976,808	29,413,126	28,176,347	29,953,201	27,629,294	16,872,177	17,199,935
Total Costs	21,398,497	26,725,730	47,432,216	48,800,998	45,633,428	44,063,640	46,132,842	43,164,653	28,757,662	29,057,229
PV Net Avoided Cost Benefits	56,104,661	58,947,862	87,339,171	83,188,804	79,247,217	70,960,464	77,868,698	61,003,491	24,963,300	15,971,193
PV Annual Program Marketing and Admin Costs	9,363,663	11,716,826	14,808,092	14,336,853	13,104,440	12,168,845	11,749,197	10,695,485	7,757,754	7,337,440
PV Net Measure Costs	12,895,294	15,196,325	25,077,672	25,514,681	22,042,397	20,727,596	20,777,875	19,113,779	13,468,634	13,054,509
TRC Ratio	2.52	2.19	2.19	2.09	2.25	2.16	2.39	2.05	1.18	0.78
Free Riders - kWh	70,186,977	133,856,838	318,321,636	487,668,211	716,875,307	906,284,047	1,234,133,242	1,467,118,470	1,432,649,730	1,353,215,194
Free Riders - kW	10,863	20,797	52,563	81,796	121,903	155,113	213,194	254,460	248,415	234,104
Other Naturally Occurring - kWh	0	0	-8	-4,351	-48,050	-172,463	-330,244	-574,400	149,387,655	252,428,137
Other Naturally Occurring - kW	0	0	0	-1	-6	-23	-43	-77	26,447	44,597
Cost per First-Year Net kWh	$0.18	$0.22	$0.23	$0.26	$0.26	$0.28	$0.25	$0.32	$1.61	-$2.39
PV Annual Program Costs	21,398,497	25,337,833	42,633,716	41,586,116	36,867,411	33,750,468	33,500,364	29,717,171	18,770,363	17,980,972
PV Lost Revenue	78,569,064	78,802,971	115,955,029	105,310,984	95,341,321	81,456,946	86,794,134	64,426,333	21,853,993	11,734,790
RIM	0.56	0.57	0.55	0.57	0.60	0.62	0.65	0.65	0.61	0.54

Electricity
Residential
Total
75 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	207,906,204	475,547,778	768,253,091	1,061,328,257	1,389,349,834	1,690,114,424	2,058,193,443	2,388,579,703	2,675,426,698	2,908,197,496
Cumulative Gross Peak Demand - kW	38,669	90,890	147,870	204,602	263,043	316,027	375,150	429,304	477,322	518,083
Cumulative Net Energy Savings - kWh	181,921,181	422,571,428	691,825,376	961,102,638	1,256,679,210	1,524,990,904	1,825,042,095	2,090,129,482	2,313,395,866	2,486,673,254
Cumulative Net Peak Demand Savings - kW	33,775	80,939	133,344	185,472	238,397	285,930	335,667	380,903	420,298	452,951
New Net Energy Savings - kWh	181,921,181	240,650,247	269,253,948	269,277,263	295,576,572	268,311,694	300,051,191	265,087,386	223,266,385	173,277,387
New Net Peak Demand Savings - kW	33,775	47,164	52,405	52,128	52,925	47,533	49,738	45,235	39,395	32,653
Administration Costs	19,985,543	23,708,383	26,595,072	28,118,326	30,499,411	31,095,735	32,141,338	31,968,983	31,628,406	31,238,155
Marketing Costs	3,464,836	3,723,717	3,952,627	4,141,756	4,322,128	4,322,128	4,322,128	4,322,128	4,322,128	4,322,128
Incentives Costs	35,767,155	45,443,778	51,389,909	52,823,506	56,015,970	55,488,516	56,797,221	55,629,876	54,121,987	52,670,868
Total Costs	59,217,533	72,875,878	81,937,609	85,083,589	90,837,508	90,906,378	93,260,687	91,920,986	90,072,521	88,231,150
PV Net Avoided Cost Benefits	93,601,533	119,674,757	144,661,985	142,403,754	184,312,095	183,882,504	224,390,679	207,339,586	186,217,984	149,605,995
PV Annual Program Marketing and Admin Costs	23,450,378	26,007,520	27,457,329	27,490,658	28,132,446	27,128,250	26,478,737	24,985,006	23,465,209	22,005,142
PV Net Measure Costs	44,885,094	54,681,275	58,868,093	57,406,990	57,376,837	53,826,982	51,235,825	47,460,596	43,694,855	40,268,659
TRC Ratio	1.37	1.48	1.68	1.68	2.16	2.27	2.89	2.86	2.77	2.40
Free Riders - kWh	25,985,023	52,976,350	76,445,247	100,260,917	132,783,303	165,332,197	233,400,360	298,740,243	362,406,075	422,089,998
Free Riders - kW	4,894	9,952	14,530	19,137	24,664	30,129	39,521	48,448	57,085	65,221
Other Naturally Occurring - kWh	0	0	-17,531	-35,299	-112,679	-208,677	-249,013	-290,022	-375,243	-565,755
Other Naturally Occurring - kW	0	0	-3	-7	-18	-31	-39	-47	-61	-88
Cost per First-Year Net kWh	$0.33	$0.30	$0.30	$0.32	$0.31	$0.34	$0.31	$0.35	$0.40	$0.51
PV Annual Program Costs	59,217,533	69,091,351	73,648,356	72,504,583	73,387,950	69,629,582	67,723,271	63,283,994	58,791,076	54,598,526
PV Lost Revenue	180,738,999	220,922,366	257,113,237	245,240,421	303,860,751	287,356,069	333,561,128	295,352,863	255,089,835	199,457,117
RIM	0.39	0.41	0.44	0.45	0.49	0.52	0.56	0.58	0.59	0.59

Electricity
All Segments
Total
50 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	210,040,840	438,880,075	843,249,170	1,228,003,338	1,731,950,922	2,180,323,280	2,865,277,467	3,396,172,671	3,721,005,456	3,905,675,633
Cumulative Gross Peak Demand - kW	33,486	71,294	141,449	208,852	294,893	371,918	484,938	572,397	625,332	654,803
Cumulative Net Energy Savings - kWh	126,867,479	276,169,120	482,995,916	683,993,340	919,236,820	1,140,684,267	1,434,149,714	1,670,551,500	1,817,949,008	1,920,439,654
Cumulative Net Peak Demand Savings - kW	20,107	45,034	80,867	116,308	155,829	193,662	240,499	278,951	303,588	321,781
New Net Energy Savings - kWh	126,867,479	149,301,641	206,826,796	200,997,424	235,243,479	221,447,447	293,465,447	236,401,785	147,397,508	102,490,646
New Net Peak Demand Savings - kW	20,107	24,928	35,832	35,442	39,520	37,833	46,838	38,451	24,638	18,193
Administration Costs	10,048,309	11,644,081	14,645,182	15,335,265	16,398,684	16,536,776	17,768,546	17,366,385	15,794,925	15,668,218
Marketing Costs	4,430,334	5,005,841	5,169,475	5,300,260	5,424,879	5,395,323	5,367,035	5,339,960	4,735,896	4,735,896
Incentives Costs	14,115,056	17,062,232	26,545,276	27,583,394	29,027,783	28,600,316	31,116,160	29,435,017	23,919,266	23,598,896
Total	28,593,700	33,712,154	46,359,932	48,218,918	50,851,346	50,532,415	54,251,740	52,141,362	44,450,087	44,003,010
PV Net Avoided Cost Benefits	61,456,788	70,768,308	95,814,662	95,141,540	129,391,202	126,763,782	191,186,800	169,648,337	137,281,057	107,521,430
PV Annual Program Marketing and Admin Costs	14,478,643	15,785,272	17,810,099	17,584,709	17,631,335	16,798,853	16,800,404	15,632,428	13,400,636	12,626,318
PV Net Measure Costs	22,997,243	27,241,894	34,002,903	34,529,871	34,576,821	33,249,459	33,697,154	31,124,528	27,115,970	25,342,967
TRC Ratio	1.64	1.64	1.85	1.83	2.48	2.53	3.79	3.63	3.39	2.83
Free Riders - kWh	83,173,361	162,710,955	360,259,691	544,027,067	812,816,011	1,039,920,719	1,431,570,787	1,726,315,326	1,751,340,062	1,728,619,987
Free Riders - kW	13,379	26,259	60,583	92,546	139,078	178,294	244,498	293,542	294,895	287,699
Other Naturally Occurring - kWh	0	0	-6,437	-17,070	-101,908	-281,706	-443,035	-694,154	151,716,386	256,615,993
Other Naturally Occurring - kW	0	0	-1	-2	-13	-38	-59	-95	26,849	45,323
Cost per First-Year Net kWh	$0.23	$0.23	$0.22	$0.24	$0.22	$0.23	$0.18	$0.22	$0.30	$0.43
PV Annual Program Costs	28,593,700	31,961,443	41,669,910	41,090,092	41,082,985	38,705,215	39,396,078	35,897,282	29,012,938	27,229,606
PV Lost Revenue	107,339,610	120,716,926	155,716,096	149,826,113	201,033,145	188,614,918	273,355,970	233,633,311	185,273,512	142,454,759
RIM	0.45	0.46	0.49	0.50	0.53	0.56	0.61	0.63	0.64	0.63

Electricity
Commercial
Total
50 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	120,239,179	236,489,689	517,295,883	771,648,165	1,094,905,598	1,369,019,322	1,783,314,572	2,072,488,299	2,182,589,010	2,185,313,171
Cumulative Gross Peak Demand - kW	19,151	38,203	87,176	131,893	189,218	238,299	312,716	365,164	386,580	388,565
Cumulative Net Energy Savings - kWh	57,711,570	116,121,513	218,872,145	309,367,810	393,934,132	471,339,908	562,097,115	622,358,009	619,513,813	600,665,775
Cumulative Net Peak Demand Savings - kW	9,283	19,143	37,257	53,526	68,963	83,465	100,509	112,357	113,705	112,170
New Net Energy Savings - kWh	57,711,570	58,409,943	102,750,632	90,495,665	84,566,321	77,405,776	90,757,207	60,260,895	-2,844,196	-18,848,038
New Net Peak Demand Savings - kW	9,283	9,860	18,114	16,268	15,437	14,502	17,045	11,848	1,348	-1,535
Administration Costs	2,678,984	2,852,093	4,802,745	4,825,610	4,584,004	4,358,035	4,411,576	4,060,610	2,598,560	2,611,279
Marketing Costs	1,432,983	1,785,306	1,751,596	1,719,331	1,688,450	1,658,895	1,630,607	1,603,532	999,468	999,468
Incentives Costs	4,069,649	4,533,537	12,230,591	12,245,317	11,313,274	10,413,283	10,720,033	9,342,819	4,224,187	4,336,395
Total Costs	8,181,616	9,170,936	18,784,932	18,790,258	17,585,728	16,430,213	16,762,215	15,006,961	7,822,214	7,947,141
PV Net Avoided Cost Benefits	26,423,857	26,222,045	40,588,807	37,840,597	36,025,594	31,731,076	34,702,410	25,466,278	6,830,129	2,263,945
PV Annual Program Marketing and Admin Costs	4,111,967	4,396,574	5,891,268	5,577,318	5,067,539	4,608,657	4,387,662	3,899,540	2,348,462	2,234,374
PV Net Measure Costs	4,953,535	5,532,775	10,317,392	10,370,859	8,355,436	7,708,684	7,457,080	6,723,720	4,500,409	4,403,501
TRC Ratio	2.91	2.64	2.50	2.37	2.68	2.58	2.93	2.40	1.00	0.34
Free Riders - kWh	62,527,608	120,368,176	298,423,745	462,284,138	700,998,801	897,808,058	1,221,484,690	1,450,625,238	1,411,115,609	1,327,639,373
Free Riders - kW	9,868	19,059	49,919	78,368	120,259	154,854	212,244	252,876	245,993	231,021
Other Naturally Occurring - kWh	0	0	-8	-3,783	-27,335	-128,644	-267,233	-494,948	151,959,588	257,008,024
Other Naturally Occurring - kW	0	0	0	-1	-4	-19	-37	-70	26,881	45,374
Cost per First-Year Net kWh	$0.14	$0.16	$0.18	$0.21	$0.21	$0.21	$0.18	$0.25	-$2.75	-$0.42
PV Annual Program Costs	8,181,616	8,694,679	16,884,546	16,012,252	14,207,573	12,584,693	12,172,246	10,331,704	5,105,623	4,917,789
PV Lost Revenue	37,139,202	35,196,124	54,335,234	48,287,365	43,746,526	36,809,705	39,040,638	27,089,522	5,352,286	367,738
RIM	0.58	0.60	0.57	0.59	0.62	0.64	0.68	0.68	0.65	0.43

Electricity
Residential
Total
50 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	89,801,661	202,390,386	325,953,287	456,355,173	637,045,324	811,303,959	1,081,962,894	1,323,684,372	1,538,416,445	1,720,362,462
Cumulative Gross Peak Demand - kW	14,334	33,091	54,273	76,959	105,676	133,619	172,222	207,234	238,752	266,238
Cumulative Net Energy Savings - kWh	69,155,908	160,047,607	264,123,770	374,625,530	525,302,688	669,344,359	872,052,599	1,048,193,490	1,198,435,195	1,319,773,879
Cumulative Net Peak Demand Savings - kW	10,824	25,891	43,609	62,783	86,866	110,197	139,990	166,594	189,883	209,610
New Net Energy Savings - kWh	69,155,908	90,891,699	104,076,163	110,501,759	150,677,158	144,041,671	202,708,241	176,140,891	150,241,705	121,338,684
New Net Peak Demand Savings - kW	10,824	15,067	17,719	19,173	24,083	23,331	29,793	26,603	23,289	19,728
Administration Costs	7,369,325	8,791,987	9,842,437	10,509,655	11,814,680	12,178,741	13,356,969	13,305,774	13,196,365	13,056,939
Marketing Costs	2,997,351	3,220,535	3,417,879	3,580,929	3,736,428	3,736,428	3,736,428	3,736,428	3,736,428	3,736,428
Incentives Costs	10,045,408	12,528,695	14,314,685	15,338,076	17,714,510	18,187,033	20,396,128	20,092,198	19,695,079	19,262,502
Total Costs	20,412,084	24,541,217	27,575,001	29,428,660	33,265,618	34,102,202	37,489,525	37,134,400	36,627,873	36,055,869
PV Net Avoided Cost Benefits	35,032,931	44,546,263	55,225,856	57,300,943	93,365,608	95,032,707	156,484,389	144,182,059	130,450,928	105,257,485
PV Annual Program Marketing and Admin Costs	10,366,676	11,388,698	11,918,831	12,007,391	12,563,796	12,190,196	12,412,741	11,732,888	11,052,174	10,391,943
PV Net Measure Costs	18,043,707	21,709,119	23,685,511	24,159,012	26,221,385	25,540,775	26,240,074	24,400,807	22,615,562	20,939,466
TRC Ratio	1.23	1.35	1.55	1.58	2.41	2.52	4.05	3.99	3.87	3.36
Free Riders - kWh	20,645,753	42,342,779	61,835,946	81,742,929	111,817,210	142,112,661	210,086,097	275,690,088	340,224,452	400,980,614
Free Riders - kW	3,510	7,200	10,664	14,178	18,819	23,441	32,253	40,665	48,901	56,678
Other Naturally Occurring - kWh	0	0	-6,429	-13,287	-74,574	-153,061	-175,802	-199,206	-243,202	-392,031
Other Naturally Occurring - kW	0	0	-1	-2	-9	-18	-22	-25	-32	-51
Cost per First-Year Net kWh	$0.30	$0.27	$0.26	$0.27	$0.22	$0.24	$0.18	$0.21	$0.24	$0.30
PV Annual Program Costs	20,412,084	23,266,764	24,785,364	25,077,841	26,875,412	26,120,522	27,223,832	25,565,578	23,907,314	22,311,817
PV Lost Revenue	70,200,408	85,520,802	101,380,862	101,538,749	157,286,619	151,805,213	234,315,332	206,543,789	179,921,227	142,087,022
RIM	0.39	0.41	0.44	0.45	0.51	0.53	0.60	0.62	0.64	0.64

Electricity
All Segments
Total
75 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	344,815,903	736,990,657	1,364,317,594	1,967,341,932	2,664,668,970	3,291,142,541	4,151,776,196	4,827,102,360	5,231,902,577	5,465,570,530
Cumulative Gross Peak Demand - kW	56,194	123,465	234,250	342,481	465,234	576,986	725,677	843,820	917,437	962,862
Cumulative Net Energy Savings - kWh	261,642,542	574,279,702	1,004,372,087	1,423,959,416	1,869,195,525	2,282,521,456	2,758,669,650	3,145,959,789	3,379,139,261	3,535,466,457
Cumulative Net Peak Demand Savings - kW	42,815	97,206	173,701	250,006	329,132	404,074	487,577	557,606	603,712	638,490
New Net Energy Savings - kWh	261,642,542	312,637,160	430,092,384	419,587,330	445,236,109	413,325,931	476,148,194	387,290,140	233,179,472	156,327,196
New Net Peak Demand Savings - kW	42,815	54,390	76,496	76,305	79,126	74,943	83,503	70,028	46,106	34,778
Administration Costs	26,650,764	31,106,042	37,912,141	39,797,441	41,624,823	41,983,959	43,397,323	42,658,169	39,372,060	38,982,444
Marketing Costs	4,863,214	6,509,437	6,689,435	6,833,298	6,970,379	6,937,867	6,906,750	6,876,968	6,212,497	6,212,497
Incentives Costs	41,201,485	50,846,144	72,838,743	76,432,182	78,744,559	78,230,481	81,937,195	78,663,323	66,621,535	65,604,398
Total	72,715,463	88,461,623	117,440,319	123,062,921	127,339,761	127,152,307	132,241,268	128,198,461	112,206,093	110,799,339
PV Net Avoided Cost Benefits	132,405,740	155,210,837	209,279,118	207,350,450	251,365,351	247,124,405	296,384,667	262,939,508	206,709,005	161,706,196
PV Annual Program Marketing and Admin Costs	31,513,979	35,662,065	40,089,439	39,736,714	39,260,239	37,471,587	36,529,394	34,102,999	29,753,416	27,967,188
PV Net Measure Costs	50,038,758	59,526,640	73,617,520	74,402,932	73,162,698	69,871,129	68,148,263	63,076,696	54,012,273	50,398,660
TRC Ratio	1.62	1.63	1.84	1.82	2.24	2.30	2.83	2.71	2.47	2.06
Free Riders - kWh	83,173,361	162,710,955	359,951,944	543,399,586	795,575,353	1,008,902,791	1,393,549,581	1,681,836,725	1,703,489,439	1,677,867,205
Free Riders - kW	13,379	26,259	60,549	92,477	136,115	172,950	238,159	286,309	287,295	279,801
Other Naturally Occurring - kWh	0	0	-6,437	-17,070	-101,908	-281,706	-443,035	-694,154	149,273,877	252,236,868
Other Naturally Occurring - kW	0	0	-1	-2	-13	-38	-59	-95	26,430	44,572
Cost per First-Year Net kWh	$0.28	$0.28	$0.27	$0.29	$0.29	$0.31	$0.28	$0.33	$0.48	$0.71
PV Annual Program Costs	72,715,463	83,867,711	105,559,420	104,868,940	102,878,252	97,392,088	96,029,866	88,259,612	73,237,840	68,564,000
PV Lost Revenue	229,602,845	260,785,709	336,550,326	322,032,201	381,330,307	358,065,149	412,549,091	352,555,932	271,154,836	206,194,277
RIM	0.44	0.45	0.47	0.49	0.52	0.54	0.58	0.60	0.60	0.59

Electricity
Commercial
Total
75 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	174,777,492	351,523,475	733,407,281	1,082,079,891	1,472,731,366	1,808,391,251	2,307,085,666	2,660,107,556	2,785,380,638	2,792,233,968
Cumulative Gross Peak Demand - kW	27,712	56,853	123,533	185,223	255,005	316,026	406,656	472,071	499,094	504,818
Cumulative Net Energy Savings - kWh	112,249,883	231,155,299	435,083,181	619,995,471	787,567,418	939,245,763	1,117,901,317	1,244,856,568	1,259,399,824	1,246,005,999
Cumulative Net Peak Demand Savings - kW	17,844	37,794	73,625	106,877	137,552	166,258	200,117	225,421	232,760	235,202
New Net Energy Savings - kWh	112,249,883	118,905,416	203,927,882	184,912,290	167,571,947	151,678,345	178,655,554	126,955,251	14,543,256	-13,393,825
New Net Peak Demand Savings - kW	17,844	19,950	35,831	33,252	30,675	28,706	33,859	25,304	7,339	2,442
Administration Costs	7,426,622	8,302,848	12,267,485	12,618,224	12,016,114	11,741,768	12,073,247	11,502,902	8,552,382	8,551,871
Marketing Costs	1,576,281	2,977,002	2,939,920	2,904,429	2,870,461	2,837,949	2,806,832	2,777,050	2,112,579	2,112,579
Incentives Costs	11,371,249	13,628,238	29,874,475	30,824,360	28,191,116	26,995,576	28,777,289	26,531,776	15,839,006	16,218,427
Total Costs	20,374,151	24,908,088	45,081,881	46,347,013	43,077,691	41,575,293	43,657,368	40,811,728	26,503,967	26,882,877
PV Net Avoided Cost Benefits	54,308,656	57,024,852	84,842,304	80,717,852	76,261,144	68,099,400	74,620,940	58,412,943	23,168,084	14,781,270
PV Annual Program Marketing and Admin Costs	9,002,902	10,694,075	13,668,942	13,227,738	12,026,917	11,167,309	10,805,493	9,831,187	6,961,108	6,599,294
PV Net Measure Costs	12,315,570	14,530,659	24,173,738	24,563,250	21,082,674	19,840,907	19,928,253	18,357,890	12,788,630	12,435,917
TRC Ratio	2.55	2.26	2.24	2.14	2.30	2.20	2.43	2.07	1.17	0.78
Free Riders - kWh	62,527,608	120,368,176	298,324,108	462,088,204	685,191,282	869,274,133	1,189,451,583	1,415,745,936	1,376,463,735	1,293,599,070
Free Riders - kW	9,868	19,059	49,908	78,347	117,457	149,787	206,576	246,719	239,872	224,993
Other Naturally Occurring - kWh	0	0	-8	-3,783	-27,335	-128,644	-267,233	-494,948	149,517,079	252,628,899
Other Naturally Occurring - kW	0	0	0	-1	-4	-19	-37	-70	26,462	44,623
Cost per First-Year Net kWh	$0.18	$0.21	$0.22	$0.25	$0.26	$0.27	$0.24	$0.32	$1.82	-$2.01
PV Annual Program Costs	20,374,151	23,614,583	40,521,154	39,494,935	34,802,621	31,844,523	31,702,745	28,097,274	17,299,358	16,635,457
PV Lost Revenue	76,129,578	76,305,210	112,767,979	102,316,686	91,828,931	78,224,593	83,223,234	61,735,194	20,135,241	10,709,850
RIM	0.56	0.57	0.55	0.57	0.60	0.62	0.65	0.65	0.62	0.54

Electricity
Residential
Total
75 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	170,038,412	385,467,182	630,910,313	885,262,041	1,191,937,604	1,482,751,290	1,844,690,530	2,166,994,804	2,446,521,939	2,673,336,562
Cumulative Gross Peak Demand - kW	28,482	66,612	110,717	157,258	210,229	260,960	319,021	371,750	418,343	458,044
Cumulative Net Energy Savings - kWh	149,392,659	343,124,403	569,288,906	803,963,945	1,081,628,107	1,343,275,693	1,640,768,333	1,901,103,222	2,119,739,437	2,289,460,458
Cumulative Net Peak Demand Savings - kW	24,971	59,412	100,077	143,129	191,580	237,816	287,460	332,184	370,952	403,288
New Net Energy Savings - kWh	149,392,659	193,731,744	226,164,503	234,675,039	277,664,161	261,647,586	297,492,640	260,334,889	218,636,216	169,721,021
New Net Peak Demand Savings - kW	24,971	34,440	40,665	43,053	48,451	46,236	49,644	44,724	38,767	32,336
Administration Costs	19,224,143	22,803,194	25,644,656	27,179,217	29,608,710	30,242,191	31,324,076	31,155,267	30,819,678	30,430,573
Marketing Costs	3,286,933	3,532,435	3,749,514	3,928,869	4,099,918	4,099,918	4,099,918	4,099,918	4,099,918	4,099,918
Incentives Costs	29,830,236	37,217,906	42,964,267	45,607,822	50,553,443	51,234,905	53,159,906	52,131,547	50,782,530	49,385,971
Total Costs	52,341,312	63,553,535	72,358,438	76,715,908	84,262,070	85,577,014	88,583,900	87,386,732	85,702,125	83,916,462
PV Net Avoided Cost Benefits	78,097,084	98,185,985	124,436,814	126,632,598	175,104,207	179,025,005	221,763,727	204,526,565	183,540,922	146,924,926
PV Annual Program Marketing and Admin Costs	22,511,076	24,967,990	26,420,497	26,508,976	27,233,322	26,304,279	25,723,902	24,271,812	22,792,308	21,367,894
PV Net Measure Costs	37,723,189	44,995,981	49,443,782	49,839,682	52,080,024	50,030,222	48,220,011	44,718,805	41,223,644	37,962,743
TRC Ratio	1.30	1.40	1.64	1.66	2.21	2.35	3.00	2.96	2.87	2.48
Free Riders - kWh	20,645,753	42,342,779	61,627,836	81,311,382	110,384,071	139,628,658	204,097,999	266,090,789	327,025,704	384,268,135
Free Riders - kW	3,510	7,200	10,641	14,130	18,658	23,163	31,583	39,591	47,424	54,807
Other Naturally Occurring - kWh	0	0	-6,429	-13,287	-74,574	-153,061	-175,802	-199,206	-243,202	-392,031
Other Naturally Occurring - kW	0	0	-1	-2	-9	-18	-22	-25	-32	-51
Cost per First-Year Net kWh	$0.35	$0.33	$0.32	$0.33	$0.30	$0.33	$0.30	$0.34	$0.39	$0.49
PV Annual Program Costs	52,341,312	60,253,129	65,038,266	65,374,005	68,075,630	65,547,565	64,327,121	60,162,338	55,938,483	51,928,543
PV Lost Revenue	153,473,267	184,480,498	223,782,347	219,715,516	289,501,375	279,840,556	329,325,857	290,820,738	251,019,595	195,484,427
RIM	0.38	0.40	0.43	0.44	0.49	0.52	0.56	0.58	0.60	0.59

Electricity
All Segments
Total
50 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	36,966,163	83,019,344	128,637,085	170,002,649	202,770,758	228,475,789	251,785,275	270,036,529	282,101,054	291,295,856
Cumulative Gross Peak Demand - kW	8,642	20,030	31,525	41,873	49,959	55,912	60,750	64,245	66,513	68,214
Cumulative Net Energy Savings - kWh	23,967,524	58,897,111	93,832,754	125,494,696	148,523,962	165,434,649	176,916,602	184,649,159	188,817,255	191,874,459
Cumulative Net Peak Demand Savings - kW	6,265	15,540	24,984	33,422	39,480	43,563	46,037	47,406	48,005	48,340
New Net Energy Savings - kWh	23,967,524	34,929,587	34,935,643	31,661,942	23,029,266	16,910,687	11,481,954	7,732,557	4,168,096	3,057,204
New Net Peak Demand Savings - kW	6,265	9,276	9,444	8,438	6,057	4,083	2,475	1,369	599	335
Administration Costs	537,845	619,004	717,121	741,000	730,782	723,567	691,244	664,466	644,841	632,569
Marketing Costs	212,945	269,099	279,854	288,741	297,215	297,215	297,215	297,215	297,215	297,215
Incentives Costs	2,927,000	4,017,458	4,522,904	4,405,424	3,910,940	3,388,281	2,910,941	2,500,829	2,255,316	2,171,297
Total	3,677,790	4,905,561	5,519,880	5,435,165	4,938,938	4,409,063	3,899,400	3,462,510	3,197,372	3,101,082
PV Net Avoided Cost Benefits	11,226,833	15,904,466	16,547,014	14,884,497	11,226,243	8,250,215	5,526,195	3,986,428	2,799,932	2,387,257
PV Annual Program Marketing and Admin Costs	750,790	841,983	896,116	877,501	830,523	781,866	717,791	662,080	614,888	575,362
PV Net Measure Costs	4,723,938	6,566,774	7,038,059	6,497,137	5,346,825	4,296,906	3,399,243	2,692,099	2,262,810	2,067,451
TRC Ratio	2.05	2.15	2.09	2.02	1.82	1.62	1.34	1.19	0.97	0.90
Free Riders - kWh	12,998,639	24,122,233	34,815,432	44,530,533	54,305,616	63,140,575	75,004,895	85,557,637	93,545,266	99,795,901
Free Riders - kW	2,377	4,489	6,543	8,456	10,491	12,367	14,736	16,868	18,552	19,937
Other Naturally Occurring - kWh	0	0	-11,102	-22,580	-58,821	-99,435	-136,222	-170,267	-261,467	-374,504
Other Naturally Occurring - kW	0	0	-3	-5	-11	-17	-23	-29	-44	-63
Cost per First-Year Net kWh	$0.15	$0.14	$0.16	$0.17	$0.21	$0.26	$0.34	$0.45	$0.77	$1.01
PV Annual Program Costs	3,677,790	4,650,810	4,961,459	4,631,614	3,990,186	3,377,114	2,831,634	2,383,803	2,086,951	1,918,988
PV Lost Revenue	19,174,460	26,352,660	26,568,724	23,335,878	16,878,262	12,042,505	7,908,260	5,663,303	3,873,209	3,320,564
RIM	0.49	0.51	0.52	0.53	0.54	0.54	0.51	0.50	0.47	0.46

Electricity
Commercial
Total
50 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	10,999,714	20,254,254	29,574,339	36,819,746	44,470,973	52,621,740	63,502,319	73,008,930	79,570,338	83,868,992
Cumulative Gross Peak Demand - kW	1,647	3,064	4,552	5,723	7,102	8,589	10,551	12,271	13,489	14,321
Cumulative Net Energy Savings - kWh	3,340,345	6,765,592	9,576,317	11,239,316	12,585,304	15,228,523	17,862,796	20,180,198	21,534,869	22,095,734
Cumulative Net Peak Demand Savings - kW	653	1,326	1,898	2,274	2,619	3,192	3,759	4,268	4,613	4,823
New Net Energy Savings - kWh	3,340,345	3,425,247	2,810,725	1,662,999	1,345,988	2,643,219	2,634,273	2,317,401	1,354,671	560,865
New Net Peak Demand Savings - kW	653	673	572	376	345	573	567	509	345	210
Administration Costs	174,454	177,820	235,262	238,201	234,488	228,609	217,550	205,600	193,851	182,773
Marketing Costs	50,769	94,760	94,760	94,760	94,760	94,760	94,760	94,760	94,760	94,760
Incentives Costs	362,848	362,381	451,335	450,314	440,205	427,141	407,335	383,450	359,662	337,265
Total Costs	588,071	634,960	781,357	783,275	769,453	750,510	719,645	683,809	648,273	614,797
PV Net Avoided Cost Benefits	1,148,201	1,113,977	1,171,571	1,008,342	958,606	1,080,586	1,048,388	926,685	650,140	419,194
PV Annual Program Marketing and Admin Costs	225,223	258,424	296,635	283,735	266,000	247,684	226,790	206,786	188,378	171,741
PV Net Measure Costs	349,525	349,105	392,038	387,597	326,252	308,068	269,105	246,131	223,236	201,999
TRC Ratio	2.00	1.83	1.70	1.50	1.62	1.94	2.11	2.05	1.58	1.12
Free Riders - kWh	7,659,369	13,488,662	19,998,022	25,580,998	31,906,384	37,437,035	45,702,534	52,908,183	58,164,895	61,974,038
Free Riders - kW	994	1,738	2,655	3,449	4,485	5,401	6,797	8,010	8,890	9,524
Other Naturally Occurring - kWh	0	0	0	-568	-20,715	-43,819	-63,011	-79,451	-129,426	-200,780
Other Naturally Occurring - kW	0	0	0	0	-2	-4	-6	-7	-15	-26
Cost per First-Year Net kWh	$0.18	$0.19	$0.28	$0.47	$0.57	$0.28	$0.27	$0.30	$0.48	$1.10
PV Annual Program Costs	588,071	601,986	702,310	667,473	621,644	574,852	522,586	470,776	423,133	380,444
PV Lost Revenue	1,572,845	1,473,253	1,492,674	1,196,632	1,070,539	1,207,639	1,129,353	955,356	619,155	356,967
RIM	0.53	0.54	0.53	0.54	0.57	0.61	0.63	0.65	0.62	0.57

Electricity
Residential
Total
50 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	25,966,449	62,765,090	99,062,746	133,182,903	158,299,784	175,854,049	188,282,956	197,027,599	202,530,716	207,426,864
Cumulative Gross Peak Demand - kW	6,995	16,966	26,972	36,150	42,857	47,324	50,199	51,974	53,024	53,893
Cumulative Net Energy Savings - kWh	20,627,179	52,131,519	84,256,438	114,255,381	135,938,658	150,206,125	159,053,806	164,468,961	167,282,386	169,778,725
Cumulative Net Peak Demand Savings - kW	5,611	14,214	23,086	31,148	36,861	40,371	42,278	43,138	43,392	43,517
New Net Energy Savings - kWh	20,627,179	31,504,340	32,124,919	29,998,943	21,683,277	14,267,467	8,847,680	5,415,155	2,813,425	2,496,339
New Net Peak Demand Savings - kW	5,611	8,603	8,872	8,062	5,712	3,510	1,907	859	254	125
Administration Costs	363,391	441,184	481,859	502,799	496,294	494,958	473,694	458,866	450,990	449,796
Marketing Costs	162,176	174,340	185,095	193,981	202,456	202,456	202,456	202,456	202,456	202,456
Incentives Costs	2,564,152	3,655,077	4,071,569	3,955,110	3,470,735	2,961,139	2,503,606	2,117,379	1,895,654	1,834,033
Total Costs	3,089,719	4,270,601	4,738,523	4,651,890	4,169,485	3,658,553	3,179,756	2,778,701	2,549,100	2,486,284
PV Net Avoided Cost Benefits	10,078,632	14,790,489	15,375,444	13,876,154	10,267,638	7,169,629	4,477,808	3,059,742	2,149,792	1,968,063
PV Annual Program Marketing and Admin Costs	525,567	583,559	599,481	593,766	564,523	534,183	491,001	455,294	426,510	403,621
PV Net Measure Costs	4,374,413	6,217,669	6,646,021	6,109,540	5,020,573	3,988,838	3,130,138	2,445,968	2,039,574	1,865,452
TRC Ratio	2.06	2.17	2.12	2.07	1.84	1.59	1.24	1.05	0.87	0.87
Free Riders - kWh	5,339,270	10,633,571	14,817,410	18,949,535	22,399,232	25,703,539	29,302,361	32,649,454	35,380,371	37,821,863
Free Riders - kW	1,383	2,751	3,889	5,007	6,006	6,966	7,938	8,857	9,662	10,413
Other Naturally Occurring - kWh	0	0	-11,102	-22,012	-38,106	-55,616	-73,211	-90,816	-132,041	-173,723
Other Naturally Occurring - kW	0	0	-3	-5	-9	-13	-17	-21	-29	-37
Cost per First-Year Net kWh	$0.15	$0.14	$0.15	$0.16	$0.19	$0.26	$0.36	$0.51	$0.91	$1.00
PV Annual Program Costs	3,089,719	4,048,824	4,259,148	3,964,141	3,368,542	2,802,262	2,309,048	1,913,027	1,663,818	1,538,543
PV Lost Revenue	17,601,615	24,879,407	25,076,050	22,139,246	15,807,723	10,834,866	6,778,907	4,707,947	3,254,054	2,963,596
RIM	0.49	0.51	0.52	0.53	0.54	0.53	0.49	0.46	0.44	0.44

Electricity
All Segments
Total
75 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	48,125,929	108,702,166	164,048,737	210,103,509	237,693,411	253,266,593	265,188,352	278,588,070	290,119,367	299,357,102
Cumulative Gross Peak Demand - kW	11,741	27,131	41,317	52,738	59,372	62,718	64,913	67,403	69,719	71,527
Cumulative Net Energy Savings - kWh	35,375,442	85,053,114	131,572,528	169,639,142	191,201,648	201,268,273	207,143,588	214,617,063	221,066,188	225,829,242
Cumulative Net Peak Demand Savings - kW	9,407	22,724	35,184	44,996	50,252	52,305	53,149	54,317	55,460	56,192
New Net Energy Savings - kWh	35,375,442	49,677,672	46,519,414	38,066,614	21,562,506	10,066,625	5,875,314	7,473,476	6,449,125	4,763,054
New Net Peak Demand Savings - kW	9,407	13,317	12,460	9,813	5,256	2,053	844	1,168	1,143	731
Administration Costs	1,126,984	1,283,090	1,410,724	1,419,119	1,346,261	1,297,137	1,227,941	1,212,359	1,194,915	1,181,999
Marketing Costs	239,865	253,245	265,076	274,850	284,173	284,173	284,173	284,173	284,173	284,173
Incentives Costs	6,522,297	8,818,258	9,111,074	7,922,394	6,135,767	4,907,155	4,245,571	4,084,995	3,903,440	3,827,502
Total	7,889,146	10,354,592	10,786,873	9,616,363	7,766,201	6,488,464	5,757,685	5,581,526	5,382,528	5,293,674
PV Net Avoided Cost Benefits	17,028,604	22,968,642	21,900,261	17,428,254	10,900,764	6,406,999	4,111,183	4,080,624	3,663,583	3,462,870
PV Annual Program Marketing and Admin Costs	1,366,849	1,456,551	1,506,266	1,443,528	1,317,233	1,211,201	1,098,054	1,030,303	965,413	907,285
PV Net Measure Costs	7,674,900	10,200,467	10,017,058	8,160,698	5,831,404	4,285,212	3,448,559	3,132,899	2,825,782	2,628,576
TRC Ratio	1.88	1.97	1.90	1.81	1.52	1.17	0.90	0.98	0.97	0.98
Free Riders - kWh	12,750,486	23,649,051	32,487,310	40,486,386	46,549,455	52,096,624	58,179,770	64,139,631	69,282,940	73,824,336
Free Riders - kW	2,335	4,407	6,136	7,747	9,131	10,430	11,787	13,114	14,297	15,385
Other Naturally Occurring - kWh	0	0	-11,102	-22,020	-57,692	-98,304	-135,006	-168,624	-229,761	-296,476
Other Naturally Occurring - kW	0	0	-3	-5	-11	-17	-23	-28	-38	-49
Cost per First-Year Net kWh	$0.22	$0.21	$0.23	$0.25	$0.36	$0.64	$0.98	$0.75	$0.83	$1.11
PV Annual Program Costs	7,889,146	9,816,867	9,695,615	8,194,652	6,274,341	4,969,828	4,181,068	3,842,662	3,513,220	3,275,791
PV Lost Revenue	29,286,792	38,317,479	35,425,750	27,521,774	16,318,263	9,222,782	5,803,502	5,799,602	4,984,645	4,646,759
RIM	0.46	0.48	0.49	0.49	0.48	0.45	0.41	0.42	0.43	0.44

Electricity
Commercial
Total
75 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	10,258,136	18,621,570	26,705,958	34,037,293	40,281,181	45,903,458	51,685,439	57,003,171	61,214,608	64,496,168
Cumulative Gross Peak Demand - kW	1,554	2,853	4,164	5,394	6,559	7,652	8,785	9,848	10,741	11,488
Cumulative Net Energy Savings - kWh	2,846,920	5,606,089	9,036,059	12,500,449	16,150,544	19,553,062	22,869,825	25,590,803	27,409,759	28,616,447
Cumulative Net Peak Demand Savings - kW	603	1,197	1,917	2,654	3,435	4,191	4,942	5,599	6,114	6,528
New Net Energy Savings - kWh	2,846,920	2,759,170	3,429,969	3,464,391	3,650,095	3,402,518	3,316,763	2,720,978	1,818,956	1,206,688
New Net Peak Demand Savings - kW	603	594	720	737	782	756	751	657	515	414
Administration Costs	365,585	377,900	460,307	480,010	455,560	443,593	410,680	398,643	386,187	374,418
Marketing Costs	61,963	61,963	61,963	61,963	61,963	61,963	61,963	61,963	61,963	61,963
Incentives Costs	585,378	592,386	685,432	706,710	673,240	653,544	608,256	586,666	563,982	542,605
Total Costs	1,012,925	1,032,250	1,207,702	1,248,683	1,190,763	1,159,100	1,080,898	1,047,272	1,012,132	978,985
PV Net Avoided Cost Benefits	1,524,155	1,479,870	1,675,090	1,657,098	1,692,875	1,549,500	1,484,231	1,267,603	986,521	781,801
PV Annual Program Marketing and Admin Costs	427,547	417,021	469,434	461,846	418,109	387,230	343,220	317,109	292,511	270,038
PV Net Measure Costs	512,995	515,173	592,747	593,390	534,590	488,451	432,745	391,108	354,571	322,660
TRC Ratio	1.62	1.59	1.58	1.57	1.78	1.77	1.91	1.79	1.52	1.32
Free Riders - kWh	7,411,216	13,015,480	17,669,900	21,536,851	24,150,223	26,393,084	28,877,409	31,490,176	33,902,569	36,002,473
Free Riders - kW	951	1,656	2,247	2,740	3,125	3,464	3,848	4,257	4,636	4,972
Other Naturally Occurring - kWh	0	0	0	-8	-19,587	-42,688	-61,795	-77,808	-97,720	-122,752
Other Naturally Occurring - kW	0	0	0	0	-2	-4	-6	-7	-9	-12
Cost per First-Year Net kWh	$0.36	$0.37	$0.35	$0.36	$0.33	$0.34	$0.33	$0.38	$0.56	$0.81
PV Annual Program Costs	1,012,925	978,644	1,085,525	1,064,074	962,022	887,811	784,918	721,006	660,627	605,808
PV Lost Revenue	2,021,061	1,875,612	2,094,860	1,996,868	1,958,888	1,707,269	1,568,231	1,267,477	914,405	674,069
RIM	0.50	0.52	0.53	0.54	0.58	0.60	0.63	0.64	0.63	0.61

Electricity
Residential
Total
75 Percent

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Cumulative Gross Energy - kWh	37,867,793	90,080,596	137,342,778	176,066,216	197,412,230	207,363,135	213,502,913	221,584,898	228,904,759	234,860,934
Cumulative Gross Peak Demand - kW	10,187	24,278	37,153	47,345	52,814	55,066	56,128	57,555	58,979	60,040
Cumulative Net Energy Savings - kWh	32,528,522	79,447,025	122,536,470	157,138,693	175,051,104	181,715,211	184,273,762	189,026,260	193,656,429	197,212,795
Cumulative Net Peak Demand Savings - kW	8,804	21,527	33,267	42,343	46,817	48,114	48,207	48,719	49,347	49,663
New Net Energy Savings - kWh	32,528,522	46,918,503	43,089,445	34,602,223	17,912,411	6,664,107	2,558,551	4,752,498	4,630,169	3,556,366
New Net Peak Demand Savings - kW	8,804	12,724	11,740	9,075	4,474	1,297	94	511	628	317
Administration Costs	761,400	905,189	950,416	939,109	890,701	853,544	817,262	813,716	808,728	807,582
Marketing Costs	177,902	191,282	203,113	212,888	222,210	222,210	222,210	222,210	222,210	222,210
Incentives Costs	5,936,919	8,225,871	8,425,642	7,215,684	5,462,527	4,253,611	3,637,316	3,498,329	3,339,458	3,284,897
Total Costs	6,876,221	9,322,343	9,579,171	8,367,680	6,575,438	5,329,364	4,676,787	4,534,254	4,370,396	4,314,688
PV Net Avoided Cost Benefits	15,504,450	21,488,772	20,225,170	15,771,156	9,207,889	4,857,499	2,626,952	2,813,021	2,677,062	2,681,069
PV Annual Program Marketing and Admin Costs	939,302	1,039,530	1,036,832	981,682	899,125	823,971	754,835	713,194	672,902	637,248
PV Net Measure Costs	7,161,905	9,685,294	9,424,311	7,567,308	5,296,814	3,796,760	3,015,814	2,741,791	2,471,211	2,305,916
TRC Ratio	1.91	2.00	1.93	1.84	1.49	1.05	0.70	0.81	0.85	0.91
Free Riders - kWh	5,339,270	10,633,571	14,817,410	18,949,535	22,399,232	25,703,539	29,302,361	32,649,454	35,380,371	37,821,863
Free Riders - kW	1,383	2,751	3,889	5,007	6,006	6,966	7,938	8,857	9,662	10,413
Other Naturally Occurring - kWh	0	0	-11,102	-22,012	-38,106	-55,616	-73,211	-90,816	-132,041	-173,723
Other Naturally Occurring - kW	0	0	-3	-5	-9	-13	-17	-21	-29	-37
Cost per First-Year Net kWh	$0.21	$0.20	$0.22	$0.24	$0.37	$0.80	$1.83	$0.95	$0.94	$1.21
PV Annual Program Costs	6,876,221	8,838,223	8,610,090	7,130,578	5,312,320	4,082,017	3,396,150	3,121,656	2,852,593	2,669,983
PV Lost Revenue	27,265,731	36,441,868	33,330,890	25,524,906	14,359,375	7,515,513	4,235,271	4,532,125	4,070,240	3,972,690
RIM	0.45	0.47	0.48	0.48	0.47	0.42	0.34	0.37	0.39	0.40

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing *Energy Efficiency Potential Study*, as filed in Docket No. E-22, Sub 464, was served electronically or via U.S. mail, first-class, postage prepaid, upon all parties of record.

This, the 13th day of May, 2015.

s/ *E. Brett Breitschwerdt*
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