Evaluation, Measurement, and Verification Report for Virginia Electric and Power Company (Dominion Energy)

Case No. PUR-2019-00201 (Virginia)
Docket No. E-22 Sub 589 (North Carolina)
VOLUME 1 OF 5
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Date: May 14, 2021
Prepared by DNV Energy Insights USA Inc. (DNV)

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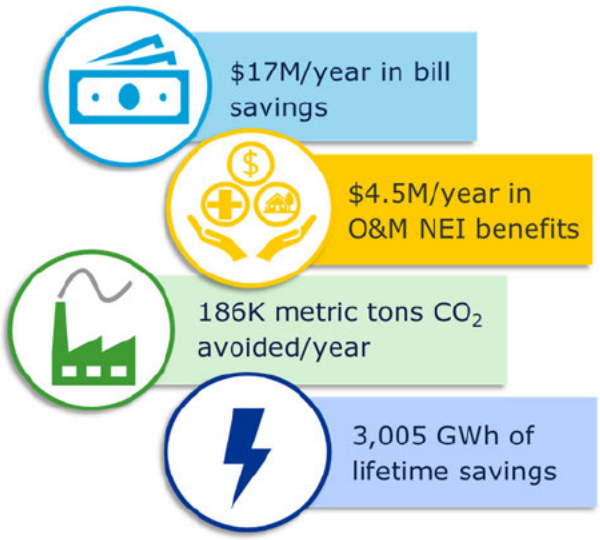
1 EXECUTIVE SUMMARY

This EM&V report, prepared by DNV Energy Insights USA (DNV) on behalf of Virginia Electric and Power Company[1] presents the key performance indicators of the Company's Phases I through VIII demand-side management (DSM) programs in Virginia and North Carolina, and reports DSM program impacts and activity for 15 active energy efficiency and demand response programs through December 31, 2020 (Table 1-1).

The 2020 EM&V report complies with the Virginia State Corporation Commission (SCC) 2010 Order to the Company. In March 2010, the Order was modified to require an annual evaluation, measurement, and verification (EM&V) report.[2]



8 programs completed their first full year of implementation in 2020:

- Residential Appliance Recycling
- Residential Efficient Products Marketplace
- Residential Home Energy Assessment
- Non-residential Lighting System & Controls
- Non-residential Heating and Cooling Efficiency
- Non-residential Window Film
- Non-residential Office
- Non-residential Small Manufacturing

This report also meets the EM&V reporting requirements of the SCC in Case No. PUR-2017-00047 for newly approved programs and renewals of existing programs after November 9, 2017.

In addition, this report presents performance indicators of Dominion Energy's North Carolina DSM programs from the first DSM program's launch (mid-2011) through December 31, 2020, in accordance with the North Carolina Utilities Commission's (NCUC) Orders approving DSM and energy efficiency (EE) programs in North Carolina, as well as the NCUC's subsequent direction regarding the filing of EM&V plans in North Carolina.[3] This report was filed on May 14, 2021 pursuant to an extension granted by the SCC in 2020.[4]

Impact evaluations were completed for:

- Residential Efficient Products Marketplace Program
- Non-residential Prescriptive Program
- Residential Smart Rewards AC Cycling Program
- Non-residential Distributed Generation program

1 Hereinafter, Virginia Electric and Power Company will be referred to as "Dominion Energy" or "Company" and may also include North Carolina operations depending on the context.
2 Issued on March 24, 2010 (the "Order") in Case No. PUE-2009-00081.
3 Through its Orders issued in Docket No. E-22, Sub 473; and finally the NCUC's instruction to align its EM&V filing schedule with that in Virginia (Docket No. E-22, Sub 524).
4 Case No. PUR-2018-00168 on April 30, 2020.

Program Year 2020 Progress towards Virginia Clean Economy Act Requirements

In 2020, three new metrics – emissions reductions, customer bill impacts, and operations and maintenance (O&M) non-energy impacts – were added to the EM&V Report to support the Company and the SCC's compliance with the Virginia Clean Economy Act (VCEA) excerpted below.[5]

> The Commission shall annually monitor and report to the General Assembly the performance of all programs approved pursuant to this subdivision, including each utility's compliance with the total annual savings required by § 56-596.2, as well as the annual and lifecycle net and gross energy and capacity savings, related emissions reductions, and other quantifiable benefits of each program; total customer bill savings that the programs produce; utility spending on each program, including any associated administrative costs; and each utility's avoided costs and cost-effectiveness results.

The active demand-side management (DSM) Phase I through VIII programs offered for customer enrollment in 2020 are listed Table 1-1. Documentation of the savings that are still persistent from both active and closed DSM Phase I through VIII programs are available in Appendices A through D. EM&V Plans and documentation of program launch costs in 2020 for the approved and soon-to-be launched DSM Phase VIII programs can also be found in the appendices of this report.

Table 1-1. Active Phases I–VII Demand-side Management Programs Reported in 2020

Residential Energy Efficiency	Non-residential Energy Efficiency	Peak Shaving
• Residential Income and Age Qualifying Home Improvement (DSM Phase IV) – Virginia and North Carolina • Residential Appliance Recycling (DSM Phase VII) – Virginia and North Carolina • Residential Efficient Products Marketplace (DSM Phase VII) – Virginia and North Carolina • Residential Home Energy Assessment (DSM Phase VII) – Virginia and North Carolina • Residential Smart Thermostat Purchase and WeatherSmart℠ (DSM Phase VIII) – Virginia	• Non-residential Lighting Systems & Controls (DSM Phase III) – North Carolina • Non-residential Lighting Systems & Controls (DSM Phase VII) – Virginia and North Carolina • Non-residential Heating and Cooling Efficiency (DSM Phase VII) – Virginia and North Carolina • Non-residential Window Film (DSM Phase VII) – Virginia and North Carolina • Non-residential Small Business Improvement (DSM Phase V) – Virginia and North Carolina • Non-residential Prescriptive (DSM Phase VI) – Virginia and North Carolina • Non-residential Small Manufacturing (DSM Phase VII) – Virginia and North Carolina • Non-residential Office (DSM Phase VII) – Virginia and North Carolina	• Residential Air Conditioner Cycling (DSM Phase I) – Virginia and North Carolina • Non-residential Distributed Generation (DSM Phase II) – Virginia

[5] Code of Virginia § 56-585.1 A 5 c.

In compliance with the various regulatory requirements as outlined above, the following key metrics are reported for 2020:

Expenditures

Program expenditures include operations and maintenance (O&M), capital spending, and common costs. O&M spending components include direct rebate, direct implementation, direct EM&V, and other indirect or administrative spending. The expenditures reported here do not include the Company's margins.

Participation

The number of participants served by the program.

Net Savings

Net installed annualized energy savings, in kilowatt hours per year (kWh/year), or peak demand reductions, in kilowatts (kW), is the amount of annual energy savings or peak demand reductions delivered by the program that would not have occurred in the absence of the program, at the Company's assumed peak at hour ending 5 pm ET in July.

VCEA Indicators

Emissions reductions, customer bill impacts, and O&M non-energy impacts attributable to the DSM programs.

The key metrics that support compliance of the Virginia Clean Economy Act are shown for Virginia in Table 1-2 and Table 1-3.

Table 1-2. Virginia Program Avoided Costs in Program Year 2020

	Avoided Costs[6]					T&D Demand Benefit[7]		
Year	On-peak	Off-Peak	Average	Capacity	Capacity	Avoided Transmission	Avoided Distribution	Total T&D Demand Credit
	$/MWh	$/MWh	$/MWh	$/kWh-month	$/kWh-year	$/kW	$/kW	$/kW
2020	$32.49	$24.01	$28.05	$2.63	$31.50	$34.40	$19.71	$54.11

[6] The average avoided costs for capacity and energy actual values will be computed as we calculate the true benefits. Actual specific avoided costs are calculated at the time program is evaluated.

[7] Case No. PUR-2020-00274.

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Table 1-3. Virginia Clean Economy Act DSM Program Metrics

Program		Expenditures ($M)[8]	Administrative Expenditures ($M)[9]	Participants[10]	Energy Impacts			Other Impacts			Benefit Cost Ratios[11]			
					Total Annualized Net Energy Savings (MWh/yr)[12]	Cumulative Net Energy Savings (MWh)[13]	Lifetime Net Energy Savings (MWh)[14]	Bill Savings ($/yr)[15]	Carbon Emissions Avoided (Metric Tons CO_2/yr)[16]	O&M NEIs ($/year)[17]	Participant B/C Ratio	Utility B/C Ratio	TRC B/C Ratio	RIM B/C Ratio
Residential	Income and Age Qualifying Home Improvement	$20.63	$0.78	23,981	7,293	26,137	103,940	$23,297	5,446	$2,257	N/A	0.24	0.24	0.16
	Appliance Recycling	$0.86	$0.04	2,551	1,274	1,261	10,193	$93,713	1,273	N/A	12.11	1.10	1.19	0.34

[8] Expenditures represent program expenditures from program inception through December 31, 2020 and include operations and maintenance (O&M), capital spending, and common costs. O&M spending components include direct rebate, direct implementation, direct EM&V, and other indirect or administrative spending. The expenditures reported here do not include the Company's margins.

[9] Administrative expenditures represent administrative expenditures from program inception through December 31, 2020.

[10] Participant represent the enrolled participants from program inception through December 31, 2020.

[11] B/C ratio was filed as part of Case No. PUR-2018-00168, except for Smart Thermostat Purchase and WeatherSmart which was refiled as part of Case No. PUR-2019-00201. Please see Appendix G for more information regarding the review of B/C ratio calculations.

[12] Total annualized net energy savings represent total annualized savings (also known as "first year savings") from participants enrolled in the program from program inception through December 31, 2020.

[13] Cumulative net energy savings represent total savings (also known as "total annual energy savings" from the VCEA, § 56-596.2) from participants enrolled in the program from program inception through December 31, 2020, persisting in program year 2020.

[14] Lifetime net energy savings represent total savings from participants enrolled in the program from program inception through December 31, 2020, extended through the program weighted measure lives shown in Table 3-5.

[15] Bill savings represent customer bill savings for a typical year based on gross energy savings calculated for 2020. Please see Appendix G for more information.

[16] Carbon emissions avoided represent avoided emissions from program inception through December 31, 2020. Please see Appendix G for more information.

[17] O&M Non-Energy Impacts (NEIs) represent O&M cost savings for a typical year based on gross energy savings calculated for 2020. The NEI analysis only reviewed O&M NEIs related to equipment upgrades of lighting, variable frequency drives (VFDs), and heating, ventilation and air conditioning (HVAC) measures. Please see Appendix G for more information.

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Program		Expenditures ($M)[8]	Administrative Expenditures ($M)[9]	Participants[10]	Energy Impacts			Other Impacts			Benefit Cost Ratios[11]			
					Total Annualized Net Energy Savings (MWh/yr)[12]	Cumulative Net Energy Savings (MWh)[13]	Lifetime Net Energy Savings (MWh)[14]	Bill Savings ($/yr)[15]	Carbon Emissions Avoided (Metric Tons CO_2/yr)[16]	O&M NEIs ($/year)[17]	Participant B/C Ratio	Utility B/C Ratio	TRC B/C Ratio	RIM B/C Ratio
	Efficient Products Marketplace	$12.70	$0.08	4,846,666	105,313	94,895	1,746,437	$8,839,775	92,794	$2,473,230	11.41	4.43	3.49	0.34
	Home Energy Assessment	$3.70	$0.18	2,738	3,969	2,881	49,607	$525,701	3,016	$1,700,398	3.40	1.38	1.13	0.41
	Smart Thermostat Purchase and WeatherSmart	$0.10	$0.00	0	0	0	0	$0	0	N/A	5.97	1.13	1.04	0.35
Non-residential	Small Business Improvement	$14.14	$0.67	2,344	47,524	109,742	665,338	$851,553	30,300	$135,790	2.05	1.27	1.07	0.52
Non-residential	Prescriptive	$24.50	$1.27	2,112	28,606	39,306	183,556	$3,705,388	33,736	-$22,074	3.27	2.22	1.75	0.58
Non-residential	Lighting Systems and Controls	$4.58	$0.22	406	20,432	9,015	217,946	$2,894,195	17,347	$380,790	3.06	1.71	1.37	0.58

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Program	Expenditures ($M)[8]	Administrative Expenditures ($M)[9]	Participants[10]	Energy Impacts			Other Impacts			Benefit Cost Ratios[11]			
				Total Annualized Net Energy Savings (MWh/yr)[12]	Cumulative Net Energy Savings (MWh)[13]	Lifetime Net Energy Savings (MWh)[14]	Bill Savings ($/yr)[15]	Carbon Emissions Avoided (Metric Tons CO_2/yr)[16]	O&M NEIs ($/year)[17]	Participant B/C Ratio	Utility B/C Ratio	TRC B/C Ratio	RIM B/C Ratio
Heating and Cooling Efficiency	$1.07	$0.05	30	1,647	716	24,703	$261,759	1,409	-$147,984	1.86	2.71	1.29	0.68
Window Film	$0.55	$0.03	62,925	200	125	2,003	$31,231	147	N/A	3.63	1.87	1.42	0.62
Small Manufacturing	$0.70	$0.03	0	0	0	0	$0	0	N/A	3.11	1.37	1.27	0.53
Office	$0.81	$0.03	6	118	19	828	$5,267	82	N/A	4.62	1.08	1.14	0.41
TOTAL	**$84.33**	**$3.88**	**34,168**	**216,376**	**270,911**	**3,004,550**	**$17,231,877**	**185,551**	**$4,522,406**	**N/A**	**N/A**	**N/A**	**N/A**

1.1 Summary of Energy Efficiency Programs

The key EM&V performance EE program indicators described in Table 1-1 are shown in Table 1-4 (Virginia) and Table 1-5 (North Carolina). The indicators reported by month for each program can be found in Appendices A and B. Cumulative and lifetime participation, net energy savings, and net peak demand reduction indicators are provided in Appendices C and D. The reported indicators support the Company's integrated resource planning process, lost revenue recovery calculations (if pursued), program incentives, and other calculations that rely on these metrics. The following sections highlight EE programs in Virginia and North Carolina.

1.1.1 Virginia Highlights

In 2020, there were five active residential EE programs in Virginia. The Income and Age Qualifying Home Improvement Program was launched in 2015 and extended in the latter part of 2018. The other four programs that were available for customer enrollment in 2020 were: Appliance Recycling, Efficient Products Marketplace, Home Energy Assessment, and Smart Thermostat Purchase and WeatherSmart. Of these programs, in 2020, Income and Age Qualifying Home Improvement enrolled the most participants compared to planned participation at 120%.

5 active residential programs in 2020:
- Income and Age Qualifying Home Improvement
- Appliance Recycling
- Efficient Products Marketplace
- Home Energy Assessment
- Smart Thermostat Purchase and WeatherSmart

In the non-residential sector, there were seven active EE programs in Virginia in 2020. Small Business Improvement, the longest running EE program, began in 2016. Figure 1-1 shows the distribution of net annualized energy savings across the Virginia portfolio for the 2020 program year. Continuing a trend from 2019, the Residential Energy Efficiency Products Marketplace Program contributed the most to the portfolio's savings at 49%. The DSM Phase III Lighting Systems & Controls Program contributed the next highest savings, followed by the Non-residential Prescriptive Program, at 19% and 17%, respectively. Combined, the three programs accounted for 85% of the portfolio's energy savings. Lighting measures offered in these programs were the primary contributor to their success as portfolio leaders.

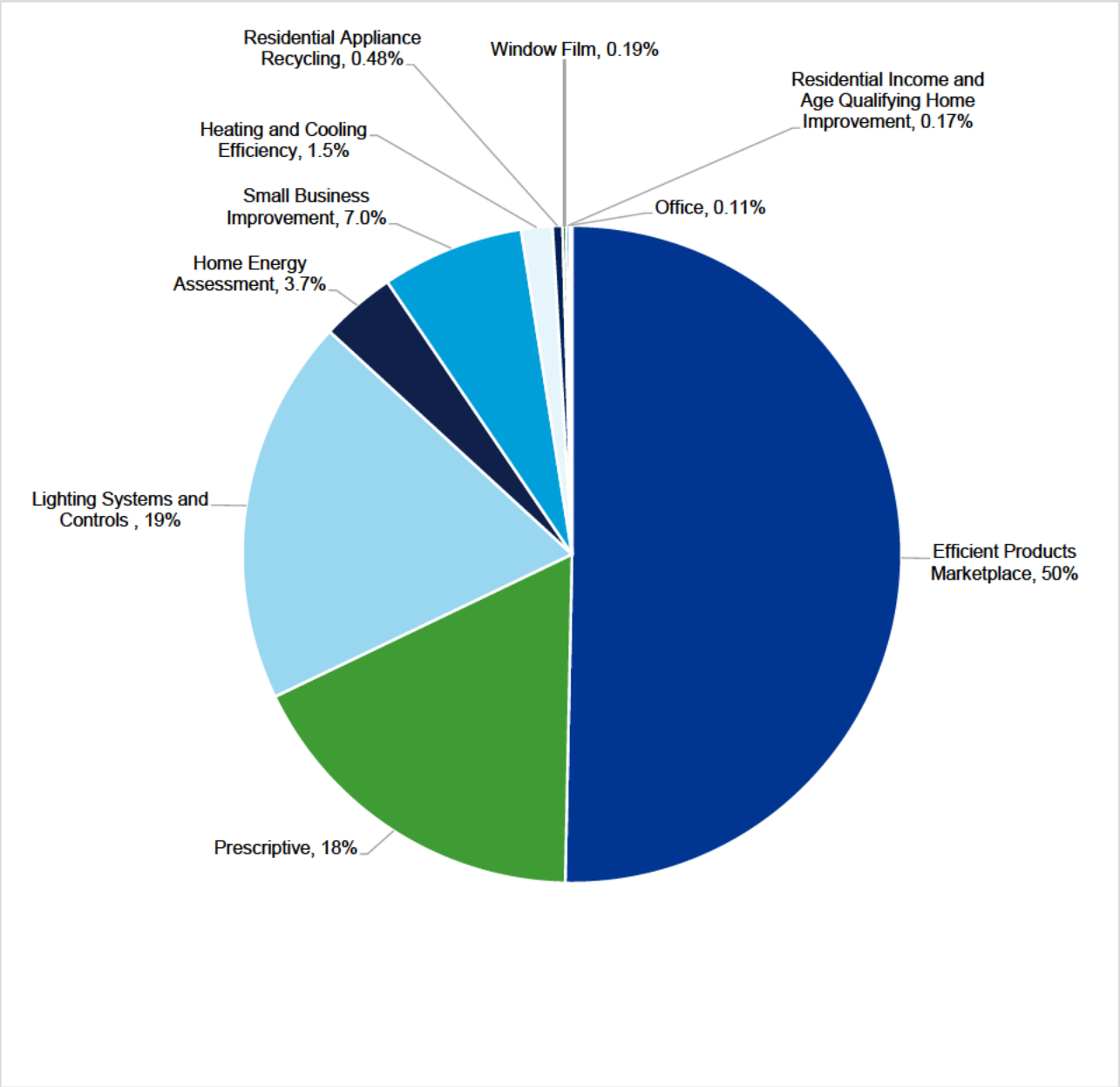
7 active residential programs in 2020:
- Small Business Improvement
- Prescriptive
- Lighting Systems & Controls
- Heating & Cooling Efficiency
- Window Film
- Small Manufacturing
- Office

The Non-residential Prescriptive Program completed its fourth year in 2020 and despite the COVID-19 pandemic:

Enrolled **135%** of planned participants

Saved **405%** of planned net annualized energy

Figure 1-1. Percentage of Installed Net Annualized Energy Savings across the Virginia Energy Efficiency Program Portfolio in 2020



Net annualized energy savings, participation, and program spending from the inception of active programs are shown Table 1-4.

Table 1-4. Annualized Program Progress for Energy Efficiency Programs (Cumulative from Program Start through December 31, 2020) in Virginia (Active Programs)

Program	Expenditures	Gross Participants	Total Annual Net Annualized Energy Savings (kWh/year)
Residential Programs			
Income and Age Qualifying Home Improvement - DSM Phase IV			
Actual	$20,626,572	23,981	7,293,088
Planned	$24,506,977	19,974	6,598,356
Percentage Toward Planned	84%	120%	111%
Appliance Recycling - DSM Phase VII[18]			
Actual	$857,995	2,551	1,274,163
Planned	$2,923,203	14,152	6,914,329
Percentage Toward Planned	29%	18%	18%
Efficient Products Marketplace - DSM Phase VII[19]			
Actual	$12,699,107	4,846,666	105,312,778
Planned	$13,555,588	5,145,153	137,011,305
Percentage Toward Planned	94%	94%	77%
Home Energy Assessment – DSM Phase VII			
Actual	$3,696,195	2,738	3,968,533
Planned	$6,583,848	39,556	9,837,161
Percentage Toward Planned	56%	7%	40%
Smart Thermostat Purchase and WeatherSmart – DSM Phase VIII			
Actual	$99,671	0	0
Planned	$0	9,071	1,593,397
Percentage Toward Planned	N/A	0%	0%
Non-residential Programs			
Lighting Systems & Controls - DSM Phase VII			
Actual	$4,582,245	406	20,432,475
Planned	$4,539,237	958	14,807,417
Percentage Toward Planned	101%	42%	138%
Heating and Cooling Efficiency - DSM Phase VII			
Actual	$1,066,165	30	1,647,007
Planned	$3,052,499	1,008	9,563,896

18 Participation is measured by units recycled.
19 Participation is measured by incentivized unit, i.e. lamp, fixture, or appliance.

Program	Expenditures	Gross Participants	Total Annual Net Annualized Energy Savings (kWh/year)
Percentage Toward Planned	35%	3%	17%
Window Film - DSM Phase VII[20]			
Actual	$549,029	62,925	200,302
Planned	$762,851	194,271	2,081,164
Percentage Toward Planned	72%	32%	10%
Small Business Improvement - DSM Phase V			
Actual	$14,143,366	2,344	47,524,120
Planned	$30,732,422	3,634	50,696,102
Percentage Toward Planned	46%	64%	94%
Prescriptive - DSM Phase VI			
Actual	$24,499,052	2,112	28,606,150
Planned	$22,617,621	1,547	39,133,993
Percentage Toward Planned	108%	137%	73%
Small Manufacturing - DSM Phase VII			
Actual	$699,018	0	0
Planned	$2,089,868	101	3,671,782
Percentage Toward Planned	33%	0%	0%
Office - DSM Phase VII			
Actual	$814,344	6	118,275
Planned	$1,973,592	121	5,496,225
Percentage Toward Planned	41%	5%	2%
Portfolio Total[21]			
Actual	$84,233,087	34,168	216,376,891
Planned	$113,337,707	90,122	287,405,327
Percentage Toward Planned	74%	38%	75%

20 Non-Residential Window Film program participation value is reported as square feet rather than as the number of participants.

21 Participants total excludes Efficient Products Marketplace, Window Film (DSM Phase III and VII) because they are measured by units incentivized, and square feet installed, respectively, rather than customers enrolled. While the Appliance Recycling program participation is measured by unites recycled, the program limits each customer to two units per household.

1.1.2 North Carolina Highlights

In 2020, there were four active residential EE programs: Income and Age Qualifying Home Improvement, Appliance Recycling, Efficient Products Marketplace, and Home Energy Assessment. As described in the Virginia highlights, the longest running program in North Carolina is the Income and Age Qualifying Home Improvement Program, part of DSM Phase IV. The other three active programs are all part of DSM Phase VII.

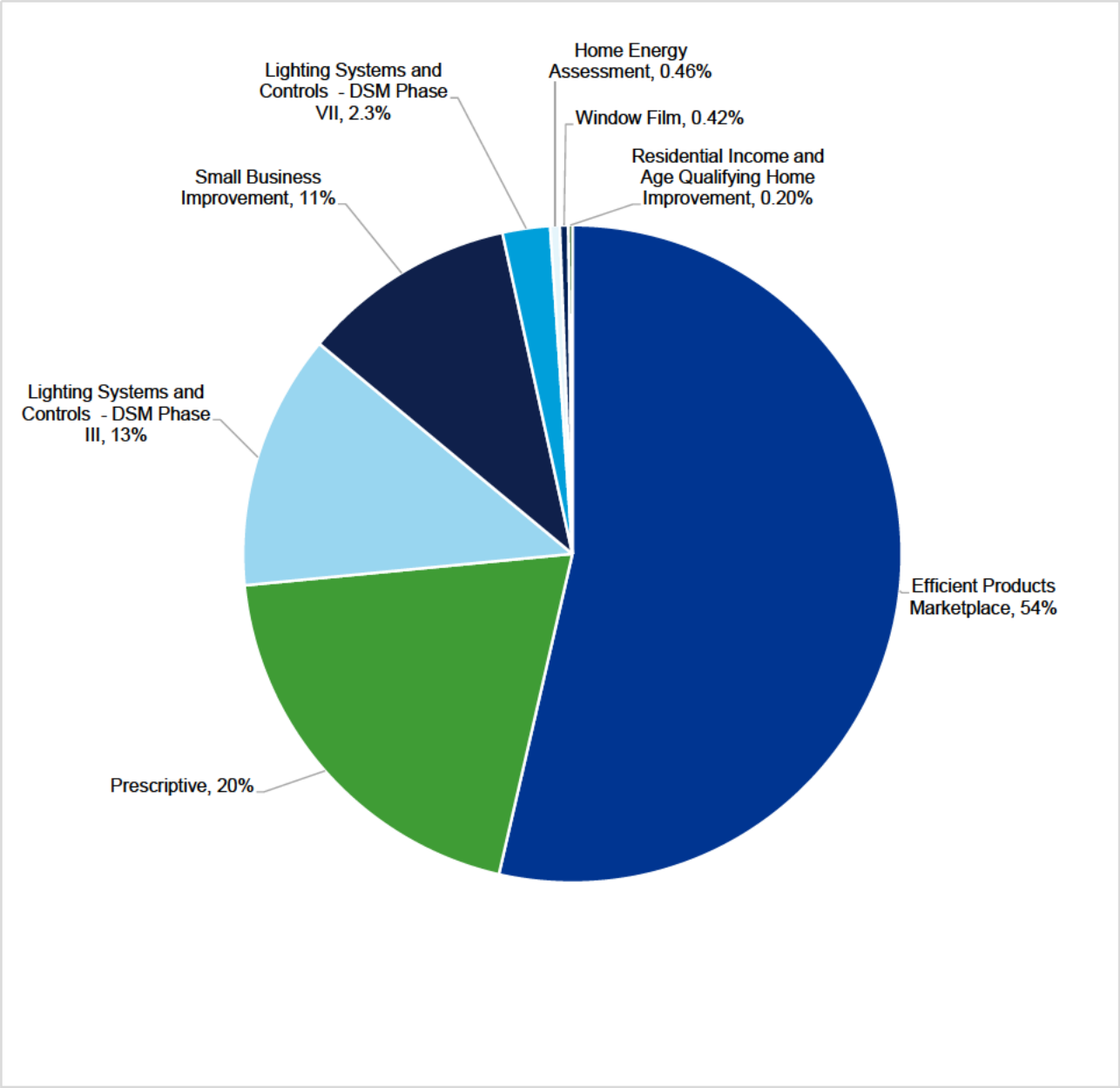
The Residential Energy Efficiency Products Marketplace Program contributed 53% of the portfolio's energy savings in North Carolina, the most of any program in 2020. The Non-residential Prescriptive Program contributed the next highest savings, followed by the DSM Phase III Lighting Systems & Controls Program, at 20% and 13%, respectively. Combined, the three programs accounted for 86% of the portfolio's energy savings.

In the non-residential sector, there were eight active programs in 2020. The DSM Phase III Lighting Systems & Controls Program closed after the first three months in 2020 but was promptly replaced by the DSM Phase VII program of the same name. Over the life of the Phase III program, Lighting Systems & Controls achieved over 10.1 million kWh of net annualized energy savings and 107% of net annualized planned energy savings. Small Business Improvement, the longest running program energy efficiency program, began in 2016.

The non-residential DSM Phase VII programs—Lighting Systems & Controls, Heating and Cooling Efficiency, Small Manufacturing, Small Office, and Window Film—all opened to enrollment in 2020 with Lighting Systems & Controls receiving the highest level of interest among the new programs.

Figure 1-2 shows the distribution of net annualized energy savings across the North Carolina portfolio for the 2020 program year. Similar to Virginia, the Residential Energy Efficiency Products Marketplace Program contributed the most to the portfolio's savings. The Marketplace Program represented 54% of the 2020 North Carolina savings. The Non-residential Prescriptive Program contributed the next highest savings, followed by the DSM Phase III Non-residential Lighting Systems & Controls Program, at 20% and 13%, respectively. Combined, the three programs accounted for 87% of the portfolio's energy savings. Also like Virginia, lighting measures offered in these programs were the primary contributor to their success as portfolio leaders.

Figure 1-2. Percentage of Installed Net Annualized Energy Savings across the North Carolina Energy Efficiency Program Portfolio in 2020)



When reviewing the North Carolina results, it is helpful to note that the North Carolina programs are operated under a cost allocation formula as a subset of the overall system-level program budget. The allocation is approximately 6% in North Carolina and 94% in Virginia. This requires that Dominion Energy manage the North Carolina programs to not exceed the cost allocation.

Net annualized energy savings, participation, and program spending from inception for active programs in North Carolina, are shown in Table 1-5.

Table 1-5. Annualized Program Progress for Energy Efficiency Programs (Cumulative from Program Start through December 31, 2020) in North Carolina (Active Programs)

Program	Expenditures	Gross Participants	Total Annual Net Energy Savings (kWh/year)
Residential Programs			
Income and Age Qualifying Home Improvement - DSM Phase IV			
Actual	$910,957	439	232,011
Planned	$1,398,487	1,075	308,689
Percentage Toward Planned	65%	41%	75%
Appliance Recycling - DSM Phase VII[18]			
Actual	$17,270	0	0
Planned	$116,132	573	402,421
Percentage Toward Planned	15%	0%	0%
Efficient Products Marketplace - DSM Phase VII[19]			
Actual	$238,201	86,493	1,796,481
Planned	$425,185	139,454	7,760,839
Percentage Toward Planned	56%	62%	23%
Home Energy Assessment – DSM Phase VII			
Actual	$96,955	17	15,530
Planned	$270,379	1,831	562,522
Percentage Toward Planned	36%	1%	3%
Non-residential Programs			
Lighting Systems & Controls - DSM Phase III			
Actual	$1,519,945	201	10,107,938
Planned	$1,698,773	464	9,467,302
Percentage Toward Planned	89%	43%	107%
Lighting Systems & Controls - DSM Phase VI			
Actual	$160,883	9	78,269
Planned	$184,522	40	855,138
Percentage Toward Planned	87%	23%	9%
Heating and Cooling Efficiency - DSM Phase VII			
Actual	$30,873	0	0
Planned	$122,049	42	545,699
Percentage Toward Planned	25%	0%	0%
Window Film - DSM Phase VII[20]			
Actual	$18,804	1,004	13,944

Program	Expenditures	Gross Participants	Total Annual Net Energy Savings (kWh/year)
Planned	$28,279	8,079	122,615
Percentage Toward Planned	66%	12%	11%
Small Business Improvement - DSM Phase V			
Actual	$560,690	87	2,086,045
Planned	$1,826,231	229	3,302,520
Percentage Toward Planned	31%	38%	63%
Prescriptive - DSM Phase VI			
Actual	$742,217	76	1,048,964
Planned	$1,206,417	87	2,253,038
Percentage Toward Planned	62%	87%	47%
Small Manufacturing - DSM Phase VII			
Actual	$18,987	0	0
Planned	$77,923	4	201,227
Percentage Toward Planned	24%	0%	0%
Office - DSM Phase VII			
Actual	$21,142	0	0
Planned	$72,457	5	310,240
Percentage Toward Planned	29%	0%	0%
Portfolio Total[22]			
Actual	$4,336,925	829	15,379,181
Planned	$7,426,834	4,350	26,092,251
Percentage Toward Planned	58%	19%	59%

[22] Participants total excludes Efficient Products Marketplace, Window Film (DSM Phase III and VII) because they are measured by units incentivized, and square feet installed, respectively, rather than customers enrolled. While the Appliance Recycling program participation is measured by unites recycled, the program limits each customer to two units per household.

1.2 Summary of Peak Shaving Programs

The following sections present key performance indicators of progress to-date for two peak shaving programs, the Residential AC Cycling (or Smart Cooling Rewards) Program offered in Virginia and North Carolina, and the Non-residential Distributed Generation (DG) Program, offered in Virginia only. DNV conducted EM&V impact evaluations for both programs (provided in Appendices EE-1 and FF-1). The key metrics for evaluating performance indicators are:

- Expenditures
- Net participation
- Net peak shaving potential in kilowatts (kW)

Key EM&V performance indicators for peak shaving programs are shown in Table 1-6.

Table 1-6. Portfolio Spending and Net Peak Shaving Potential by Program (Cumulative through December 31, 2020)

Program	Expenditures	Number of Participants[23]	Peak Shaving Potential (kW)
Residential AC Cycling—Virginia			
Actual	$82,568,545	67,917	43,051
Planned	$112,019,680	80,765	50,817
Percentage Toward Planned	74%	84%	85%
Residential AC Cycling—North Carolina			
Actual	$3,389,391	2,786	1,769
Planned	$5,694,898	4,235	2,664
Percentage Toward Planned	60%	66%	66%
Non-residential Distributed Generation—Virginia			
Actual	$5,676,993	6	6,498
Planned	$12,063,897	9	9,025
Percentage Toward Planned	47%	68%	82%
Total			
Actual	91,634,929	—	51,318
Planned	$129,778,475	—	62,506
Percentage Toward Planned	60%	—	78%

Eighty-six percent of peak shaving potential was expected to be provided by the Residential AC Cycling program in Virginia, in 2020, and that planned goal was achieved.

1.3 Study Approach

EM&V is an important part of a program's cycle because its findings can be utilized during the program planning and design stage and inform continuous improvement activities as the program evolves. This is illustrated in Figure 1-3.

[23] Total participation is not reported because AC Cycling participation is defined by the number of participating accounts and participation for Distributed Generation is defined be the number of enrolled megawatts.

Figure 1-3. Illustration of a Program Cycle

Typically, EM&V reports review and report on available program data that has been collected and validated; collect and report data from secondary or primary research activities; and offer recommendations for improvements to specific program designs where applicable. EM&V direct-measurement data can also be, and has been in previous years, integrated into Dominion Energy's long-term system planning process through the incorporation of more current data into its future Integrated Resource Plan (IRP) modeling when appropriate.

- Appendices A and B show screenshots of the program performance indicator table results for each of Dominion Energy's Virginia and North Carolina DSM active and closed programs from program inception to the end of this reporting year. Appendix A shows the Virginia performance indicator tables and Appendix B shows the North Carolina tables. Abbreviated versions of these tables for the current year are also included in the main body of this report, in each program's report section. They show the year-end program spending, participation, gross and net annualized energy savings and demand reductions compared against planning goals for the year.
- Appendices C and D show screenshots of the summary tables used for claiming lost revenue, program performance incentives, IRP modeling, lifetime savings accounting, and other purposes used in both states. Appendix C shows gross energy savings and demand reductions. Appendix D shows net energy savings and demand reductions.

2 INTRODUCTION

This report presents performance indicators of Dominion Energy's DSM programs in Virginia and North Carolina.

In Virginia, it is in compliance with the SCC's Order requiring detailed EM&V reports following DSM program implementation, which states:

> *Furthermore, we conclude that the DSM Programs approved herein are in the public interest subject to the following requirements … Third, the Company shall file detailed* [Measurement & Verification] *M&V reports in this proceeding, with service on Staff and all parties to this case, every six months beginning October 1, 2010.*
>
> *Finally, Virginia Power shall implement its commitment, as discussed during the hearing, to coordinate with the participants in this case and other interested parties in evaluating the M&V results and in developing further DSM Program proposals. For example, if the M&V data establishes that a program is not performing as expected, the Company and the participants to this case should address modifications to, or removal of, such program. These M&V reports, among other things, will provide significant information for purposes of subsequent evaluations as to whether certain programs warrant continuation thereof. Accordingly, we find that the M&V reports should be filed in this DSM proceeding.*[24]

In its April 30, 2012 Order, the SCC approved the Company's request to issue annual EM&V Reports on April 1st, focusing on DSM program impacts from the previous calendar year.[25] The SCC granted a motion in Case No. PUR-2017-00129 to extend the filing date for the report due in 2018 and all future EM&V reports to May 1st of each year.[26] On April 30, 2020, the SCC granted a motion in Case No. PUR-2018-00168 to further extend the filing date for the report due in 2020 and all future EM&V reports to May 15 of each year.[27]

The SCC issued its order regarding new rules governing the EM&V of the effects of utility-sponsored DSM programs (Case No. PUR-2017-00047) on November 9, 2017. The new rules apply prospectively to new or renewing DSM programs starting from the order date. The programs that are reported in this document and are affected by this rule include:

- Residential Income and Age Qualifying Home Improvement Program, extended in 2018[28], and
- DSM Phase VII programs[29]

On September 1, 2010, Dominion Energy filed an application for the NCUC's approval of six DSM programs. On February 22, 2011, NCUC approved five DSM Phase I programs, the same five that were approved in Virginia. As a condition of approval, EM&V reports must be filed with the NCUC, which are to include the EM&V reports filed in Virginia, as well as information specific to the Company's North Carolina customers. The NCUC subsequently directed Dominion Energy to

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[24] *Virginia Electric and Power Company Petition for approval to implement new DSM programs and for approval of two rate adjustment clauses pursuant to 56-585.1 A 5 of the Code of Virginia*, Case No. PUE-2009-00081, Order Approving Demand Side Management Programs at 12 (March 24, 2010).

[25] *Application of Virginia Electric and Power Company For approval to implement new demand-side management programs and for approval of two updated rate adjustment clauses pursuant to § 56-585.1 A 5 of the Code of Virginia*, Case No. PUE-2011-00093, Order at 14 (April 30, 2012).

[26] *Petition of Virginia Electric and Power Company For approval to extend an existing demand-side management program and for approval of two updated rate adjustment clauses pursuant to 56-585.1 A 5 of the Code of Virginia*, Case No. PUR-2017-00129, Order Granting Motion (March 8, 2018).

[27] *Petition of Virginia Electric and Power Company For approval to implement demand-side management programs and for approval of two updated rate adjustment clauses pursuant to 56-585.1 A 5 of the Code of Virginia*, Case No. PUR-2018-00168, Order Granting Motion (April 30, 2020).

[28] *Virginia Electric and Power Company Petition for approval to extend an existing demand-side management program and for approval of two updated rate adjustment clauses pursuant to § 56-585.1 A 5 of the Code of Virginia*, Case No. PUR-2017-00129, Order Granting Motion (May 10, 2018).

[29] *Virginia Electric and Power Company Petition for approval to implement demand-side management programs and for approval of two updated rate adjustment clauses pursuant to § 56-585.1 A 5 of the Code of Virginia*, Case No. PUR-2018-00168, Order Granting Motion (May 2, 2019).

revise its annual EM&V reporting cycle to April 1 each year, which was then extended to May 1 consistent with the Virginia deadline.[30]

2.1 Programs Covered in This Report

This report divides the DSM programs into four categories:

- Residential EE programs with active participation and/or active spending
- Non-residential EE programs with active participation and/or active spending
- Peak shaving programs with active participation and/or active spending
- Closed programs with persisting savings

Sections 2.1.1 through 2.1.4 give brief descriptions of all programs covered in this report. Table 2-1 shows the specific programs included in this report and the SCC's or NCUC's Order Date for approval, suspension, reinstatement, and closure of each of these programs. It also shows updated key program values as a result of EM&V efforts conducted in 2019 and the average annualized kWh/year per participant before and after the update. The change in the average annualized kWh/year per participant values are a function of the following:

- Updates to adjustment factors or values based on EM&V activities
- Updates to deemed savings calculation methodology based on regular Standard Tracking and Engineering Protocol Manual (STEP Manual) updates
- Variation in participant characteristics as inputs to the deemed savings calculations from year to year

Note that changes in deemed savings approaches that also drive changes in average participant values are not detailed here, but rather in Appendix F, STEP Manual.

[30] *In the Matter of Application of Virginia Electric and Power Company d/b/a Dominion North Carolina Power, for Approval of Demand Side Management and Energy Efficiency Cost Recovery Rider Pursuant to G.S. 62-133.9 and Commission Rule R8-69,* Order Approving DSM/EE Rider and Requiring Customer Notice at 13, Docket No. E-22, Sub 473 (December 13, 2011).

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Table 2-1. Categories and List of Active 2020 DSM Programs in Report

DSM Phase	Program	State	Date of Order	EM&V Update Description[31]	Updated Factor/ Value Source	Effec-tive Date	Previous Factor/ Value	Updated Factor/ Value	Updated Participant kWh/year
Energy Efficiency—Residential									
IV	Residential Income and Age Qualifying Home Improvement	VA	April 24, 2015 Extension: May 10, 2018	None					
		NC	October 6, 2015 Extension: June 26, 2018	None					
VII	Residential Appliance Recycling	VA	May 2, 2019	None					
		NC	November 13, 2019						
	Residential Efficient Products Marketplace	VA	May 2, 2019	Updated realization rate and net-to-gross rates based on program impact evaluation, described in Appendix J.1	Realization rate	2020	Default = 100%	See Table 3-2	22 kWh/year-participant
					Net-to-gross rate	2020	Default = 70%	See Table 3-4	22 kWh/year-participant
		NC	November 13, 2019		Realization rate	2020	Default = 100%	See Table 3-2	21 kWh/year-participant
					Net-to-gross rate	2020	Default = 70%	See Table 3-4	21 kWh/year-participant
	Residential Home Energy Assessment	VA	May 2, 2019	None					
		NC	November 13, 2019						
VIII	Residential Smart Thermostat Purchase and WeatherSmart	VA	May 2, 2019 Reapproved: July 30, 2020	None					
Energy Efficiency—Non-residential									
III	Non-residential Lighting Systems & Controls	VA	April 29, 2014	None					
		NC	October 27, 2014						
VII	Non-residential Lighting Systems & Controls	VA	May 2, 2019	None					
		NC	November 13, 2019	None					
V	Non-residential Small Business Improvement	VA	April 19, 2016	None					
		NC	October 26, 2016	None					

[31] Changes to participant kWh/year are also partially driven by updates to the deemed annualized savings methodology as a result of regular updates made to the STEP Manual. To review those specific updates, refer to Appendix F.

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DSM Phase	Program	State	Date of Order	EM&V Update Description[31]	Updated Factor/ Value Source	Effec-tive Date	Previous Factor/ Value	Updated Factor/ Value	Updated Participant kWh/year
VI	Non-residential Prescriptive	VA	June 1, 2017	Updated realization rate and net-to-gross rates based on program impact evaluation, described in Appendix X.1	Realization rate	2020	Default = 100%	See Table 3-2	13,545 kWh/year-participant
					Net-to-gross rate	2020	Default = 85%	See Table 3-4	13,545 kWh/year-participant
		NC	October 16, 2017		Realization rate	2020	Default = 100%	See Table 3-2	13,802 kWh/year-participant
					Net-to-gross rate	2020	Default = 85%	See Table 3-4	13,802 kWh/year-participant
VII	Non-residential Heating & Cooling Efficiency	VA	May 2, 2019	None					
		NC	November 13, 2019	None					
	Non-residential Office	VA	May 2, 2019	None					
		NC	November 13, 2019	None					
	Non-residential Small Manufacturing	VA	May 2, 2019	None					
		NC	November 13, 2019	None					
	Non-residential Window Film	VA	May 2, 2019	None					
		NC	November 13, 2019	None					
Peak Shaving Programs									
I	Residential AC Cycling	VA	March 24, 2010	Update based on Operability Study	Operability rate	2017		N/A	0.63 kW/ participant
			April 19, 2016	Update based on tracking data	Opt-out rate	2017		0.03%	
				Update based on tracking data	Removal/ deactivation rate	2017		-0.92%	
		NC	February 22, 2011	Update based on Operability Study	Operability rate	2017		N/A	
				Update based on tracking data	Opt-out rate	2017		0.03%	
				Update based on tracking data	Removal/ deactivation rate	2017		0.33%	

DSM Phase	Program	State	Date of Order	EM&V Update Description[31]	Updated Factor/ Value Source	Effec-tive Date	Previous Factor/ Value	Updated Factor/ Value	Updated Participant kWh/year
II	Non-residential Distributed Generation	VA	April 30, 2012 Extension: June 1, 2017	None					

2.1.1 Energy Efficiency Programs – Residential

In 2020, Dominion Energy offered four residential EE programs in both Virginia and North Carolina.

- Residential Income and Age Qualifying Home Improvement: This program is the updated version of the Residential Low-Income Program from DSM Phase I, and an extension of the program approved in DSM Phase IV. It provides low-income and age qualifying homeowners with a free energy check-up that identifies and installs energy conservation measures within their residences to help save energy.
- Residential Appliance Recycling: This program provides an incentive to residential customers for recycling old, inefficient refrigerators and freezers.
- Residential Efficient Products Marketplace: This program provides rebates for the purchase and installation of ENERGY STAR® qualified LED lamps, LED fixtures, and appliances.
- Residential Home Energy Assessment: This program provides owners and occupants of single-family homes and townhomes with a home energy audit. This includes a walk-through audit of customer homes, direct install measures, and recommendations for additional home energy improvements.

One additional EE program was offered in Virginia.

- Residential Smart Thermostat Purchase and WeatherSmart: This program provides one-time rebates for the purchase and installation of ENERGY STAR® certified smart thermostats and an annual rebate for allowing remote optimization of their new or existing smart thermostat.

2.1.2 Energy Efficiency Programs – Non-residential

The DSM Phase VII programs, Small Business Improvement, and the Non-residential Prescriptive Programs are offered in both Virginia and North Carolina. The DSM Phase III Non-residential Lighting Systems & Controls Program was open for the first three months of 2020 in North Carolina only, and was subsequently replaced by the DSM Phase VII version of the same name.

- Non-residential Lighting Systems & Controls (DSM Phase III): This program provides non-residential customers with an incentive to retrofit their existing inefficient lighting system with a more cost-effective, energy efficient lighting system.
- Non-residential Lighting Systems & Controls (DSM Phase VII): This program provides non-residential customers with an incentive to retrofit their existing inefficient lighting system with a more cost-effective, energy efficient lighting system.
- Non-residential Heating and Cooling Efficiency: This program provides incentives to non-residential customers to upgrade existing heating or cooling equipment or install new energy efficient technologies.
- Non-residential Window Film: This program provides incentives to non-residential customers to install window film to reduce energy consumption and demand during the cooling season.
- Non-residential Small Business Improvement: This program provides small business customers with on-site energy assessments of their facilities and incentives for direct install lighting, duct testing and sealing, HVAC upgrades, and prescriptive re-commissioning through participating contractors.
- Non-residential Prescriptive: This program provides incentives to qualifying non-residential customers for cooking, refrigeration, and HVAC measures installed through participating contractors.
- Non-residential Small Manufacturing: This program provides qualifying non-residential customers with incentives for the installation of energy efficiency improvements, consisting of compressed air systems measures for small manufacturing facilities.
- Non-residential Office: This program provides qualifying non-residential customers with incentives for the installation of energy efficiency improvements, consisting of recommissioning measures at smaller office facilities.

2.1.3 Peak Shaving Programs

Dominion Energy operates two peak shaving programs—the Residential AC Cycling Program and the Non-residential DG Program. The Residential AC Cycling program is offered in Virginia and North Carolina. The Non-residential Distributed Generation (DG) Program is offered only in Virginia.

1. Residential AC Cycling: Participants receive an on-bill credit in the December billing cycle in exchange for allowing the Company to reduce the operating cycle of their central air conditioning and heat pumps between June 1–September 30 (excluding weekends and holidays), or for emergency situations that may occur outside of this window when the Company must dispatch this resource. When cycling events are initiated, a paging signal is broadcast by the Company and received by load curtailment switches installed on the central air conditioners and heat pumps of participating customers and reduces the duty cycle of the air conditioning units between 30%–50% while the event is in progress.
2. Non-residential Distributed Generation (Virginia): This program provides qualifying non-residential customers with an incentive to curtail load by operating on-demand backup generation for a limited number of hours per year throughout the year, to include winter periods. Eligible customers are those with at least 200 kW of demand and participant sites are those with an installed generator.

2.1.4 Closed Programs

The following is a list of programs previously offered in Virginia and North Carolina. They are no longer offered to new participants in either state as of January 1, 2020, however the savings achieved from some measures installed in these programs continue to persist:

2.1.4.1 Residential

1. Residential Lighting (Virginia and NC. DSM Phase I): During this program's operation, Dominion Energy partnered with manufacturers and retailers to give residential participants an instant discount for high-efficiency compact fluorescent lamp (CFL) lighting purchases.
2. Residential Low-Income (Virginia and NC. DSM Phase I): This program, marketed as the Income Qualifying Home Improvement Program, provided low-income homeowners and renters with a free energy audit that identified and installed energy conservation measures within their residences to help save electricity. This program has been replaced with the Residential Income and Age Qualifying Home Improvement Program in both states.
3. Residential Heat Pump Upgrade (Virginia and NC. DSM Phase II): This program provided incentives for residential heat pump (e.g., air and geothermal) upgrades to residential homeowners who were interested in installing a new, higher efficiency, ENERGY STAR®-rated heat pump unit.
4. Residential Heat Pump Tune-Up (Virginia and NC. DSM Phase II): This program provided qualifying residential homeowners with an incentive to have a contractor tune up their existing heat pumps once every five years in order to achieve maximum operating performance.
5. Residential Duct Sealing (Virginia and NC. DSM Phase II): This program promoted the repair of poorly performing duct- and air-distribution systems in residential homes. Qualifying customers with a heat pump received an incentive for having a contractor seal ducts in their homes using program-approved methods and eligibility paths.
6. Residential Home Energy Check-Up (Virginia and NC. DSM Phase II): This program provided owners and occupants of single-family homes and townhomes an easy and low-cost home energy walk-through audit, which included the direct installation of some energy saving measures and recommendations for additional home energy improvements.
7. Residential Appliance Recycling (Virginia only. DSM Phase IV): This program provided qualifying residential customers in the Company's Virginia service territory with an incentive to recycle their existing and operating refrigerators and freezers.

8. Residential Retail LED Lighting (North Carolina): This program provides residential customers in the Company's North Carolina service territory with an instant discount for qualifying light-emitting diode (LED) light bulb purchases from a participating retailer. It closed to new participants in 2018, however 2019 still had some program spending due to program close out and reporting activities.

2.1.4.2 Non-residential

1. Commercial HVAC Upgrade (Virginia and NC. DSM Phase I): This program provided non-residential customers with an incentive to upgrade inefficient HVAC units or to install new high-efficiency HVAC units and motor controls. High-efficiency HVAC installations helped ensure customers that their heating and cooling systems were running at maximum efficiency while minimizing energy consumption.
2. Commercial Lighting (Virginia and NC. DSM Phase I): This program provided non-residential customers with an incentive to retrofit their existing inefficient lighting systems with more cost-effective, energy-efficient lighting equipment or to install new high-efficiency lighting equipment.
3. Non-residential Duct Testing and Sealing (Virginia and NC. DSM Phase II): This program promotes testing and general repair of poorly performing duct and air distribution systems in non-residential facilities. The program provides incentives to qualifying customers who have a contractor seal ducts in existing buildings using program-approved methods.
4. Non-residential Energy Audit (Virginia and NC. DSM Phase II): This program provides qualifying customers with an on-site energy audit by a contractor in Dominion Energy's contractor network in non-residential facilities. Customers receive a rebate once they provide documentation that recommended EE improvements have been made.
5. Non-residential Heating and Cooling Efficiency (Virginia and NC. DSM Phase III): This program provided non-residential customers with an incentive to install high-efficiency HVAC units, economizers, and/or motor controls. High-efficiency HVAC installations helped ensure customers that their heating and cooling systems were running at maximum efficiency while minimizing energy consumption.
6. Non-residential Window Film (Virginia and NC. DSM Phase III): This program provided non-residential customers with an incentive to install solar reduction window film to lower their cooling bills and improve occupant comfort.

2.2 Report Structure

Section 3 of this report provides an overview of the methodology used in 2020 and the planned research activities for 2021. Sections 4 through 7 discuss the EM&V results of the different programs. In particular, Section 4 reviews the residential EE programs, Section 5 the non-residential EE programs, Section 6 the peak shaving programs, and Section 7 the closed programs where savings continue to persist through the program weighted measure lives. For each active program, DNV reports on the following:

1. Program description summary
2. Initial program-design planning assumptions
3. Methods used for the current reporting period
4. An assessment of program progress compared to plan, including:
    a) Cumulative indicators over time compared with planned indicators for program costs, participation, and resource savings (kWh/year and/or kW)
    b) Average indicators of program costs, participation, and resource savings

3 METHODOLOGIES

3.1 Calculating the Value of Resources Saved

In the life of a Dominion Energy DSM program, there are three stages of savings estimates that the Company provides the Commission:

1. Planning. Program design forecasted savings estimates that are derived from program designers and/or implementers. These are a generalized savings estimate on a per-participant basis, forecasted and submitted to the Commission in the initial program approval filing.
2. Tracking. Participant-specific deemed savings currently calculated by DNV, using deemed savings calculations documented in the STEP Manual, for actual program participants using a combination of customer-specific inputs (from customer applications collected either directly from customers or installation vendor while onsite) and DNV assigned deemed factors. The STEP Manual is independently produced by DNV and updated annually. These savings have been referred to as “deemed savings” estimates.
3. Evaluated. Net savings calculated by DNV based on primary impact evaluation data and analysis.

All programs and measures begin with a stage 1 (planning) estimate. For most measures, a tracking value or calculation is then developed and used for ongoing tracking and annual reporting if there is no primary evaluation conducted (stage 2). For measures with stage 3 evaluation conducted, the evaluated savings are reported for that year, and the evaluation results are used to update the tracking calculations going forward. For some measures (e.g. Demand Response) stage 3 evaluation is conducted from the outset and are the only reported savings provided.

In this process, DNV has produced the savings for stages 2 and 3 throughout the life of each of the Company’s DSM portfolios to date and is under contract to continue to do so through 2024 via the DSM Phase VIII programs. The tracked (stage 2) savings are not based on primary evaluation analysis, but are calculated using a combination of the customer-specific information and deemed factors listed below:

- The utility’s customer-specific information collected from customer application data where available and reliable (e.g., equipment size, equipment type), collected either from the customer or installation vendor
- Virginia-specific information (e.g., Virginia building code requirements)
- Information from other sources that are adjusted to be both utility- and Virginia-specific, where applicable (e.g., for weather specific to the Company’s territory)
- Adjustment factors from prior evaluations.

Savings Estimation for DR programs

The evaluation approach differs slightly depending on the type of program (EE or peak shaving/DR). For DR programs, DNV has historically and will continue to analyze customer-specific load data for an affected group of participant premises in comparison with a control group (non-participants from the Company’s customer population), on an annual basis. These estimates are fully customer- and utility-specific and do not rely on any deemed factors from outside sources.

Generally, this approach for evaluating EE and DR programs is consistent with industry best practices for EM&V of these types of programs.

Savings Estimation for EE programs

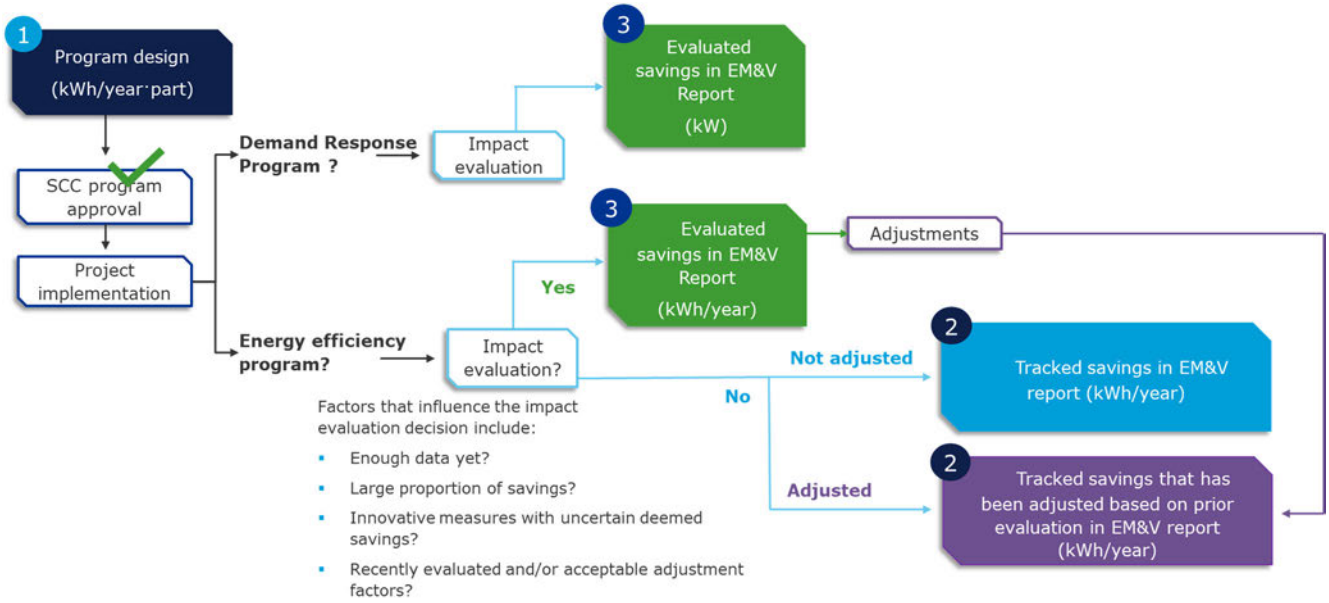
The three broadly recognized categories of EM&V methods are:

- Deemed savings
- Measurement and verification
- Consumption data analysis with a comparison group.

DNV uses deemed savings methods for tracked savings (Stage 2) to determine and report deemed participant-specific savings when a program is initially launching. This process ensures that program progress can be reported on an annual basis for the Commission's use, even before there is sufficient program participation to conduct an impact evaluation that will yield meaningful results.

Then, when there is enough participation in the program to reliably produce statistically valid results, or roughly two to three years after program launch, DNV will conduct primary impact evaluations of the programs that will yield the most value from the evaluation information. The impact evaluation will include primary data collection and analysis (or either direct EM&V and/or a comparison group impact analysis). This process is illustrated in Figure 3-1, if a program will go through a primary data collection evaluation (stage 3), those evaluations will collect customer-specific data that will be used in combination with other variables to estimate savings.

Figure 3-1. Overall Evaluation Process



For measures with particularly uncertain deemed savings estimates, DNV may conduct impact evaluations (i.e., primary data collection and analysis) after the first year and annually, assuming the program budget is sufficient to warrant that level of evaluation.

We use a value of information framework to decide which programs will receive primary impact evaluation (stage 3 savings estimates) in a given year. Not all programs will be evaluated through a primary impact evaluation, as it will not be cost-effective to do so. For the DSM Phase I through VIII programs, these impact evaluation approaches are described in greater detail in their program EM&V plans listed APPENDIX H through APPENDIX HH.

Programs selected for evaluation in each year will be prioritized based on several factors, including, but not limited to, the uncertainty or variability of realized savings, its contribution to portfolio savings, program costs relative to all programs, the elapsed time since the last evaluation, or to address targeted research questions.

If a program will go through a primary data collection evaluation (stage 3), those evaluations will collect customer-specific data that will be used in combination with other variables to estimate savings. A high-level summary of the primary data collection evaluation methods that will be used for each program is listed in Table 3-1.

Currently, tracking savings estimates (stage 2), and primary impact evaluations (stage 3) are guided by these objectives:

- Follow the "value of information" framework to identify the programs that should receive primary impact evaluations (e.g., programs with the largest proportion of the portfolio's savings, programs with savings estimates with the greatest uncertainty, programs with potential for future growth)
- Optimize the cost of measurement
- Produce savings that are not overly conservative or high, to achieve the Virginia State Corporation Commission's guidance to determine actual savings estimates
- Keep the process as simple as it needs to be, and not overcomplicate the calculations and issues in an attempt to gain a false sense of accuracy
- Provide transparency in our deemed savings methodology, or the STEP Manual, and our evaluations
- Specify the impact evaluation approaches that will be taken in our EM&V plans, before program launch, to allow for flexibility in the plan as the program may not be adopted by the market the way it was originally planned

In addition to the impact evaluation method, Table 3-1 indicates whether a net-to-gross survey is required. While other methods of determining a net-to-gross ratio are available, our proposed net-to-gross method for the current programs is based on surveys of customers, vendors, distributors, or manufacturers, as applicable. For some programs, a net-to-gross adjustment is not needed because the impact evaluation method provides net savings directly. This is the case, for example, for the load analysis conducted for the Residential AC Cycling Program, as well as for the energy consumption analysis for the Residential Customer Engagement Program.

Table 3-1 Primary Impact Evaluation Methods to Measure Net Energy and Demands Savings

DSM Phase	Program	Impact Evaluation Method	Net-to-Gross Surveys Required?	Preference Order for Collection of EM&V Data (1, 2, 3)
I	Residential AC Cycling Program	Whole premise hourly load analysis	No	1 – customer specific
II	Non-residential Distributed Generation	Whole premise hourly load analysis	No	1 – customer specific
III	Non-residential Lighting Systems and Controls Program	Measurement and verification (metering)	Yes	1 – customer specific
IV	Residential Income & Age Qualifying Home Improvement Program	Whole premise monthly consumption analysis	Yes	1 – customer specific
V	Non-residential Small Business Improvement Program	Measurement and verification (metering)	Yes	1 – customer specific
VI	Non-residential Prescriptive Program	Measurement and verification (metering)	Yes	1 – customer specific

DSM Phase	Program	Impact Evaluation Method	Net-to-Gross Surveys Required?	Preference Order for Collection of EM&V Data (1, 2, 3)
VII	Non-residential Heating and Cooling Efficiency Program	Measurement and verification (metering)	Yes	1 – customer specific
	Non-residential Lighting Systems & Controls Program	Measurement and verification (metering)	Yes	1 – customer specific
	Non-residential Office Program	Measurement and verification (metering)	Yes	1 – customer specific
	Non-residential Small Manufacturing Program	Measurement and verification (metering)	Yes	1 – customer specific
	Non-residential Window Film Program Measures	Measure verification with deemed calculation	Yes	1 – customer specific
	Residential Appliance Recycling Program	Measurement and verification (metering)	Yes	1 – customer specific
	Residential Efficient Products Marketplace Program	Measure verification with deemed calculation	Yes	1 – customer specific
	Residential Home Energy Assessment Program	Whole premise monthly consumption analysis	Yes	1 – customer specific
VIII	Non-residential Heating & Cooling HB 2789 Program	Whole premise monthly consumption analysis	Yes	1 – customer specific
	Non-residential Midstream Energy Efficient Products	Measurement and verification (metering)	Yes	1 – customer specific
	Non-residential Multifamily Program	Whole premise monthly consumption analysis	Yes	1 – customer specific
	Non-residential New Construction Program	Measurement and verification (metering)	Yes	1 – customer specific
	Non-residential Small Business Improvement Enhanced Program	Measurement and verification (metering)	Yes	1 – customer specific
	Residential Customer Engagement Program	Whole premise monthly consumption analysis	No	1 – customer specific
	Residential Electric Vehicle Demand Response/Residential Electric Vehicle Peak Shaving Program	Whole premise hourly load analysis	No	1 – customer specific
	Residential Electric Vehicle Energy Efficiency Program	Whole premise monthly consumption analysis	Yes	1 – customer specific
	Residential Energy Efficiency Kits Program	Measure verification with deemed calculation	Yes	1 – customer specific
	Residential HB 2789 HVAC Component Program	Whole premise monthly consumption analysis	Yes	1 – customer specific

DSM Phase	Program	Impact Evaluation Method	Net-to-Gross Surveys Required?	Preference Order for Collection of EM&V Data (1, 2, 3)
	Residential Home Retrofit Program	Whole premise monthly consumption analysis	Yes	1 – customer specific
	Residential Manufactured Housing Program	Whole premise monthly consumption analysis	Yes	1 – customer specific
	Residential Multifamily Program	Whole premise monthly consumption analysis	Yes	1 – customer specific
	Residential New Construction Program	Measurement and verification (metering)	Yes	1 – customer specific
	Residential Smart Thermostat Purchase and WeatherSmart Program	Whole premise monthly consumption analysis	Yes	1 – customer specific
	Residential Smart Thermostat Demand Reduction Program	Whole premise hourly load analysis	No	1 – customer specific

The EM&V Plans for each program (APPENDIX H - APPENDIX HH) are organized in the following manner:

- Program Summary – high-level program description
- Measures – high-level description of proposed program measures
- Evaluation, Measurement, and Verification Overview – high-level description of EM&V approach
  - Deemed Savings Approach – planned deemed savings estimation approach, upon program approval
  - Evaluated Savings Approach or Verified Savings Approach – planned evaluation approach based on program as filed, upon program approval, and should an evaluation of the program and/or measures in the program be appropriate, based on the portfolio assessment
- Lost Revenue Methodology – steps for calculating lost revenue, should the Company pursue lost revenue recovery in Virginia and/or North Carolina
- Timeline and Scope of Work – description of the EM&V schedule and scope of work, upon program approval
- Document Revision History

The evaluation methods described in the EM&V plans meet the standards of Section A of 20 VAC 5-318-40. All evaluation methodologies align with Options A, B, C, or D from the International Performance Measurement and Verification Protocol (January 2012 or later) (IPMVP) and the guidance developed through the U.S. Department of Energy's Uniform Methods Project for Determining Energy Efficiency Program Savings (UMP).

The summary EM&V plans presented here reflect DNV's current understanding of the Company's proposed program designs. The plans will be revised if merited by changes in approved measures, funding levels, or implementation strategies following consideration and/or final approval by the Commission.

3.1.1 Gross Savings

Gross savings are calculated using deemed calculations documented in the Standard Tracking and Engineering Protocol Manual ("STEP Manual", APPENDIX F), also known as the Company's technical reference manual ("TRM"). It has been

included as an appendix to the annual EM&V report since 2010. The STEP Manual is a collection of deemed engineering equations used to calculate kilowatt and kilowatt-hour savings for each of the measures and program that the Company implements in Virginia and North Carolina for a given program year. It is updated annually.

In the absence of a state-wide TRM in Virginia and North Carolina, DNV derives deemed savings equations from the Mid-Atlantic TRM. The Mid-Atlantic TRM is used in states that border Virginia and elsewhere in the mid-Atlantic region of the United States (e.g., Maryland, District of Columbia, Delaware). For program measures that are not available in the Mid-Atlantic TRM, DNV assesses recent TRMs in the region, and nationally, if necessary, to identify the most appropriate source or sources for deriving the deemed savings equations and/or inputs.

Each STEP Manual contains the sources for every deemed savings equation and input, including titles, version numbers, publication dates, and page numbers of all source documents, as appropriate.

As much as practicable, DNV currently produces kilowatt and kilowatt-hour savings estimates using utility-specific program participant data as inputs to the equations described above.

To gather utility-specific program data, DNV provides the Company with a list of the EM&V data variables and other data requirements that are necessary for estimating deemed savings, and for documenting the measure baseline. DNV develops this list, keeping in mind when it may be impractical to collect specific data variables (e.g., equipment name plate may be sun-bleached and illegible). The Company's program managers, analysts, and information technology ("IT") staff ensures that the program data is generated, and the Company's IT staff defines the information management system needed to ensure delivery of the data to DNV monthly.

When utility-specific data are unavailable or impracticable to collect, DNV uses proxy utility-specific program participant data to assign assumed inputs derived from Virginia-specific data or data from non-Virginia jurisdictions, and with appropriate citation to the source documents.

DNV applies the combination of program-generated utility-specific data, and other default inputs to the deemed equations documented in the STEP Manual to calculate the kilowatt and kilowatt-hour savings for each implemented measure and aggregates it at the measure level, where appropriate, and reports it in the annual EM&V report for each program, without adjustment for free-ridership values. DNV reports the savings after adjustments for free-ridership based on either initial program design assumed free-ridership value or evaluated free-ridership value determined through EM&V. We will continue to report savings in this manner.

The protocols are limited to calculating per-unit annual energy savings and demand reductions at the measure level. The measure-level savings are aggregated up to the program level and reported through this document. The protocols do not include the calculation for the value of resources saved. To calculate the value of the resource savings for reporting and other purposes, the energy savings reported in this document can then be increased by the amount of the transmission and distribution (T&D) losses to reflect the energy savings at the system level. Energy savings at the system level can be multiplied by the appropriate avoided costs to calculate the value of the benefits.

System savings = Savings at measure x T&D loss factor

Value of resources saved = System savings x System avoided costs

The durations of expected savings of installed measures are specified in terms of average expected measure life in years by program. They are discussed in more detail in Section 3.1.5, Life Cycle Savings, below.

3.1.2 Transmission and Distribution System Losses

These protocols calculate gross annual energy savings at the measure level, which should be increased by transmission and distribution (T&D) system losses to determine gross annual energy savings at the system level. The T&D loss factor multiplied by the savings calculated from the protocols will result in savings at the supply level.

The T&D electric loss factor is approximately 1.05 as a system-wide average (for both energy and demand), to be applied to savings at the customer meter. This loss factor was provided to DNV by Dominion Energy. It was developed internally for Dominion Energy's programs as part of its IRP process.

3.1.3 Adjusted Gross Savings

As indicated in section 3.1.1, once an impact evaluation (stage 3 analysis) is conducted, the tracked or deemed savings (stage 2 results) that are produced using the STEP Manual can then be adjusted based on those results. The adjustment factor is called a "gross realization rate" or "realization rate." Until an impact evaluation is conducted, the realization for any program is assigned a default of 100%. Table 3-2 lists the realization rates by program for all of the Company's DSM programs, for which an impact evaluation and realization rates have been produced.

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Table 3-2. Realization Rates and Sources by Program

DSM Phase	Program	Realization Rate	Source
Energy Efficiency-Residential Programs			
I	Residential Low Income	2012: 47%	Case No. PUE-2010-00084. April 1, 2012. Appendix E-1. Low Income Program Billing Analysis Report
		2013: 75%	Case No. PUE-2011-00093. April 1, 2013 Appendix E-1. Low Income Program Billing Analysis Report
		2014: 62%	Case No. PUE-2011-00093. April 1, 2013 Appendix E-1. Low Income Program Billing Analysis Report
II	Residential Duct Sealing	• Gross energy savings realization rate: 49% with a relative precision of approximately ±23% at a 90% confidence level • Gross demand reduction realization rate: 43% with a precision of ±23% at a 90% confidence level.	Case No. PUE-2013-00072. April 1, 2015. Appendix J-1. Residential Duct Sealing Program Load Shape and Net Savings Analysis Evaluation Report
II	Residential Heat Pump Tune-Up	Gross energy savings realization rate: 99% with a precision of ±33% at a 90% confidence level.	Case No. PUE-2013-00072. April 1, 2015. Appendix I-1. Residential Heat Pump Tune-up Program Load Shape and Net Savings Analysis Evaluation Report
II	Residential Heat Pump Upgrade	2012-2014: • Gross energy savings realization rate: 107% with a relative precision of approximately ±10.2% at a 90% confidence level. • Gross demand reduction realization rate: 83% with a precision of ±11.8% at a 90% confidence level.	Case No. PUE-2013-00072. April 1, 2015. Appendix H-1. Residential Heat Pump Upgrade Program Load Shape and Net Savings Analysis Evaluation Report
		2015 and beyond: • Gross energy savings realization rate: 78% with a relative precision of approximately ±7.5% at a 90% confidence level. • Gross demand reduction realization rate: 89% with a precision of ±2.2% at a 90% confidence level.	Case No. PUE-2014-00071. April 1, 2016. Appendix G-2. Residential Heat Pump Upgrade Program Load Shape and Impact Analysis
II	Residential Home Energy Check-up	154%	Case No. PUE-2013-00072. April 1, 2015. Appendix G-1. Residential Home Energy Check-up Program Impact Evaluation and Customer Satisfaction Report
VII	Residential Efficient Products Marketplace	100%	Appendix J.1
Energy Efficiency-Non-residential Programs			
I	Commercial Lighting	Gross energy savings realization rate: • 179% for the peak season from June through September, with a relative precision of approximately ±6.1% at a 90% confidence level • 177% during the off-peak season from October through May, with a relative precision of approximately ±6.4% at	Case No. PUE-2010-00084. October 1, 2011 Appendix B-1. Commercial Lighting Program. Load Shape and Net Savings Analysis Evaluation Report

DSM Phase	Program	Realization Rate	Source
		a 90% confidence level. Gross demand reduction realization rate: 98% with a precision of ±1.4% at 90% confidence	
I	Commercial HVAC	Gross energy savings realization rate: • 35% for the summer system peak season from June through September, with a relative precision of approximately ±19% at a 90% confidence level. • 63% during the off-peak season from October through May, with a relative precision of approximately ±20% at a 90% confidence level Gross demand reduction realization rate: • 169% for the summer system peak season from June through September, with a precision of ±17% at 90% confidence. • 97.0% during the off-peak season from October through May, with a relative precision of approximately ±19.3% at a 90% confidence level.	Case No. PUE-2010-00084. April 1, 2012 Appendix C-1. Commercial HVAC Program. Load Shape and Net Savings Analysis Evaluation Report
II	Non-residential Duct Testing and Sealing	• Gross energy savings realization rate: 87% with a relative precision of approximately ±10% at a 90% confidence level • Gross demand reduction realization rate: 94% with a relative precision of ±6% at a 90% confidence level	Case No. PUE-2013-00072. April 1, 2015. Appendix L-1. Non-residential Duct Sealing and Testing Program Load Shape and Net Savings Analysis Evaluation Report
II	Non-residential Energy Audit	Gross energy savings realization rate: • Walk-in door closer: 89.8% with a relative precision of approximately ±6.1% • Smart strips: 70.0% with a relative precision of approximately ±8.3% • Electric commutated motors: 78.6% with a relative precision of approximately ±<1.0% • LED display case lighting: 97.5% with a relative precision of approximately ±<1.0% • Occupancy sensor: 93.1% with a relative precision of approximately ±<1.0% • Door gaskets: 99.2% with a relative precision of approximately ±4.0% • Strip curtains: 36.1% with a relative precision of approximately ±22.1% Gross demand reduction realization rate: • Walk-in door closer: 91.2% with a relative precision of approximately ±5.5% • Electric commutated motors: 78.6% with a relative precision of approximately ±<1.0%	Case No. PUE-2013-00072. April 1, 2015. Appendix K-1. Non-residential Energy Audit Program Load Shape and Net Savings Analysis Evaluation Report

DSM Phase	Program	Realization Rate	Source
		• LED display case lighting: 97.5% with a relative precision of approximately ±<1.0% • Occupancy sensor: 51.2% with a relative precision of approximately ±<1.0% • Door gaskets: 99.2% with a relative precision of approximately ±4.0% • Strip curtains: 35.3% with a relative precision of approximately ±21.9%	
VI	Non-residential Prescriptive	Gross energy savings realization rate: • AC tune-up: 117% with a relative precision of approximately ±14% • Auto closer: 89% with a relative precision of approximately ±20% • Condenser coil cleaning: 41% with a relative precision of approximately ±58% • Convection oven: 100% • Door gasket: 107% with a relative precision of approximately ±6% • Duct test and seal: 80% with a relative precision of approximately ±31% • ECM at evaporator fan: 100% • Electric fryer: 100% • Evaporator fan control: 100% • Freezer and refrigerator: 116% with a relative precision of approximately ±22% • Griddle: 100% • Hot food holder: 100% • Ice maker: 100% • Low now sweat door film: 100% • Night cover: 100% • Steam cooker: 100% • Strip curtains: 151% with a relative precision of approximately ±58% • VSD at kitchen exhaust fan: 186% Gross energy savings realization rate:	Appendix X.1

DSM Phase	Program	Realization Rate	Source
		• AC tune ups: 99% with a relative precision of approximately ±0% • Auto closers: 77% with a relative precision of approximately ±52% • Condenser coil clean: 62% with a relative precision of approximately ±115% • Convection oven: 100% • Door gasket: 107% with a relative precision of approximately ±6% • Duct test and seal: 77% with a relative precision of approximately ±21% • ECM at evaporator fan: 100% • Electric fryer: 100% • Evaporator fan control: 100% • Freezer and refrigerator: 116 with a relative precision of approximately ±22% • Griddle: 100% • Hot food holder: 100% • Ice maker: 100% • Low no sweat door film: 100% • Night cover: 100% • Steam cooker: 100% • Strip curtain: 151 with a relative precision of approximately ±58% • VSD at kitchen exhaust fans: 93%	
Peak Shaving Programs			
II	Non-residential DG	See section 6.2	Appendix FF.1

3.1.4 Net Savings Estimation

The STEP Manual protocols are designed to estimate gross savings program impacts, or more specifically, the total amount of annual energy savings and demand reductions related to program activity. However, the amount of energy savings and demand reductions that can be attributed to the program is not the same as the estimated gross savings. This is because any given program's design can have intended and unintended outcomes. The amount of energy savings and demand reductions that can be attributed to the program is referred to as net savings, which is the magnitude of the impact of the program's intended outcomes. The most common unintended outcomes of an energy efficiency (EE) or peak shaving program can be characterized as any combination of the following:

- **Free-ridership:** program participants who consume the incentive but were not influenced by the program through which the measure is delivered, thereby reducing gross savings.
- **Participant "like" spillover:** past program participants who subsequently install those same program-eligible EE measures, but do not consume the incentive, having been already influenced by the program through which the measure is delivered, thereby increasing gross savings.
- **Participant "unlike" spillover:** past program participants who subsequently install other EE measures not offered through the program, but who have been influenced by the original program, thereby increasing gross savings.
- **Non-participant spillover:** program non-participants who were influenced by the program through which the measure is delivered and implement the measure without consuming the program incentive, potentially increasing gross savings. The influence may happen upstream at the design or specification stage without the customer's input or knowledge. This is also commonly referred to as "free drivers."
- **Leakage:** program non-participants who receive the measure and consume the incentive but install the measure outside of Dominion Energy's service territory, thereby reducing gross savings.
- **Snapback:** program participants who receive the measure and consume the incentive but alter behavior in such a way that the participants' or non-participants' energy and demand are higher than the baseline for the given measure.

Table 3-3 summarizes unintended outcomes that are considered in DNV's net-to-gross studies.

Table 3-3. Status of Unintended Outcomes Considered in DNV Impact Evaluations

Unintended Outcome Category	Status of Impact Evaluations
Free ridership	Included in all previous impact evaluations
Participant "Like" Spillover	Included only in the previous Non-residential Energy Audit program impact evaluation
Participant "Unlike" Spillover	Not included at this time
Non-participant Spillover	Not included at this time
Leakage	Not included at this time
Snapback	Not included at this time

The combination of all adjustments described above is typically referred to as the net-to-gross (NTG) factor. The NTG factor is summarized by program in Table 3-4. In this report, default NTG ratios are the ex ante values specified by Dominion Energy. These values will be updated over time as NTG is measured for each program. NTG factors typically change as programs mature and extend beyond the early adopters to the mass market.

NTG factors may be estimated a number of ways. The energy efficiency evaluation industry discussions around various approaches are described in Chapter 21, Estimating Net Savings – Common Practices of the Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures[32] produced for the U.S. Department of Energy and the general public. It also references the Energy Efficiency Program Impact Evaluation Guide, which provides additional details.

Table 3-4. Net-to-Gross Factors and Sources by Program

DSM Phase	Program	Net-to-Gross Ratio	Source
Energy Efficiency-Residential Programs			
I	Residential Lighting	65%	Dominion Energy program design assumption
I	Residential Low Income	94%	KEMA, April 2011 for Dominion Virginia Power
II	Residential Duct Sealing	80%	Dominion Energy program design assumption
II	Residential Heat Pump Tune-Up	90%	Dominion Energy program design assumption
II	Residential Heat Pump Upgrade	45%	DNV, April 2016 for Dominion Virginia Power
II	Residential Home Energy Check-up	82%	DNV, April 2016 for Dominion Virginia Power
IV	Residential Appliance Recycling	77%	Dominion Energy program design assumption
IV	Residential Income and Age Qualifying Home Improvement	80%	Dominion Energy program design assumption
V	Residential Retail LED Lighting	85%	Dominion Energy program design assumption
VII	Residential Appliance Recycling	60%	Dominion Energy program design assumption
VII	Residential Efficient Products Marketplace	Varies by measure	DNV, May 14, 2021 for Dominion Energy
VII	Residential Home Energy Assessment	80%	Dominion Energy program design assumption
VIII	Residential Customer Engagement	100%	Dominion Energy program design assumption
VIII	Residential Electric Vehicle	80%	Dominion Energy program design assumption
VIII	Residential Energy Efficiency Kits	60%	Dominion Energy program design assumption
VIII	Heating & Cooling, Health & Safety (HB 2789)	80%	Dominion Energy program design assumption
VIII	Residential Home Retrofit	90%	Dominion Energy program design assumption
VIII	Residential Manufactured Housing	90%	Dominion Energy program design assumption
VIII	Residential New Construction	87%	Dominion Energy program design assumption
VIII	Residential Multifamily	90%	Dominion Energy program design assumption
VIII	Residential Smart Thermostat (Energy Efficiency)	80%	Dominion Energy program design assumption
VIII	Residential Smart Thermostat (Behavioral)	95%	Dominion Energy program design assumption
Energy Efficiency-Non-residential Programs			
I	Commercial Lighting	50%	KEMA, October 2011 Commercial Lighting Program: Load Shape and Net Savings Analysis Evaluation Report
I	Commercial HVAC	45%	KEMA, April 2012 Commercial HVAC Program: Load Shape and Net Savings Analysis Evaluation Report
II	Non-residential Duct Testing and Sealing	97%	DNV, April 2015 for Dominion Virginia Power
II	Non-residential Energy Audit	Varies by measure	DNV, April 2015 for Dominion Virginia Power
III	Non-residential Heating and Cooling	70%	Dominion Energy program design assumption
III	Non-residential Lighting Systems & Controls	70%	Dominion Energy program design assumption
III	Non-residential Window Film	80%	Dominion Energy Program design assumption
V	Non-residential Small Business Improvement	93%	Dominion Energy Program design assumption
VI	Non-residential Prescriptive	Varies by measure	DNV, May 14, 2021 for Dominion Energy

[32] Chapter 21: Estimating Net Savings – Common Practices. The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures. October 2017. https://www.nrel.gov/docs/fy17osti/68578.pdf. Accessed March 26, 2019.

DSM Phase	Program	Net-to-Gross Ratio	Source
VII	Non-residential Heating and Cooling	70%	Dominion Energy program design assumption
VII	Non-residential Lighting Systems & Controls	70%	Dominion Energy program design assumption
VII	Non-residential Window Film	80%	Dominion Energy program design assumption
VII	Non-residential Small Manufacturing	90%	Dominion Energy program design assumption
VII	Non-residential Office	90%	Dominion Energy program design assumption
VIII	Non-residential Midstream Energy Efficiency Products	90%	Dominion Energy program design assumption
VIII	Non-residential New Construction	90%	Dominion Energy program design assumption
VIII	Non-residential Small Business Improvement Enhanced	93%	Dominion Energy program design assumption
VIII	Non-residential Multifamily	90%	Dominion Energy program design assumption
Peak Shaving Programs			
I	Residential AC Cycling	100%	KEMA, October 2011 Operability Study replaced net-to-gross. Required by PJM and not applicable in 2019
II	Non-residential DG	100%	
VIII	Residential Electric Vehicle (Peak Shaving)	93%	Dominion Energy program design assumption
VIII	Residential Thermostat (DR)	95%	Dominion Energy program design assumption

3.1.5 Life Cycle Savings

Program life cycle savings are calculated by accumulating the program savings at the monthly level over the program-level measure lives are provided in Table 3-5. Measure lives were included in the initial planning assumptions as filed with the SCC and NCUC when each program was considered for approval. Program-level measure lives are a composite estimate of the associated measures that comprise the program.

The program life cycle savings calculations are presented in Appendices C and D.

Table 3-5. Measure Life Assumptions

DSM Phase	Program	Program Weighted Measure Life (years)
Energy Efficiency-Residential Programs		
I	Residential Lighting Program	9.40
I	Residential Low Income Program	13.60
II	Residential Duct Testing and Sealing Program	18.00
II	Residential Heat Pump Tune-Up Program	5.00
II	Residential Heat Pump Upgrade Program	15.00
II	Residential Home Energy Check-up Program	10.00
IV	Residential Appliance Recycling Program	8.00
IV	Residential Income and Age Qualifying Home Improvement Program	14.00
IV	Residential Income and Age Qualifying Home Improvement Program Extension	15.00
V	Residential Retail LED Lighting Program	20.00
VII	Residential Appliance Recycling Program	8.00
VII	Residential Efficient Products Marketplace Program	16.50
VII	Residential Home Energy Assessment Program	12.41
VIII	Residential Customer Engagement	5.00
VIII	Residential Electric Vehicle (REVEE)	10.00
VIII	Residential Energy Efficiency Kits	14.81

DSM Phase	Program	Program Weighted Measure Life (years)
VIII	Heating & Cooling, Health & Safety (HB 2789)	16.00
VIII	Residential Home Retrofit	23.66
VIII	Residential Manufactured Housing	15.13
VIII	Residential New Construction	25.00
VIII	Residential Multifamily	10.22
VIII	Residential Smart Thermostat (Energy Efficiency)	10.00
VIII	Residential Smart Thermostat (Behavioral)	10.00
Energy Efficiency-Non-residential Programs		
I	Commercial HVAC Upgrade Program	15.00
I	Commercial Lighting Program	10.00
II	Non-residential Duct Testing and Sealing Program	25.00
II	Non-residential Energy Audit Program	7.00
III	Non-residential Heating and Cooling Efficiency Program	15.00
VII	Non-residential Heating and Cooling Efficiency Program	15.00
III	Non-residential Lighting & Controls Program	9.00
VII	Non-residential Lighting Systems & Controls Program	10.59
III	Non-residential Window Film Program	10.00
VII	Non-residential Window Film Program	10.00
V	Non-residential Small Business Improvement Program	14.00
VI	Non-residential Prescriptive Program	6.30
VII	Non-residential Office Program	7.00
VII	Non-residential Small Manufacturing Program	12.24
VIII	Non-residential Midstream Energy Efficiency Products	14.86
VIII	Non-residential New Construction	20.00
VIII	Non-residential Small Business Improvement Enhanced	5.00
VIII	Non-residential Multifamily	9.11
Peak-shaving Programs		
I	Residential AC Cycling Program	15.00
II	Non-residential Distributed Generation Program	N/A
VIII	Residential Electric Vehicle (REVDR)	10.00
VIII	Residential Smart Thermostat (Demand Response)	10.00

3.1.6 Virginia Clean Economy Act Requirements Non-Energy Metrics

This is the first EM&V report following the passing of the VCEA where DNV is reporting on the additional metrics required of in the Act:

- Related emissions reductions,
- Total customer bill savings that the programs and portfolios produce,
- Other quantifiable benefits of each program,
- Utility spending on each program, including any associated administrative costs, and
- Review each utility's avoided costs and cost-benefit analyses

Given this is the first year, DNV recognizes that there will be future refinements to the approach, as stakeholders, regulators, and law makers review and provide feedback. The methodologies, assumptions, calculations, and methodology pros and cons for the emissions, customer bill savings, non-energy impacts, and avoided cost and cost-benefit analyses are described in detail in APPENDIX G.

3.2 Research Activities through 2020

The EM&V approach incorporates deemed annualized energy savings and demand reduction calculations outlined in the STEP Manual (Appendix F), customer surveys, billing analyses using customer data, and on-site evaluations at customer homes and businesses. Each year, as scheduled in the EM&V plans, DNV undertakes various research activities across the Company's DSM programs to evaluate each program through impact evaluations. The following research activities are used to evaluate the DSM programs:

- **Data quality review:** DNV reviews the program tracking data to ensure they have all the necessary information to compute savings and to feed into potential future evaluation research data requirements. DNV performs data quality review on a monthly basis throughout the year for all programs and performs an in-depth data quality check at least twice a year for all programs. Section 3.4 provides more details about the data quality reviews that DNV conducts.
- **Deemed savings calculations:** DNV estimates energy savings and demand reductions across programs with standardized calculations and assumptions outlined in the STEP Manual. DNV tracks deemed estimates for all programs on a monthly basis throughout the year and reports draft deemed estimates to Dominion Energy each month.
- **Satisfaction surveys:** Satisfaction survey questions help the Company determine how satisfied its customers are with the programs it offers. These questions generally cover satisfaction with the program as a whole, the rebate application and payments, and, if applicable, the contractors used. This survey is often combined with an NTG estimation or verification survey (sometimes both) to reduce the number of interactions with, and burden on the participant.
- **Consumption data analysis:** This approach applies Company-specific customer usage data to actual participating households or facilities to quantify annualized energy savings and demand reductions for a program. DNV analyzes monthly consumption data from households or facilities for at least a 12-month period before and after the audit/install date of a program measure. The savings calculated from this method allow DNV to create an adjustment factor to the engineering algorithms known as a realization rate. This realization rate is then applied to future deemed calculations for savings.
- **NTG estimation surveys:** Depending on the program design and the evaluation methodology used, survey research methods can be used to estimate the NTG factor, which is the percentage of savings that are attributable to the program because participants would not have performed the program measures in the absence of the program. This survey is often combined with the satisfaction and verification surveys and conducted during a single interaction with the participant and/or contractor.
- **Verification surveys:** Survey verification questions help verify the customer did participate in the program and install any or all measures as recorded in the tracking data. The survey results are used to calculate a verification rate that is applied to the deemed savings. This survey is often combined with the satisfaction survey and NTG-estimation survey and conducted during a single interaction with the participant.
- **On-site verification:** This occurs when a member of the evaluation team visits a random selection of sites and verifies that the measures are actually installed. This may be used in conjunction with or in place of verification surveys to help the Company verify program participation and measure installation. The savings calculated from this method, in combination with other activities, allow DNV to create an adjustment factor to the engineering algorithms known as a realization rate. This realization rate is then applied to future deemed calculations for savings.
- **On-site measurement:** This is physical verification of an installed measure's power load and energy usage through the use of metering equipment. The measurement results help make deemed savings calculations more accurate and precise. The savings calculated from this method, in combination with other activities, allow DNV to create an adjustment factor to the engineering algorithms known as a realization rate. This realization rate is then applied to future deemed calculations for savings.

- **Building simulation modeling:** When on-site measurement is not available at the measure-level, or where interactive effects of multiple installed measures cannot be determined, modeling is used to more accurately determine measured power load and energy usage of multiple measures installed at a single site. Like on-site measurement, the results of modeling help the Company to adjust its deemed savings calculations through a realization rate adjustment.
- **Load-shape analysis:** The Company conducts a load-shape analysis using data from a combination of data inputs (e.g., on-site verification, on-site measurement, and modeling) to determine each program's annual power load profile for the Company-specific system peak and for PJM-defined performance periods.[33]

[33] PJM is the Company's regional transmission organization (www.pjm.com).

Table 3-6 provides an overview of the research activities conducted for each program through the end of 2020. The years listed in the table represent the year that the EM&V study report was published. All programs undergo data quality review and evaluation using deemed calculations.

Table 3-6. EM&V Research Activities Conducted Through 2020 by Program

DSM Phase	Program	Data Quality Review	Deemed Savings Calcu-lations	Consumption Data Analysis	Satis-faction Survey	Verifi-cation Survey	NTG Studies	On-Site Verifi-cation	On-Site Meas-urement	Building Simula-tion Modeling	Load-Shape Analy-sis	Other
Energy Efficiency-Residential Programs												
IV	Residential Income and Age Qualifying Home Improvement	2016-present	2016-present								2016-present	VCEA analysis
VII	Residential Appliance Recycling	2020-present	2020-present								2020-present	VCEA analysis
VII	Residential Efficient Products Marketplace	2020-present	2020-present		✓	✓	✓				2020-present	VCEA analysis
VII	Residential Home Energy Assessment	2020-present	2020-present								2020-present	VCEA analysis
Energy Efficiency-Non-residential Programs												
III	Non-residential Lighting Systems & Controls	2015-present	2015-present								2015-present	VCEA analysis
V	Non-residential Small Business Improvement	2016 - present	2016 - present								2016 - present	VCEA analysis
VI	Non-residential Prescriptive	2017 - present	2017 - present		✓	✓	✓	✓	✓		2017-present	VCEA analysis
VII	Non-residential Heating & Cooling	2020-present	2020-present								2020-present	VCEA analysis
VII	Non-residential Lighting Systems & Controls	2020-present	2020-present								2020-present	VCEA analysis
VII	Non-residential Window Film	2020-present	2020-present								2020-present	VCEA analysis
VII	Non-residential Small Manufacturing	2020-present	2020-present								2020-present	VCEA analysis
VII	Non-residential Office	2020-present	2020-present								2020-present	VCEA analysis
Peak Shaving Programs												
I	Residential AC Cycling	2010-present		2012-present				10/2011[34]			2015-present	
II	Non-residential Distributed Genera ion	2013-present		2013-present							2015-present	
Closed Programs												
I	Commercial HVAC (Closed)	2010–2013, 2015	2010–2013, 2015				4/2012	4/2012	4/2012			
I	Commercial Lighting (Closed)	2010–2013, 2015	2010–2013, 2015				4/2012	4/2012	4/2012			

[34] The Company currently conducts an annual inspection program for a random selection of meter switches and for customers on AMI meters with poor performance.

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DSM Phase	Program	Data Quality Review	Deemed Savings Calcu-lations	Consumption Data Analysis	Satis-faction Survey	Verifi-cation Survey	NTG Studies	On-Site Verifi-cation	On-Site Meas-urement	Building Simula-tion Modeling	Load-Shape Analy-sis	Other
I	Residential Lighting (Closed)	2010–2012	2010–2012									Retail sales survey (4/2011)
I	Residential Low Income (Closed)	2010–2016	2010–2016	4/2012–2014	4/2011		4/2011					
II	Residential Duct Sealing (Closed)	2012–2017	2012–2017		2015	2015					2015–2017	
II	Residential Heat Pump Tune-Up (Closed)	2012–2017	2012–2017		2015	2015					2015–2017	
II	Residential Heat Pump Upgrade (Closed)	2012–2017	2012–2017		2015, 2016	2015, 2016	2015, 2016	2015, 2016	2015, 2016		2015–2017	
II	Residential Home Energy Check-Up (Closed)	2012–2017	2012–2017	2015–2016	2015, 2016	2015, 2016	2016				2015–2017	
II	Non-residential Duct Testing and Sealing (Closed)	2012–2017	2012–2017		2015	2015	2015	2015			2015–2017	
II	Non-residential Energy Audit (Closed)	2012–2017	2012–2017		2015	2015	2015	2015	2015		2015–2017	
III	Non-residential Heating and Cooling Efficiency	2015-2019	2015-2019								2015-2019	
III	Non-residential Heating and Cooling Efficiency	2015-2019	2015-2019								2015-2019	
IV	Residential Appliance Recycling (Closed)	2016–2018	2016–2018								2016–2018	
V	Residential Retail LED Lighting	2017-2019	2017-2019								2017-2019	

3.3 Planned Research Activities in 2021

In 2021, DNV will begin a new cycle of EM&V activities for all of Dominion Energy's active programs. An in-depth description of the potential planned activities for each program is provided in APPENDIX H through APPENDIX HH of this report.

The SCC issued its order regarding new rules governing the EM&V of the effects of utility-sponsored DSM programs (Case No. PUR-2017-00047) on November 9, 2017. The new rules apply prospectively to new or renewing DSM programs starting from the order date. As of this EM&V report, the DSM Phase IV Residential Income and Age Qualifying Home Improvement Program, and all of the DSM Phase VII and VIII programs are affected by this new rule.

3.4 Data Quality and Validation

3.4.1 Methodologies

In cooperation with Dominion Energy, DNV has developed data quality and validation procedures to help ensure program data are consistent and accurate. Importantly, participant counts, gross annualized energy savings, and demand reduction result from engineering equations that use these validated data from the Company as inputs.

Program data used to calculate gross annualized energy savings must meet predefined data requirements as agreed upon by DNV, the Company, and the program implementation vendor. Historically, the data requirements are developed after a program is approved by the SCC or NCUC and before the program is launched. The program implementation vendor is responsible for program data collection and data entry. This data is then transferred to the Company's Business Intelligence (BI) database for quality control and verification. The Company then transfers EM&V-specific data to DNV. The data requirements define:

1. Variable name
2. Variable description
3. Data type (e.g., numeric, character, and date)
4. Maximum field length
5. Validation range (where appropriate)
6. Necessity of variable to compute savings

The validation range comes in the form of a structured list of acceptable text variables or a range for numeric variables. If the data contain a text variable that does not match the values defined in the structured list, then that record will not be processed. If the data contain a numeric variable that does not fall within the validation range, then that data is removed by the Company. The validation ranges were carefully constructed to exclude unrealistic records while not excluding unusual records.

Each month the data is reviewed for the following:

- **Are the correct data being collected for EM&V purposes?** This would include the data containing the requisite database fields for calculations using the STEP Manual (Appendix F) and for future sampling needs for data analysis, modeling, and survey research.
- **Are the data well populated?** Large databases are rarely completely populated, but some data are critical and cannot be overlooked.

- **Are the data generally consistent with expectations according to range and consistency checks?** Any exceptionally large or small values are noted and verified where appropriate.

At least annually, DNV conducts two types of quality checks on the code and the results to confirm that they are consistent with engineering expectations and the STEP Manual protocols. These activities check for outliers in the data at a macro level and individual record level results for consistency with the intentions of the protocols.

Additionally, DNV and the Company review the DSM program participant data on a monthly basis. DNV also has all of the Company's historic DSM program data and results since program inception, which are further utilized to check and audit historic calculations annually when the STEP Manual is updated and make corrections as necessary in the year-end reporting to ensure data integrity.

3.4.2 Adjustments and/or Corrections to Prior Year Calculations

DNV did not make any adjustments or corrections to calculations to the program year 2019 results that were previously reported.

4 ENERGY EFFICIENCY PROGRAMS – RESIDENTIAL

This section reports on the 2020 progress of five residential energy efficiency programs.

1. Residential Income and Age Qualifying Home Improvement Program (DSM Phase IV) - Virginia and North Carolina
2. Residential Appliance Recycling (DSM VII) - Virginia and North Carolina
3. Residential Efficiency Products Marketplace (DSM VII) - Virginia and North Carolina
4. Residential Home Energy Assessment (DSM VII) - Virginia and North Carolina
5. Residential Smart Thermostat Purchase and WeatherSmart (DSM VIII) - Virginia

Residential programs active in 2020 accounted for:

- 83% of new participants for all programs (excluding participants in the Energy Efficiency Market Place program, because participation is measured in units sold)
- 51% of net annualized energy savings for all programs both residential and non-residential
- 44% of spending in 2020

Figure 4-1 and Figure 4-2 show the cumulative count of residential energy efficiency program participation and gross annualized energy savings in the two states, for the active programs, at the county level, through December 2020. The deeper the color, the greater the participation and gross annualized energy savings.

In Virginia, the three jurisdictions with the highest participation, in descending order, are Fairfax, Henrico, and Newport News City. In North Carolina, Halifax, Hertford, and Northampton have the highest participation.

In regard to energy savings, the top three jurisdictions in Virginia, in descending order, are Fairfax, Chesterfield, and Henrico. In North Carolina, Dare, Hertford, and Pasquotank have the most energy savings.

Figure 4-1. Virginia and North Carolina Residential Energy Efficiency Program Participation Map by County

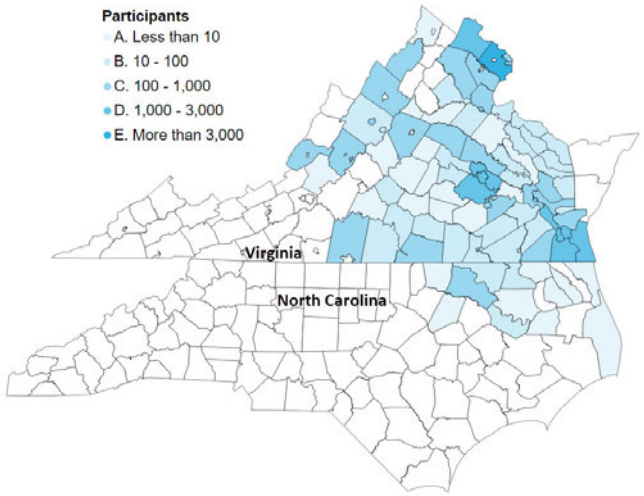
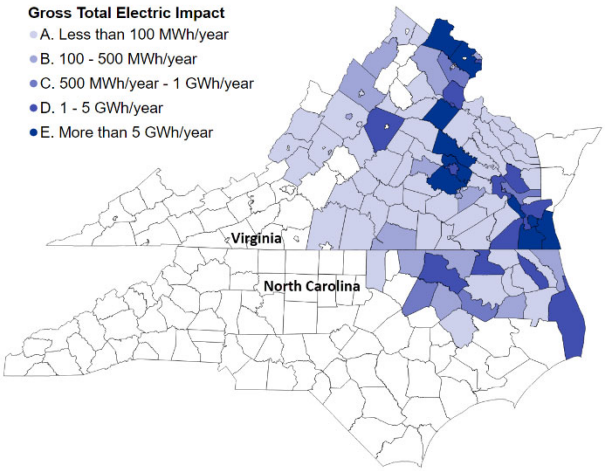


Figure 4-2. Virginia and North Carolina Residential Energy Efficiency Program Gross Annualized Energy Savings Map by County



4.1 Residential Income and Age Qualifying Home Improvement – Virginia and North Carolina

Virginia

Case #: PUE-2017-00129

RESIDENTIAL INCOME & AGE QUALIFYING HOME IMPROVEMENT

2015-PRESENT
304 kWh/yr Average Net Savings Per Participant

Eligibility

- Income qualifying customers must have an income ≤ 60% of Virginia median income, or 80% of the Local Area Median Income, whichever is greater
- Age qualifying residential customers must be ≥ 60 years of age and have an income ≤ 120% of Virginia median income
- Qualified individuals must live in single-family homes, multifamily homes, or mobile homes

Measures

- LED lamps
- Energy-saving showerheads
- Faucet aerators
- Pipe wrap insulation
- Added attic insulation

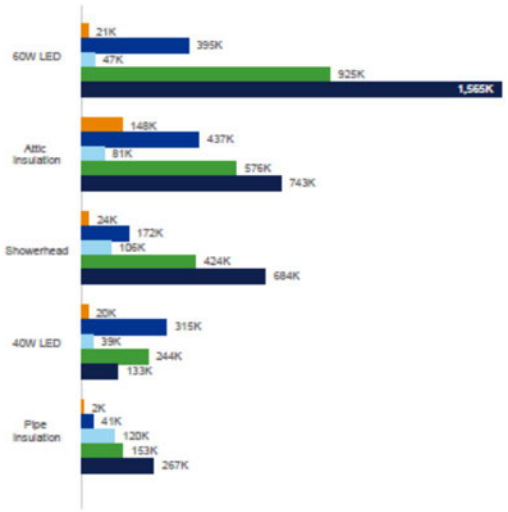
Enrolled **23,981** customers, **120%** of planned participation

Achieved net annual energy savings of **7,293 MWh/year**, **111%** of planned energy savings

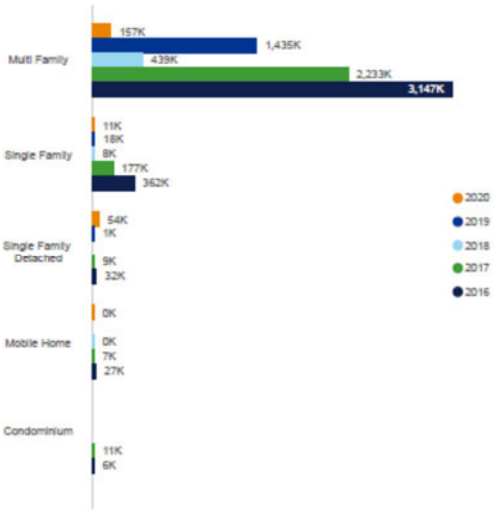
Spent **84%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)	6,315,785	5,079,529	1,432,463	4,050,714	1,678,260	20,626,572
Total Program Participants (#)	8,403	5,970	1,141	5,897	1,047	23,981
Total Gross Incremental Savings (kWh/yr)	3,575,492	2,443,920	447,775	1,453,805	223,320	
Total Net Incremental Savings (kWh/yr)	2,860,394	1,955,136	358,220	1,163,044	178,656	
Average Gross Incremental Demand Reduction (kW)	398	229	35	229	58	
Average Net Incremental Demand Reduction (kW)	318	183	28	183	47	
Total Net Lifetime Savings (kWh)	2,084,602	6,862,687	12,523,362	18,898,286	26,137,034	103,939,600
Average Lifetime Demand Reduction (kW)	383	566	594	777	824	824

TOTAL SAVING BY MEASURE TYPE
TOP 5 IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



DNV

North Carolina

Docket #: E-22 Sub 523

RESIDENTIAL INCOME & AGE QUALIFYING HOME IMPROVEMENT

2016-PRESENT
528 kWh/yr Average Net Savings Per Participant

Eligibility

- Income qualifying customers must have an income ≤ 200% of the federal poverty level
- Age qualifying residential customers must be ≥ 60 years of age and have an income ≤ 250% of the federal poverty level
- Qualified individuals must live in single-family homes, multifamily homes, or mobile homes

Measures

- LED lamps
- Energy-saving showerheads
- Faucet aerators
- Pipe wrap insulation
- Added attic insulation

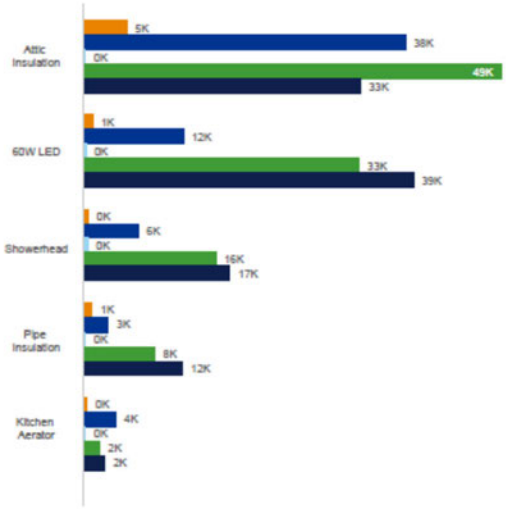
Enrolled **439** customers, **41%** of planned participation

Achieved net annual energy savings of **232,011 kWh/year**, **75%** of planned energy savings

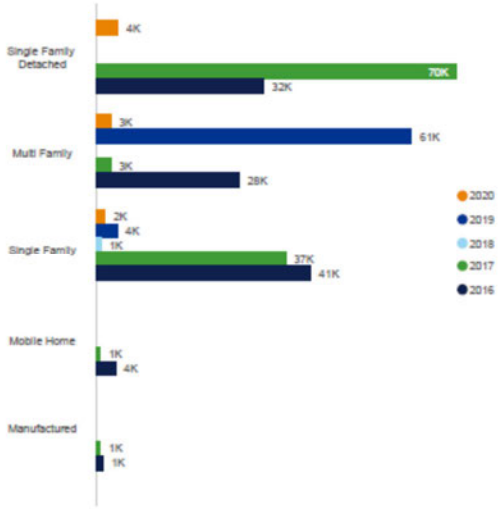
Spent **65%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)	296,086	327,806	34,521	205,018	47,525	910,957
Total Program Participants (#)	157	130	1	132	19	439
Total Gross Incremental Savings (kWh/yr)	106,379	110,101	723	64,879	8,237	
Total Net Incremental Savings (kWh/yr)	85,103	88,081	579	51,903	6,590	
Average Gross Incremental Demand Reduction (kW)	11	9	0	19	3	
Average Net Incremental Demand Reduction (kW)	8	7	0	15	2	
Total Net Lifetime Savings (kWh)	18,652	165,320	339,083	538,261	768,350	3,310,658
Average Lifetime Demand Reduction (kW)	8	16	16	31	33	33

TOTAL SAVING BY MEASURE TYPE
TOP 5 IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



4.1.1 Program Description

The Residential Income and Age Qualifying Home Improvement Program provides direct-install EE improvements to eligible age- and income-qualifying homeowners to reduce electric usage in Dominion Energy's service territory. To qualify for the Program in the Company's Virginia service territory, a customer must meet the following eligibility requirements:

- Customer must be a current Dominion Energy or a new service customer intending to receive electric services on a residential rate schedule; and either:
- Customer must have a total household income that does not exceed 60% of the Virginia Median Income, or 80% of the Local Area Median Income, whichever is greater; or
- Customer is 60 years or older with a total household income that does not exceed 120% of the Virginia Median Income.

To qualify for the Program in the Company's North Carolina service territory, a customer must meet the following eligibility requirements, which also conforms to the North Carolina State Energy Office qualification guidelines:

- Customer must have a total household income of 200% of the Federal poverty level.
- Customer must be 60 years of age or older and have income at or below 250% of the federal poverty level.
- Individuals living in single family homes, multifamily homes, and mobile homes are all eligible.

Both owner-occupied and renter-occupied households are eligible to participate in the Program. Eligible customers must be responsible for the electric bill and either own the home or be able to secure permission from the owner to perform the Program-qualifying installations or improvements.

Customer measures receiving incentives through this Program are not eligible to receive incentives through any other programs offered by Dominion Energy. In addition, only one application may be submitted per household. Eligible customers must be living in single family residences, town homes, mobile homes, and separately-metered multi-family dwellings (apartments and condominiums) with electric or non-electric heating and electric cooling. Multi-family facilities owned by local housing authorities are not eligible for the Program.

To participate in the Program, Dominion Energy customers can contact Dominion Energy-approved weatherization service providers. These weatherization service providers also go door-to-door in some areas of the Dominion Energy service territory to promote the Program. The energy-saving products may include:

- Maximum of 6 ENERGY STAR® qualified LED light bulbs (screw base) replacing incandescent lamps (CFLs are not eligible)
  - LED replacement of 60-Watt incandescent lamps
  - LED replacement of 40-Watt incandescent lamps
- Energy-saving showerhead(s)
- High-efficiency faucet aerators
- Pipe wrap insulation for hot water pipes
- Adding attic insulation

The official Program start dates were May 1, 2015 in Virginia and January 1, 2016 in North Carolina. The first instances of participation did not begin until July of each state's start year because the time between enrollment and becoming a tracked

participant in the EM&V data can lag several months. The Program was designed to expire in early 2018 for Virginia. However, on May 10, 2018, the Virginia State Corporation Commission approved an extension for three years (Case No. PUR-2017-00129), and the Program received approval in North Carolina to restart on July 1, 2018 (Docket No. E-22, Sub 523).

The COVID-19 pandemic impacted the Program in multiple ways. There was a pause in activity starting March 16th, 2020, in accordance with state policy, until it was resumed during the last week of June 2020. The usual marketing, outreach, and events that promoted and contributed to the Program's historic activity levels were unable to take place due to the pandemic. Terms and conditions for resumed activity followed governmental guidelines and activity ramped up once partner organizations returned to work. These guidelines included a customer and technician checklist focused on safety and security. In home services did not resume until all terms and conditions were agreed to by the customer and technician.

The assessment of this Program used the algorithms and assumptions specified in the STEP Manual (APPENDIX F).

This DSM program must meet reporting requirements outlined in the "EM&V Rule"[35] in Virginia, which also applied to the May 15, 2020 EM&V Report.[36] Table 4-1 denotes the applicable report sections to reporting requirements listed in the EM&V Rule section 50, "Standard Requirements for Evaluation, Measurement, and Verification Reporting."

Table 4-1. Residential Income and Age Qualifying Home Improvement Program Compliance with EM&V Rule Section 50

Subsection within 20 VAC 5-318-50	Location and Description
A. EM&V Plan	APPENDIX H. Residential Income and Age Qualifying Home Improvement Program EM&V Plan
B. Utilizing utility-specific data or other data	**Per 20 VAC 5-318-40 A and B** 1. See APPENDIX F. STEP Manual v2020 for a description of all data or estimates used as inputs for this program and the measures within it. 2. See the Methodologies section (section 3) of this report for a description of the overarching EM&V methodologies used to produce results in this report. **Per 20 VAC 5-318-40 C** 3. See subsections of this report section, and Table 4-5 for measure-level estimates of kilowatt and kilowatt-hour, before and after adjustments for free-ridership, as appropriate.
C. Changes to measure-level inputs and assumptions, and inputs to cost/benefit estimates	1. See Table 4-2 for program planning assumptions 2. See documents filed with the Virginia State Corporation Commission Docket PUR-2017-00129 for approved measure-level inputs and assumptions, and the impact of such changes on original cost/benefit estimates for DSM programs or measures.
D. Measure-level data collection methodology	See response to A. and B. above.
E. Explanation of eligibility requirements for each rate schedule that program is offered	See program description above.
F. Comparison of measured annual measure or program savings estimates to the annual usage of the average rate schedule usage, and eligible customer in each rate schedule	See section 4.1.3.5, Comparison of Savings with Usage in Virginia

[35] 20 VAC 5-318-50
[36] PUR-2017-00129

Subsection within 20 VAC 5-318-50	Location and Description
G. Explanation of controls undertaken by utility	See APPENDIX II

4.1.2 Methods for the Current Reporting Period

DNV developed an EM&V Plan for this program, which appears in APPENDIX G.

For the current period, the EM&V approach included reviewing the tracking data and then estimating net energy savings and demand reductions using STEP Manual calculations. Table 4-2 outlines Dominion Energy's initial program planning assumptions used to design the program in its first iteration and the design in the recent extension.

Table 4-2. Residential Income and Age Qualifying Home Improvement Program Planning Assumptions System-wide

Assumption	Value (2015–2017)	Value (Extension 2018 forward)
Target Market	Income and age-qualifying residential customers	
NTG Factor	80%	80%
Measure Life (years)	14	15
Gross Average Annual Energy Savings per Participant (kWh/year)	873	464
Net Average Annual Energy Savings per Participant (kWh/year)	698.4	371.2
Average Coincident Peak Demand Reduction per Participant (kW)	0.21	0.09
Average Rebate per Participant (US$)	n/a	n/a

4.1.3 Assessment of Program Progress toward Plan

The next section describes the Program's progress towards planned participants, energy savings, and demand reduction.

4.1.3.1 Key Virginia Program Data

Key data highlights for participation, energy savings, demand reduction, and program costs for Virginia appear below. Following this summary, Table 4-3 provides performance indicator data from 2015 through December 31, 2020, and shaded cells are considered extraordinarily sensitive information. Detailed program indicator tables by year and month can be found in Appendix A.1. Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.1, and cumulative net savings are in Appendix D.1.

In 2020, annual participation, annual net energy savings (kWh/year) and annual net demand reduction (kW) did not exceed planned values. As noted, the COVID-19 pandemic created many challenges which impacted 2020 Program delivery and participation.

- For 2020 there were 1,047 participants, which achieved 25% of the participation goal.
- From 2015 through 2020, total Program participation was 23,981 and the Program achieved 120% of the participation goal.
- From 2018 through 2020, total Program participation was 8,085 and the Program achieved 77% of the participation goal.

The following describes the Program's progress from its inception in 2015 through the end of 2020.

- The annual net energy savings in 2020 were 178,656 kWh/year, which comprised 8% of planned net savings. Annual net demand reduction was 46.7 kW, which comprised 23% of planned net demand reductions.
- The total annual net energy savings from 2015 through 2020 were 7,293,088 kWh/year, which continues to exceed planned values by 111%. Total annual net demand reduction over the same period was 823.0 kW, which accounted for 76% of planned net demand reduction.
- The total Program average annual gross energy savings and demand reduction per participant was 380 kWh/year and 0.04 kW, respectively, from 2015 through 2020.
- The 2020 average annual net savings per participant was 171 kWh/year and the average net demand reduction per participant was 0.04 kW. Net savings are calculated by applying the 100% realization rate and the 80% NTG ratio to the gross savings, and the realization rate and NTG ratio are from planning assumptions.
- The majority of Virginia participants and their associated gross energy savings and demand reduction are from single-family detached buildings. Popular measures in 2020 included attic insulation, LED replacements of 40 W incandescent lamps, and LED replacement of 60 W incandescent lamps.

The following describes the extended Program's progress from 2018 through the end of 2020.

- The total annual net energy savings from 2018 through 2020 were 1,699,920 kWh/year, which was 56% of planned values. Total annual net demand reduction over the same period was 258.0 kW, which accounts for 92% of planned net demand reduction.
- The average annual gross energy savings and demand reduction per program participant over the 2018-2020 period were 263 kWh/year and 0.04 kW, respectively
- The total program average annual net savings per participant from 2018 through 2020 was 210 kWh/year. Average net demand reduction per participant over the same period was 0.03 kW. Both values are less than the planning assumptions.

- 2020 program spending was 38% of planned values.
- Total cumulative spending for 2015 through 2020 was 84% of planned spending.
- Total cumulative spending for 2018 through 2020 was 65% of planned spending.
- The 2020 annual rebate per participant was $948, which is more spending per participant relative to 2019. Since the Program does not charge participants directly, the rebate represents annual installation cost.

- On a per participant basis, administrative and EM&V costs increased slightly in 2020 compared to the relaunch year of 2018. The decrease in 2020 activity likely affected these metrics.

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Table 4-3. Virginia Residential Income and Age Qualifying Home Improvement Program Performance Indicators (2015-2020)

Category	Item	2015	2016	2017[37]	2018	2019	2020	Extension Total (2018–2020)	Program Total (2015-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]							
	Direct Implementation								
	Direct EM&V								
	Indirect Other (Administrative)	$48,256	$191,950	$199,872	$80,889	$166,845	$89,410	$337,143	$777,222
Total Costs ($)	Total[38]	$2,069,822	$6,315,785	$5,079,529	$1,432,463	$4,050,714	$1,678,260	$7,161,437	$20,626,572
	Planned	$3,056,782	$5,856,409	$4,648,601	$2,371,260	$4,192,450	$4,381,475	$10,945,185	$24,506,977
	Variance	-$986,960	$459,376	$430,927	-$938,797	-$141,736	-$2,703,215	-$3,783,748	-$3,880,405
	Annual % of Planned	68%	108%	109%	60%	97%	38%	65%	84%
Participants	Total (Gross)	1,523	8,403	5,970	1,141	5,897	1,047	8,085	23,981
	Planned (Gross)	1,849	3,843	3,846	2,000	4,218	4,218	10,436	19,974
	Variance	-326	4,560	2,124	-859	1,679	-3,171	-2,351	4,007
	Annual % of Planned (Gross)	82%	219%	155%	57%	140%	25%	77%	120%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	984,230	3,575,492	2,431,737	447,775	1,453,805	223,320	2,124,900	9,116,360
	Realization Rate Adjustment (100%)	0	0	0	0	0	0	0	0
	Adjusted Gross Savings	984,230	3,575,492	2,431,737	447,775	1,453,805	223,320	2,124,900	9,116,360
	Net-to-Gross Adjustment (80%)	-196,846	-715,098	-486,347	-89,555	-290,761	-44,664	-424,980	-1,823,272
	Net Adjusted Savings	787,384	2,860,394	1,945,390	358,220	1,163,044	178,656	1,699,920	7,293,088

[37] The 2017 total gross deemed savings values reported in this table include adjustments of -12,182 94 kWh/year and -1.10 kW made to the January 2017 reported savings. The adjustments account for corrections to STEP Manual version 7.0.0 issued on May 1, 2017. Specifically, the correction was in section 2.1.5 for "Low-Flow Showerhead" measures, to the "ΔT" variable, which is a measure of the change in temperature of the water used for shower and temperature entering the house ($\Delta T = T_{shower} - T_{in\ house}$). STEP Manual 7.0.0 reported the value as 44.9°F, but has been corrected to 44.1°F. This correction is reflected in STEP Manual version 8.0.0 in this EM&V report.

[38] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

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Category	Item	2015	2016	2017[37]	2018	2019	2020	Extension Total (2018–2020)	Program Total (2015-2020)
	Planned Savings (Net)	1,810,380	998,136	765,945	175,247	728,300	2,120,348	3,023,895	6,598,356
	Annual % Toward Planned Savings (Net)	43%	287%	254%	204%	160%	8%	56%	111%
	Avg. Savings per Participant (Gross)	646	426	407	392	247	213	263	380
	Avg. Savings per Participant (Net)	517	340	326	314	197	171	210	304
Installed Demand Reduction (kW)	Total Gross Deemed Demand	80.2	398.0	228.1	34.9	229.3	58.4	322.5	1,028.8
	Realization Rate Adjustment (100%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Adjusted Gross Demand	80.2	398.0	228.1	34.9	229.3	58.4	322.5	1,028.8
	Net-to-Gross Adjustment (80%)	-16.0	-79.6	-45.6	-7.0	-45.9	-11.7	-64.5	-205.8
	Net Adjusted Demand	64.1	318.4	182.5	27.9	183.4	46.7	258.0	823.0
	Planned Demand (Net)	415.0	217.7	170.2	0.0	75.6	205.1	280.6	1,083.5
	Annual % Toward Planned Demand (Net)	15%	146%	107%	N/A	243%	23%	92%	76%
	Avg. Peak Demand per Participant (Gross)	0.05	0.05	0.04	0.03	0.04	0.06	0.04	0.04
	Avg. Demand per Participant (Net)	0.04	0.04	0.03	0.02	0.03	0.04	0.03	0.03
Program Performance	Annual $Admin. per Participant (Gross)	$32	$23	$33	$71	$28	$85	$42	$32
	Annual $Admin. per kWh/year (Gross)	$0.05	$0.05	$0.08	$0.18	$0.11	$0.40	$0.16	$0.09
	Annual $Admin. per kW (Gross)	$602	$482	$876	$2,318	$728	$1,532	$1,045	$755
	Annual $EM&V per Total Costs ($)	0.6%	1.4%	2.3%	6.8%	2.4%	5.6%	4.0%	2.5%
	Annual $Rebate per Participant (Gross)	$582	$612	$644	$626	$518	$948	$589	$610

Table 4-4 provides gross and net annualized energy savings and demand reduction for the extended program years 2018–2020 in Virginia by measure type.

Table 4-4. Virginia Residential Income and Age Qualifying Home Improvement Program Measure-Level Performance Indicators (2018–2020)

Program	kWh/year		kW	
Residential Income and Age Qualifying Home Improvement – Virginia (DSM IV)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	80%	100%	80%
Measure	**Gross**	**Net**	**Gross**	**Net**
40 W Incandescent Replacement with LED Lamp	785,791	628,633	79.7	63.7
60 W Incandescent Replacement with LED Lamp	3,331,713	2,665,370	357	285.6
Attic Insulation	2,057,897	1,646,317	336	268.8
Bathroom Aerator	276,065	220,852	32.1	25.7
Kitchen Aerator	247,849	198,279	21.7	17.3
Pipe Insulation	603,275	482,620	68.9	55.1
Showerhead	1,825,955	1,460,764	134.5	107.6
Total	9,128,543	7,302,834	1,029.9	823.9

4.1.3.2 Key North Carolina Program Data

Key data highlights for participation or enrollment, energy savings, demand reduction and program costs for North Carolina appear below. Following this summary, Table 4-5 provides performance indicator data from January 1, 2016 through December 31, 2020 and shaded cells are considered extraordinarily sensitive information. Detailed program indicator tables by year and month are provided in Appendix B.1. Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.1, and cumulative net savings are in Appendix D.1.

In 2020, annual net energy savings (kWh/year) and annual net demand reduction (kW) did not exceed planned values. 2020 Program performance and delivery were impacted by the many challenges created by the COVID-19 pandemic.

- In 2020, there were 19 participants, which achieved 7% of the participation goal.
- From 2016 through 2020, total program participation is 439 and the Program achieved 41% of the participation goal.
- From 2018 through 2020, total program participation was 152 and the Program achieved 27% of the participation goal.

The following describes the Program's progress from its inception in 2016 through the end of 2020.

- The annual net energy savings in 2020 were 6,590 kWh/year, which accounted for 5% of planned net savings. The annual net demand reduction was 2.3 kW, which accounted for 17% of planned net demand reduction.
- Total annual net energy savings from 2016 through 2020 were 232,011 kWh/year, which comprised 75% of planned values. Total annual net demand reduction over the same period was 33.3 kW, which accounted for 74% of planned net demand reduction.

- The Program average annual gross energy savings and demand reduction per participant were 661 kWh/year and 0.09 kW, respectively, from 2016 through 2020.
- The 2020 average annual net savings per participant was 347 kWh/year and the average net demand reduction per participant was 0.12 kW. Net savings are calculated by applying the 100% realization rate and the 80% NTG ratio to the gross savings, and the realization rate and NTG ratio are from planning assumptions.
- The majority of North Carolina participants and their associated gross energy savings and demand reduction are from single family detached buildings this year. Popular measures in 2020 included attic insulation, pipe insulation, and bathroom aerators.

The following describes the extended Program's progress from 2018 through the end of 2020.

- Total annual net energy savings from 2018 through 2020 were 59,072 kWh/year, which accounted for 31% of planned values. Total annual net demand reduction over the same period was 17.5 kW, which accounted for 93% of planned net demand reduction.
- The total Program average annual gross energy savings and demand reduction per participant were 486 kWh/year and 0.14 kW, respectively, from 2018 through 2020.
- The total Program average annual net savings per participant from 2018 through 2020 was 389 kWh/year, which was lower than planning assumptions. Average demand reduction per participant over the same period was 0.11 kW, which exceeded planning assumptions.

- In 2020, program spending was 17% of planned values.
- Total cumulative spending for 2016 to 2020 was 65% of planned spending.
- Total cumulative spending for 2018 to 2020 was 41% of planned spending.
- The 2020 average rebate amount per participant was $1,019. Since the Program does not charge participants directly, the rebate represents annual installation cost.
- On a per participant basis, administrative and EM&V costs increased in 2020 compared to the relaunch year of 2018. The decrease in 2020 activity likely affected these metrics.

DNV

Table 4-5. North Carolina Residential Income and Age Qualifying Home Improvement Program Performance Indicators (2016–2020)

Category	Item	2016	2017[39]	2018	2019	2020	Extension Total (2018–2020)	Program Total (2016-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]						
	Direct Implementation							
	Direct EM&V							
	Indirect Other (Administrative)	$8,999	$12,899	$1,949	$8,131	$2,550	$12,630	$34,528
Total Costs ($)	Total[40]	$296,086	$327,806	$34,521	$205,018	$47,525	$287,065	$910,957
	Planned	$393,347	$306,440	$152,200	$268,230	$278,271	$698,700	$1,398,487
	Variance	-$97,261	$21,366	-$117,679	-$63,211	-$230,745	-$411,635	-$487,530
	Annual % of Planned	75%	107%	23%	76%	17%	41%	65%
Participants	Total (Gross)	157	130	1	132	19	152	439
	Planned (Gross)	257	254	0	282	282	564	1,075
	Variance	-100	-124	1	-150	-263	-412	-636
	Annual % of Planned (Gross)	61%	51%	N/A	47%	7%	27%	41%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	106,379	109,794	723	64,879	8,237	73,840	290,013
	Realization Rate Adjustment (100%)	0	0	0	0	0	0	0
	Adjusted Gross Savings	106,379	109,794	723	64,879	8,237	73,840	290,013
	Net-to-Gross Adjustment (80%)	-21,276	-21,959	-145	-12,976	-1,647	-14,768	-58,003
	Net Adjusted Savings	85,103	87,835	579	51,903	6,590	59,072	232,011
	Planned Savings (Net)	67,040	51,199	0	48,691	141,759	190,450	308,689

[39] The 2017 total gross deemed savings values reported in this table include adjustments of -306 89 kWh/year and -0.03 kW made to the January 2017 reported savings. The adjustments account for corrections to STEP Manual version 7.0.0 issued on May 1, 2017. Specifically, the correction was in section 2.1.5 for "Low-Flow Showerhead" measures, to the "ΔT" variable, which is a measure of the change in temperature of the water used for shower and temperature entering the house ($\Delta T = T_{shower} - T_{in\ house}$). STEP Manual 7.0.0 reported the value as 44.9°F, but has been corrected to 44.1°F. This correction is reflected in STEP Manual version 8.0.0 in this EM&V report.

[40] Program expenditures include operations and maintenance (O&M), capital spending, and common costs. O&M spending components include direct rebate, direct implementation, direct EM&V, and other indirect or administrative spending. The expenditures reported here do not include the Company's margins.

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Category	Item	2016	2017[39]	2018	2019	2020	Extension Total (2018–2020)	Program Total (2016-2020)
	Annual % Toward Planned Savings (Net)	127%	172%	N/A	107%	5%	31%	75%
	Avg. Savings per Participant (Gross)	678	845	723	492	434	486	661
	Avg. Savings per Participant (Net)	542	676	579	393	347	389	528
Installed Demand Reduction (kW)	Total Gross Deemed Demand	10.6	9.1	0.1	18.9	2.9	21.8	41.6
	Realization Rate Adjustment (100%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Adjusted Gross Demand	10.6	9.1	0.1	18.9	2.9	21.8	41.6
	Net-to-Gross Adjustment (80%)	-2.1	-1.8	0.0	-3.8	-0.6	-4.4	-8.3
	Net Adjusted Demand	8.5	7.3	0.0	15.1	2.3	17.5	33.3
	Planned Demand (Net)	15.0	11.4	0.0	5.1	13.7	18.8	45.1
	Annual % Toward Planned Demand (Net)	57%	64%	N/A	299%	17%	93%	74%
	Avg. Peak Demand per Participant (Gross)	0.07	0.07	0.06	0.14	0.15	0.14	0.09
	Avg. Demand per Participant (Net)	0.05	0.06	0.05	0.11	0.12	0.11	0.08
Program Performance	Annual $Admin. per Participant (Gross)	$57	$99	$1,949	$62	$134	$83	$79
	Annual $Admin. per kWh/year (Gross)	$0.08	$0.12	$2.70	$0.13	$0.31	$0.17	$0.12
	Annual $Admin. per kW (Gross)	$847	$1,415	$31,929	$430	$888	$578	$831
	Annual $EM&V per Total Costs ($)	2.0%	2.3%	18.2%	3.0%	12.4%	6.4%	3.5%
	Annual $Rebate per Participant (Gross)	$1,442	$1,939	$1,763	$1,161	$1,019	$1,147	$1,487

Table 4-6 provides gross and net annualized energy savings and demand reduction for the extended program years 2018–2020, in North Carolina, by measure type.

Table 4-6. North Carolina Residential Income and Age Qualifying Home Improvement Program Measure-Level Performance Indicators (2018–2020)

Program	kWh/year		kW	
Residential Income and Age Qualifying Home Improvement – North Carolina (DSM IV)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	80%	100%	80%
Measure	**Gross**	**Net**	**Gross**	**Net**
	Gross	Net	Gross	Net
40 W Incandescent Replacement with LED Lamp	3,318	2,655	0.3	0.2
60 W Incandescent Replacement with LED Lamp	84,256	67,405	8	6.4
Attic Insulation	125,127	100,101	26.2	20.9
Bathroom Aerator	5,838	4,671	0.7	0.6
Kitchen Aerator	8,260	6,608	0.7	0.5
Pipe Insulation	23,645	18,916	2.7	2.2
Showerhead	39,876	31,901	3	2.1
Total	290,320	232,256	41.6	33.3

4.1.3.3 Additional Virginia Program Data

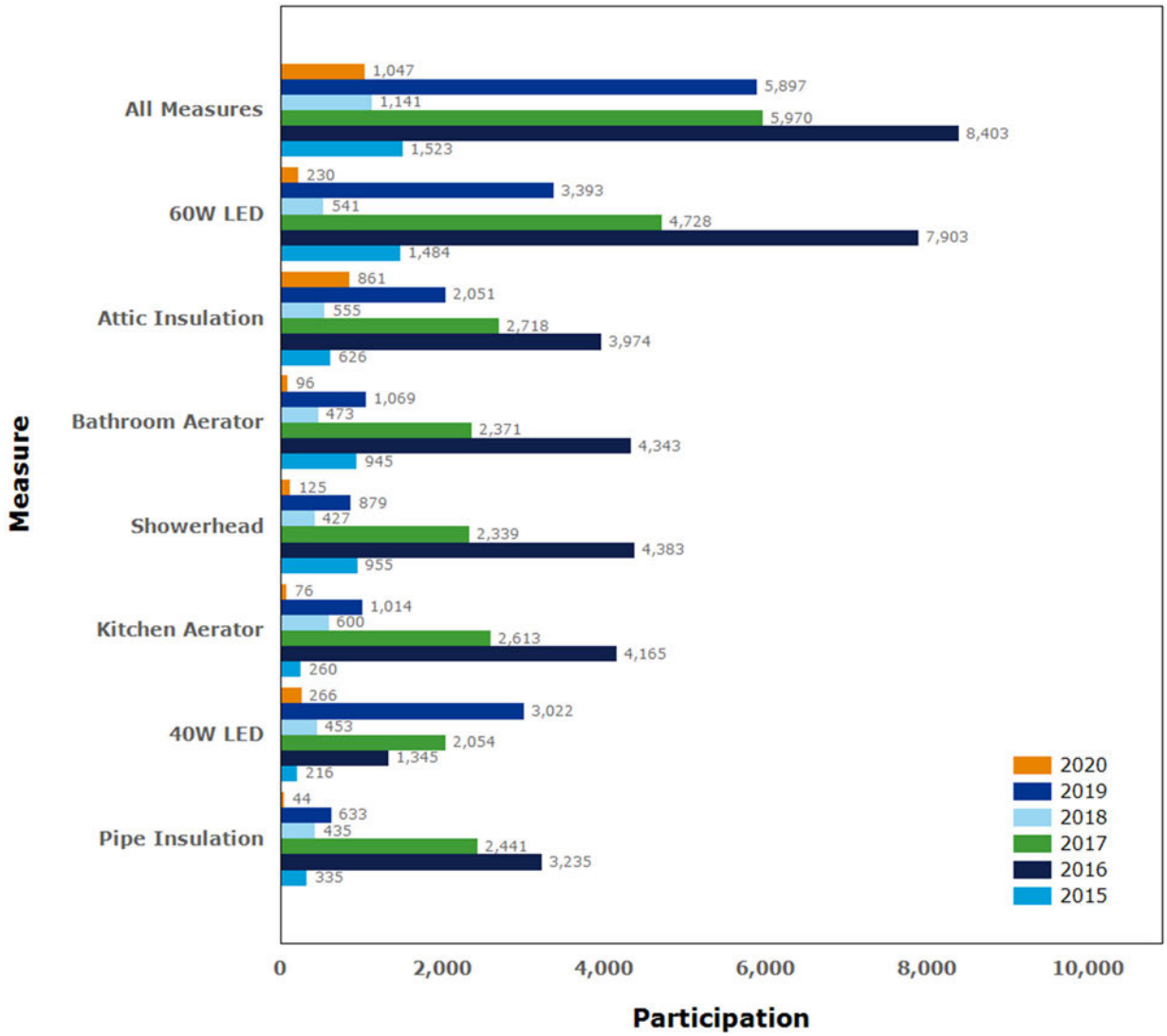
Figure 4-3 through Figure 4-5 show the Virginia program's participation, gross annualized energy savings, and average gross annualized energy savings per participant (for participants who installed the measure in the respective years) by measure type.

Note participation in these charts are the count of new unique customers in the "all measures" presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

In 2020, participant levels were near historically low 2018 levels, which was when activity slowed while waiting for the Program extension decision, resulting in the smallest enrollment year. Participation is a metric of the number of customers who had a measure installed. The most frequently installed measures, in decreasing order, were attic insulation, LED replacements of 40 W incandescent lamps, and LED replacement of 60 W incandescent lamps. The popularity of these measures varies slightly from historical trends that favored water saving measures where the most frequently installed measures were LED replacements of 60 W incandescent lamps, showerheads, and bathroom aerators (Figure 4-3). It is

possible that due to the COVID-19, pandemic measures to be installed inside living spaces were impacted more than measures installed outside living spaces in terms of historic participation.

Figure 4-3. Virginia Residential Income and Age Qualifying Home Improvement Program Participation by Measure and Year

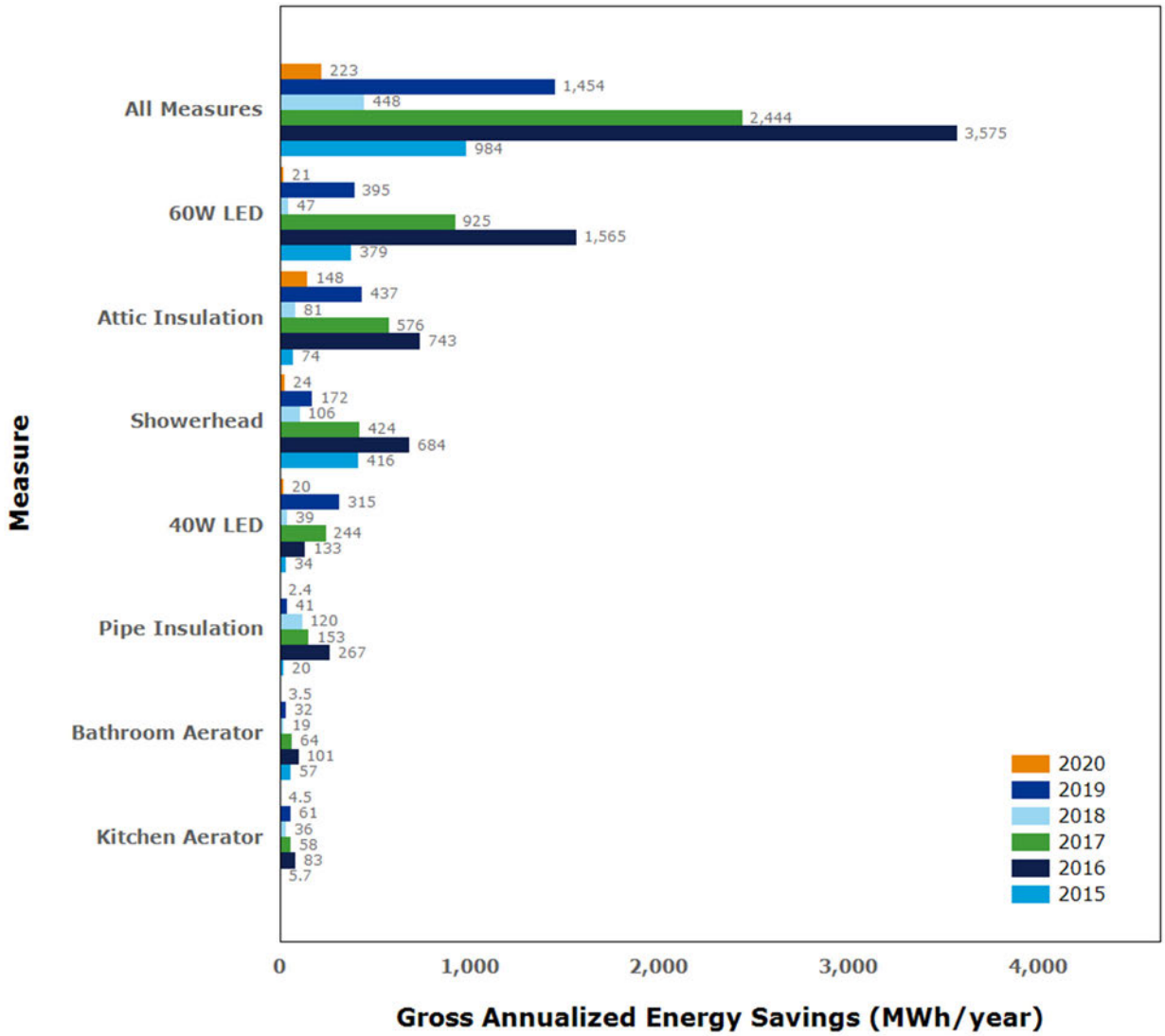


Total gross energy savings grew from the 2015 start year (cyan) and peaked in 2016 and 2017 of the originally approved three-year program life. In 2018, activity slowed until the Commission approved the program extension and relaunch activity increased at the end of the year (light blue). 2020 (orange) is the second full year of the extended program and total gross energy savings did not surpass original program start and wind-down levels. However 2020 cannot be considered a typical year with the challenges and major uncertainties resulting from the COVID-19 pandemic.

The measures with the most gross energy savings in 2020, in decreasing order, were attic insulation (148 MWh/year), showerheads (24 MWh/year), and LED replacement of 60 W incandescent lamps (21 MWh/year) (Figure 4-4). Historically the measure LED replacement of 60 W incandescent lamps often produced the most energy savings within a given year and

other measures have yet to surpass this level of savings achieved in 2016. Attic insulation and showerheads are the next largest gross energy saving measures (Figure 4-4).

Figure 4-4. Virginia Residential Income and Age Qualifying Home Improvement Program Gross Annualized Energy Savings by Measure and Year (MWh/year)[41]



In the program's lifetime from 2015 to 2020 (yellow), the low-flow showerheads and attic insulation were the measures with the largest gross annualized savings per participant values, followed closely by LED replacement of 60 W incandescent

[41] Note that the data reported here for 2017 differs slightly to Table 4-3, due to changes made to the January 2017 reported savings. For additional information, see that table's footnote.

lamps (Figure 4-5). In 2020 (orange), the energy savings per participant from eligible measures are generally lower relative to previous years' values and the overall all measure value is the lowest compared to previous years.

Figure 4-5. Virginia Residential Income and Age Qualifying Home Improvement Program Average Gross Annualized Energy Savings per Participant (kWh/year per participant) by Measure and Year[42]

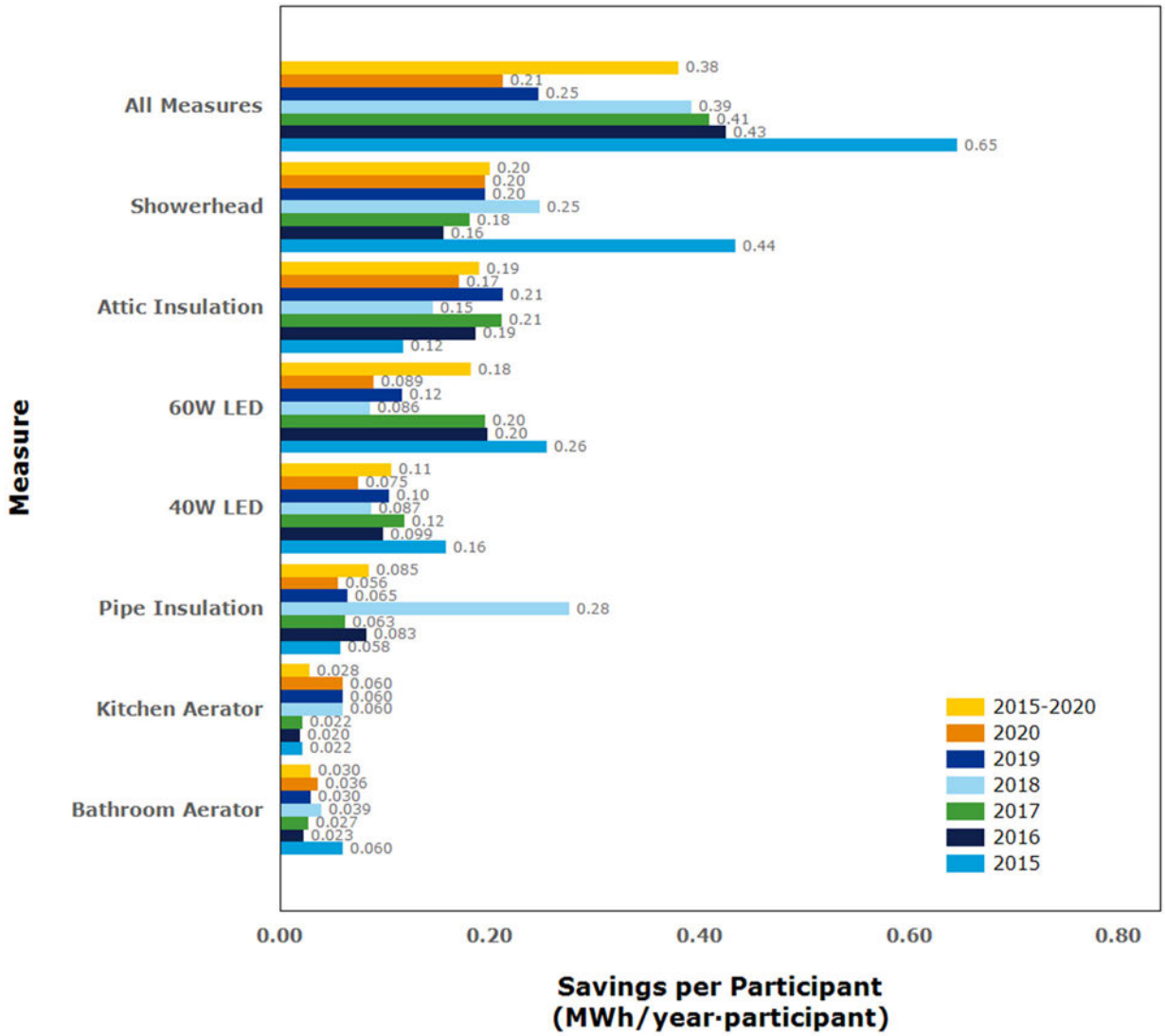


Figure 4-6 through Figure 4-8 show participation, gross annualized energy savings, and average annualized energy savings per participant by building type and program year. Consistent with historical building type trends, the majority of program participants live in multi-family buildings (Figure 4-6), and this is also reflected as the building type that generated the majority of the gross annualized energy savings (Figure 4-6) in 2020.

[42] Note that the data reported here for 2017 differs slightly to Table 4-3, due to changes made to the January 2017 reported savings. For additional information, see that table's footnote.

A participant in these charts is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

Figure 4-6. Virginia Residential Income and Age Qualifying Home Improvement Program Participation by Building Type and Year

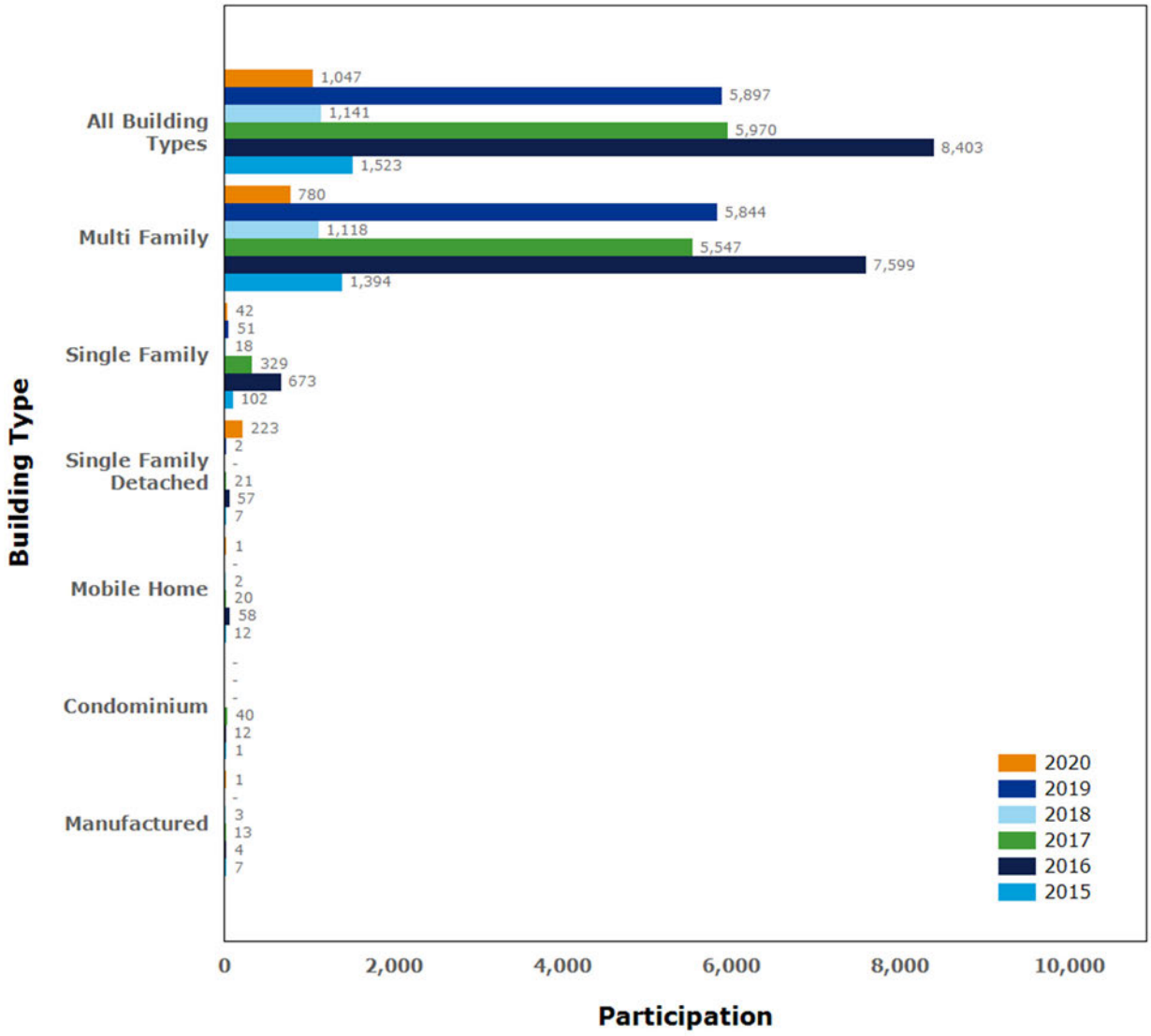


Figure 4-7. Virginia Residential Income and Age Qualifying Home Improvement Program Gross Annualized Energy Savings by Building Type and Year (MWh/year)[43]

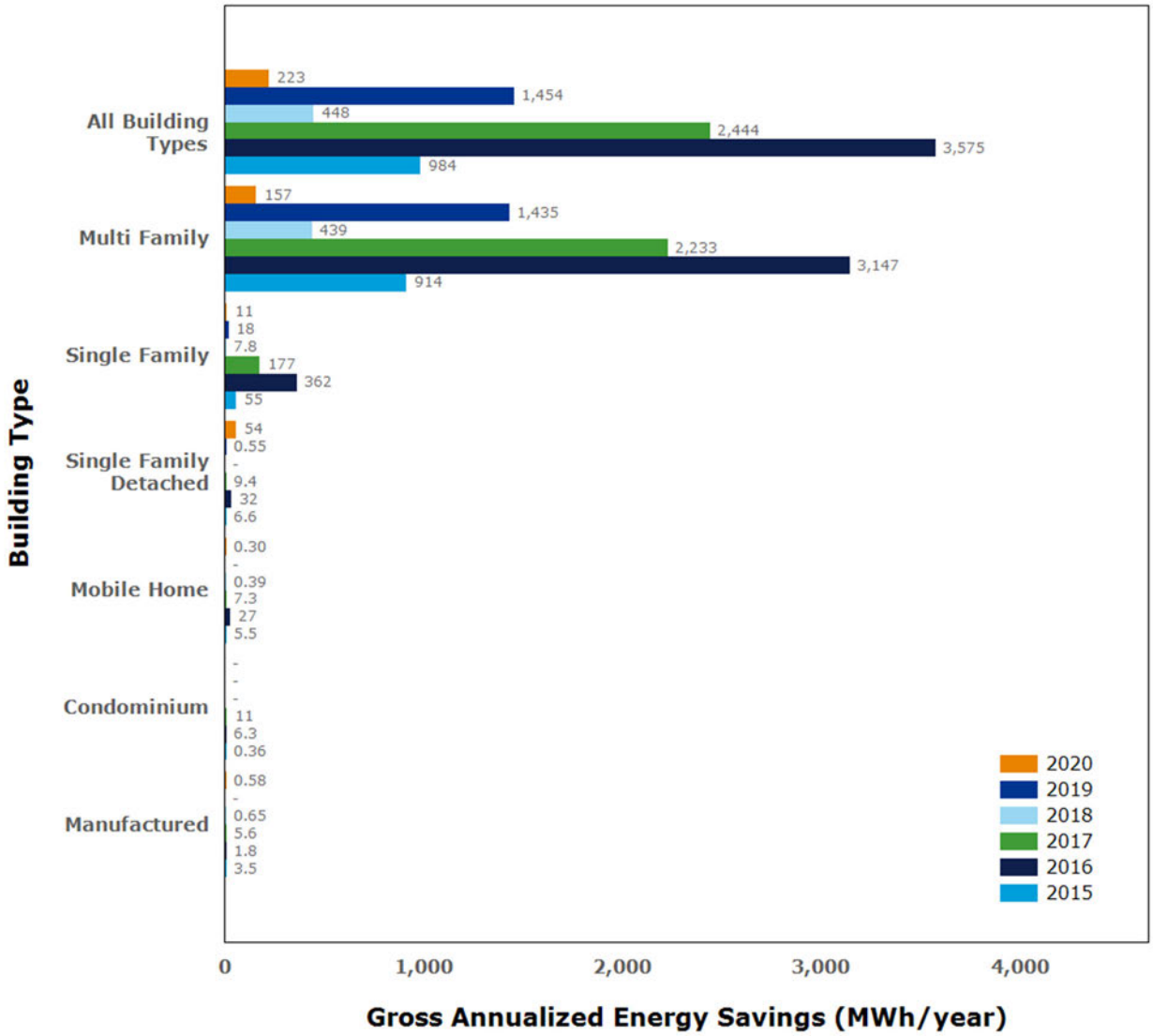
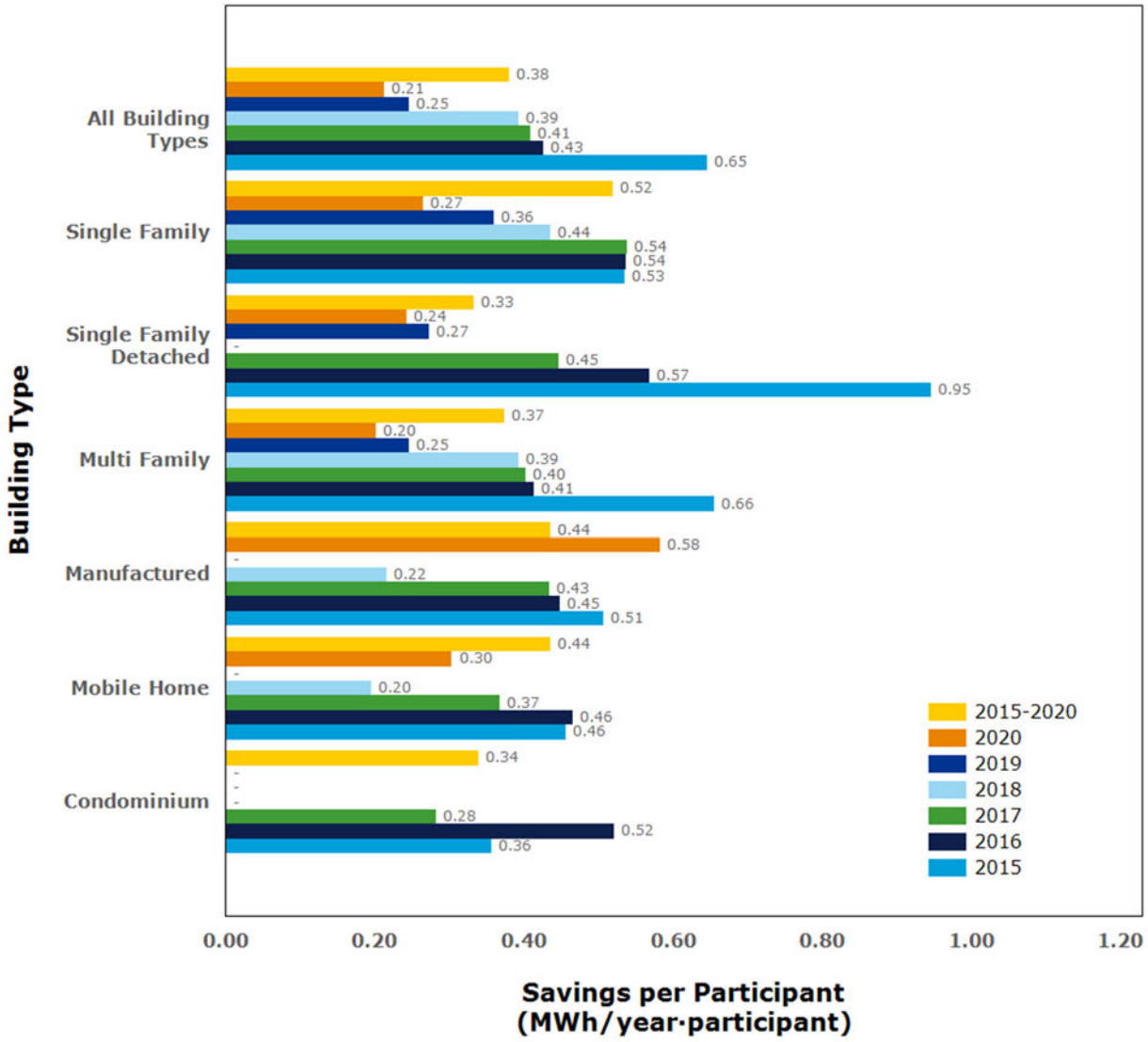


Figure 4-8 shows the average gross annualized savings per participant for all years combined (2015-2020) by building type and per individual year. Single family detached and single family homes have the largest average gross annualized savings per participant values nearly greater than or equal to 0.3 MWh/year per participant. The higher average savings per participant for single family homes, compared to other building types, may be attributed to a difference in square footage. Single family buildings generally having larger areas relative to other building types and this may result in more savings

[43] Note that the data reported here for 2017 differs slightly to Table 4-3, due to changes made to the January 2017 reported savings. For additional information, see that table's footnote.

opportunities. Mobile, condos, manufactured, and multi-family buildings average savings per participant values range from nearly 0.34 to 0.44 MWh/year per participant.

Figure 4-8. Virginia Residential Income and Age Qualifying Home Improvement Program Average Gross Annualized Energy Savings per Participant (kWh/year per participant) by Building Type and Year[44]



[44] Note that the data reported here for 2017 differs slightly to Table 4-3, due to changes made to the January 2017 reported savings. For additional information, see that table's footnote.

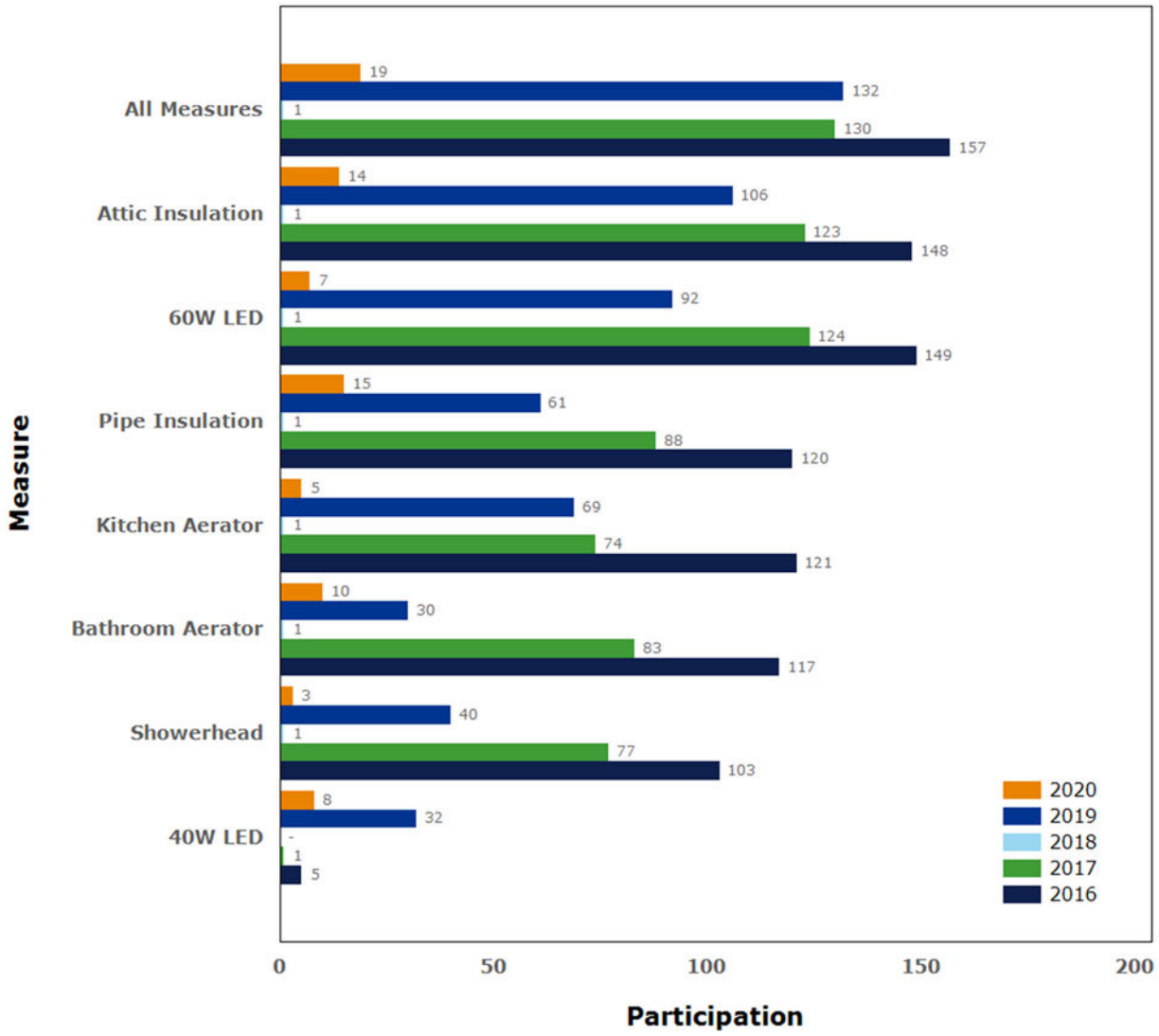
4.1.3.4 Additional North Carolina Program Data

Figure 4-9 through Figure 4-11 show gross annualized energy savings, participation, and average annualized energy savings per participant (for participants who installed the measure in that year) by measure and by building type in North Carolina.

Note participation in these charts are the count of new unique customers in the “all measures” presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

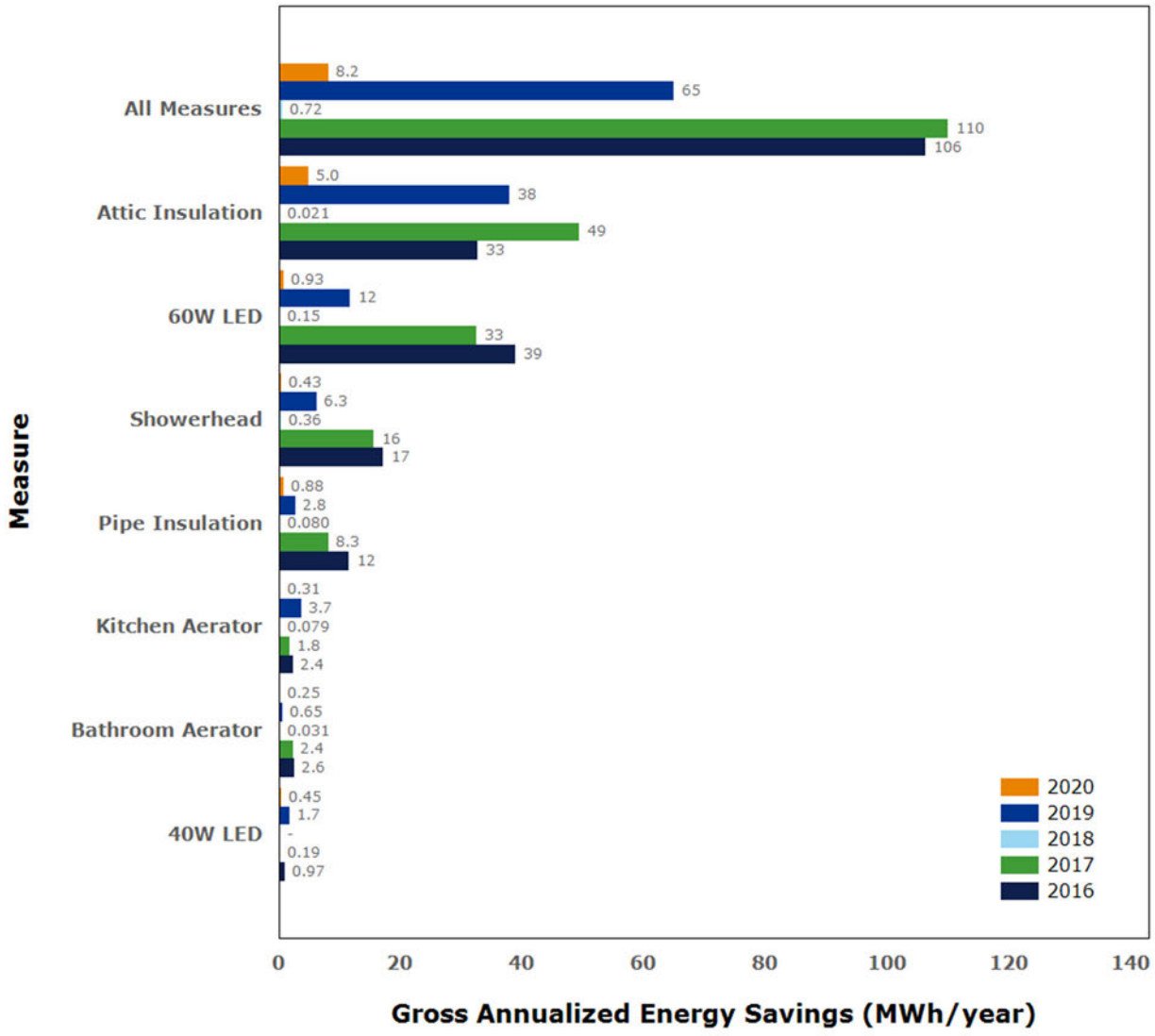
When comparing 2020 results to previous years and cumulative for the program life, it should be noted that in 2018 there was a single program participant because the program was winding down in North Carolina and did not restart until 2019 after its extension was approved in both states. Most measures were adopted by the majority of participants every year the program has been active, with the exception of the measure LED replacement of 40 W incandescent lamps. 2020 (orange) participation is modest relative to the programs’ history and the most popular measures installed, in decreasing order, were attic insulation, pipe insulation, and bathroom aerator. Participation by measure is lower compared to previous years (Figure 4-9).

Figure 4-9. North Carolina Residential Income and Age Qualifying Home Improvement Program Participation by Measure and Year



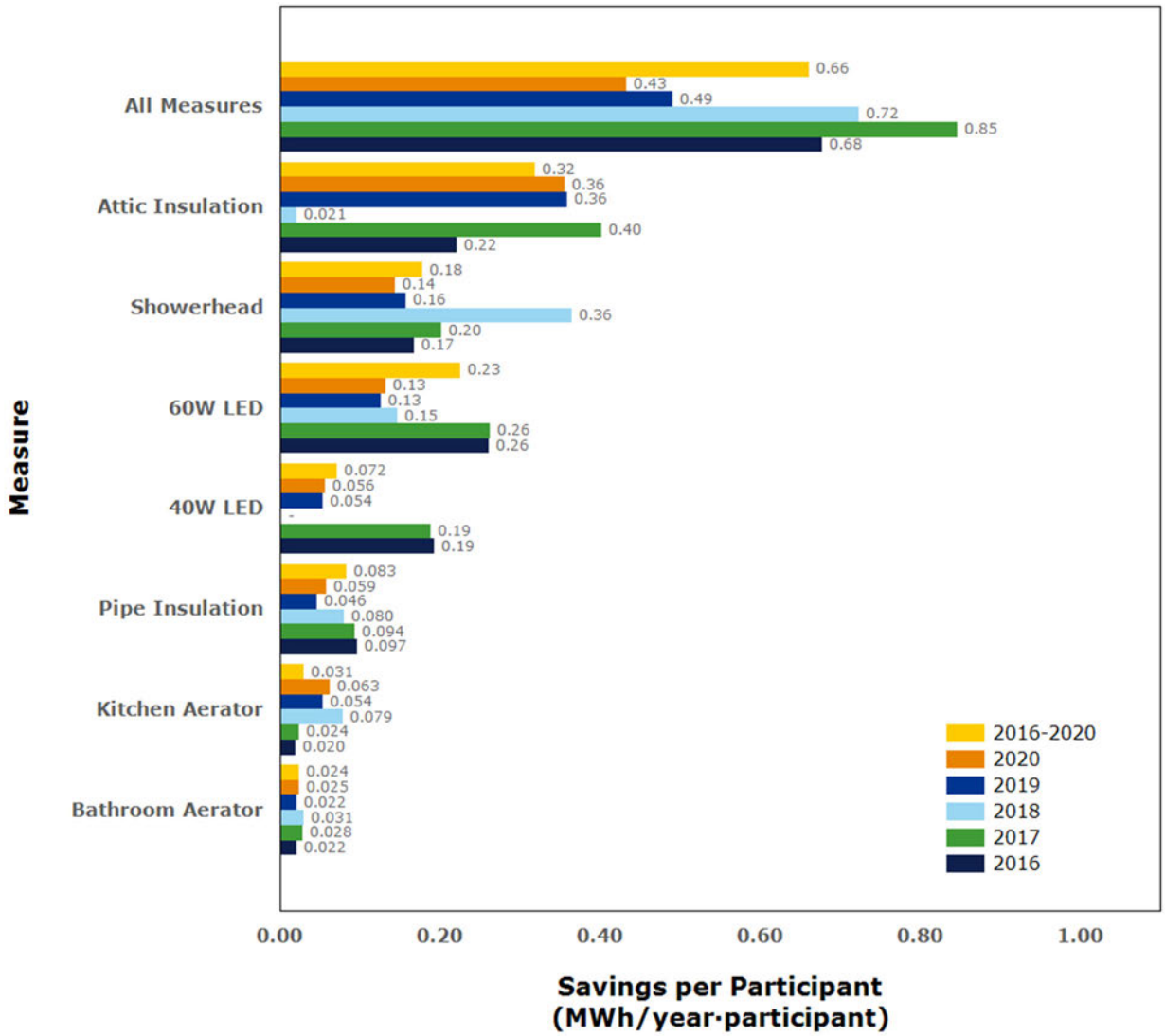
Attic insulation, LED replacement of 60 W incandescent lamps, and pipe insulation were the measures with the greatest contributions to program gross annualized savings in 2020 (orange). This varies slightly with the measures that were installed the most by participants, except bathroom aerators which were more frequently installed relative to LED replacement of 60 W incandescent lamps (Figure 4-10). Attic insulation has consistently produced the largest average savings per participant values historically (Figure 4-11).

Figure 4-10. North Carolina Residential Income and Age Qualifying Home Improvement Program Gross Annualized Energy Savings by Measure and Year (kWh/year)[45]



[45] Note that the data reported here for 2017 differs slightly from Table 4-5, due to changes made to the January 2017 reported savings. For additional information, see that table's footnote.

Figure 4-11. North Carolina Residential Income and Age Qualifying Home Improvement Program Average Gross Annualized Energy Savings per Participant (kWh/year per participant) by Measure and Year[46]



[46] Note that the data reported here for 2017 differs slightly to Table 4-5, due to changes made to the January 2017 reported savings. For additional information, see that table's footnote.

The 2020 participants resided in single family, single family detached, and multifamily buildings, and the majority of participants reside in single family homes, which is similar to historical trends (Figure 4-12). This trend appears in the 2020 gross annualized energy savings where single family detached buildings represented the majority of savings (Figure 4-13).

Figure 4-12. North Carolina Residential Income and Age Qualifying Home Improvement Program Participation by Building Type and Year

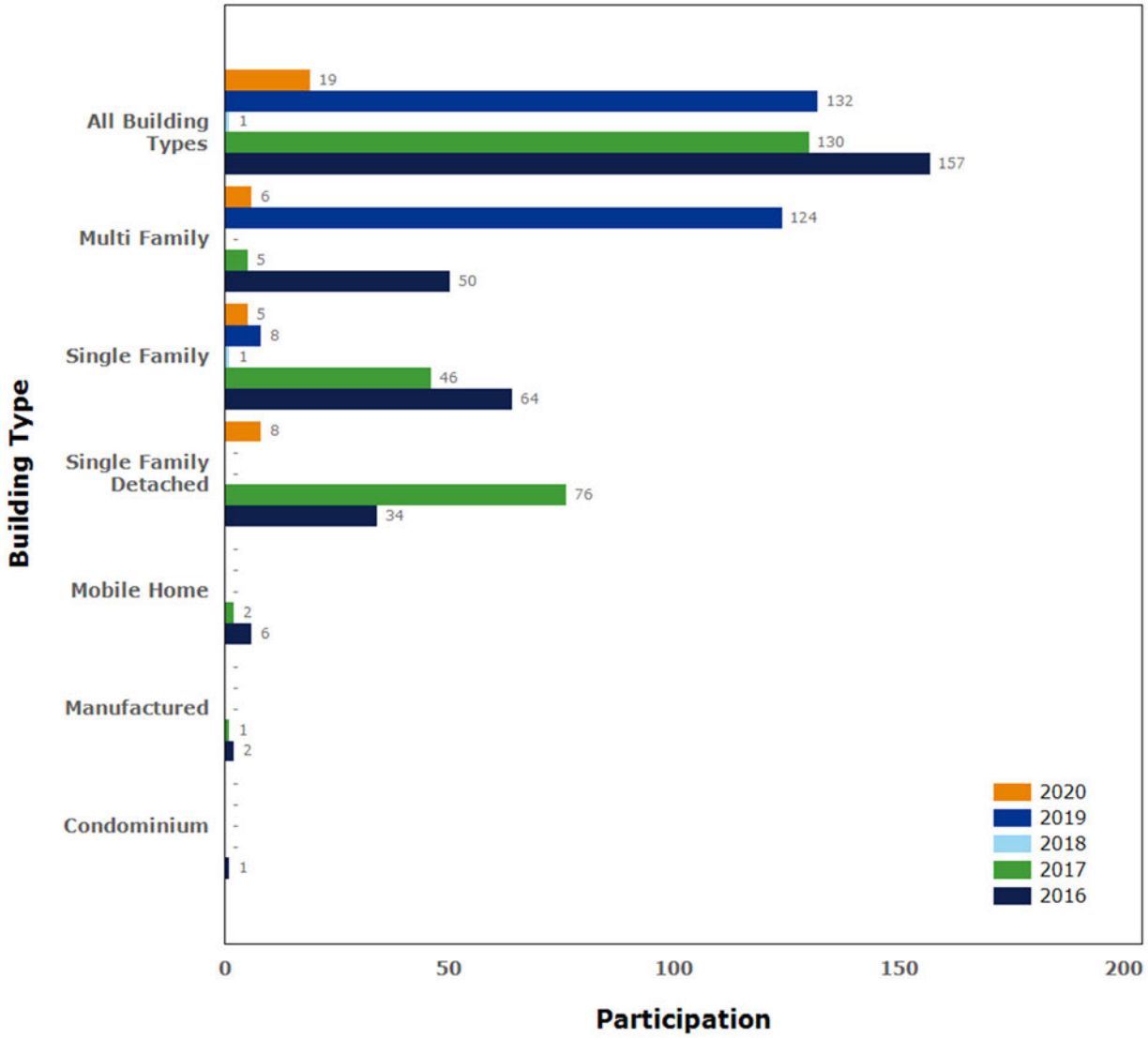
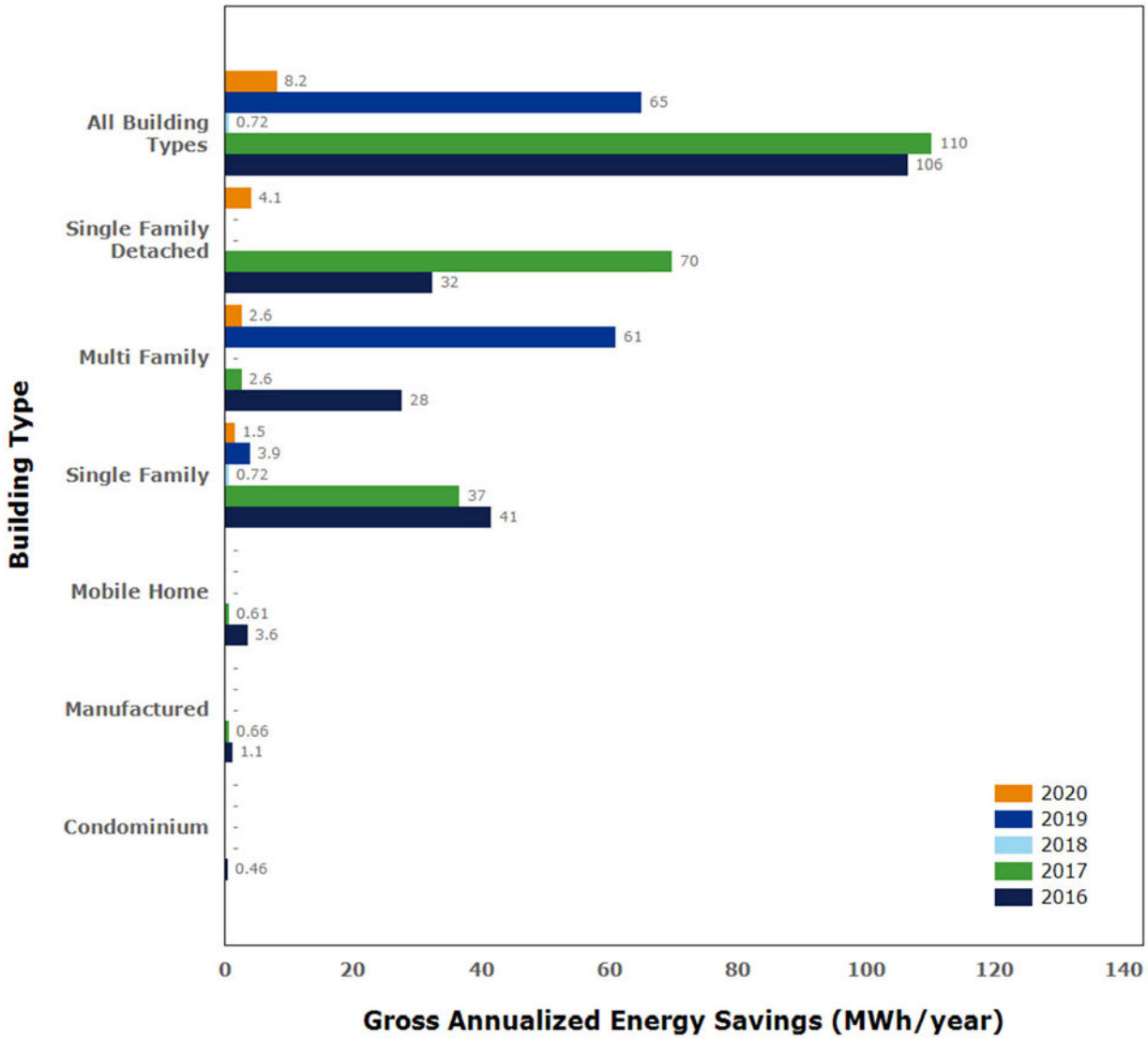


Figure 4-13. North Carolina Residential Income and Age Qualifying Home Improvement Program Gross Annualized Energy Savings by Building Type and Year (kWh/year)[47]

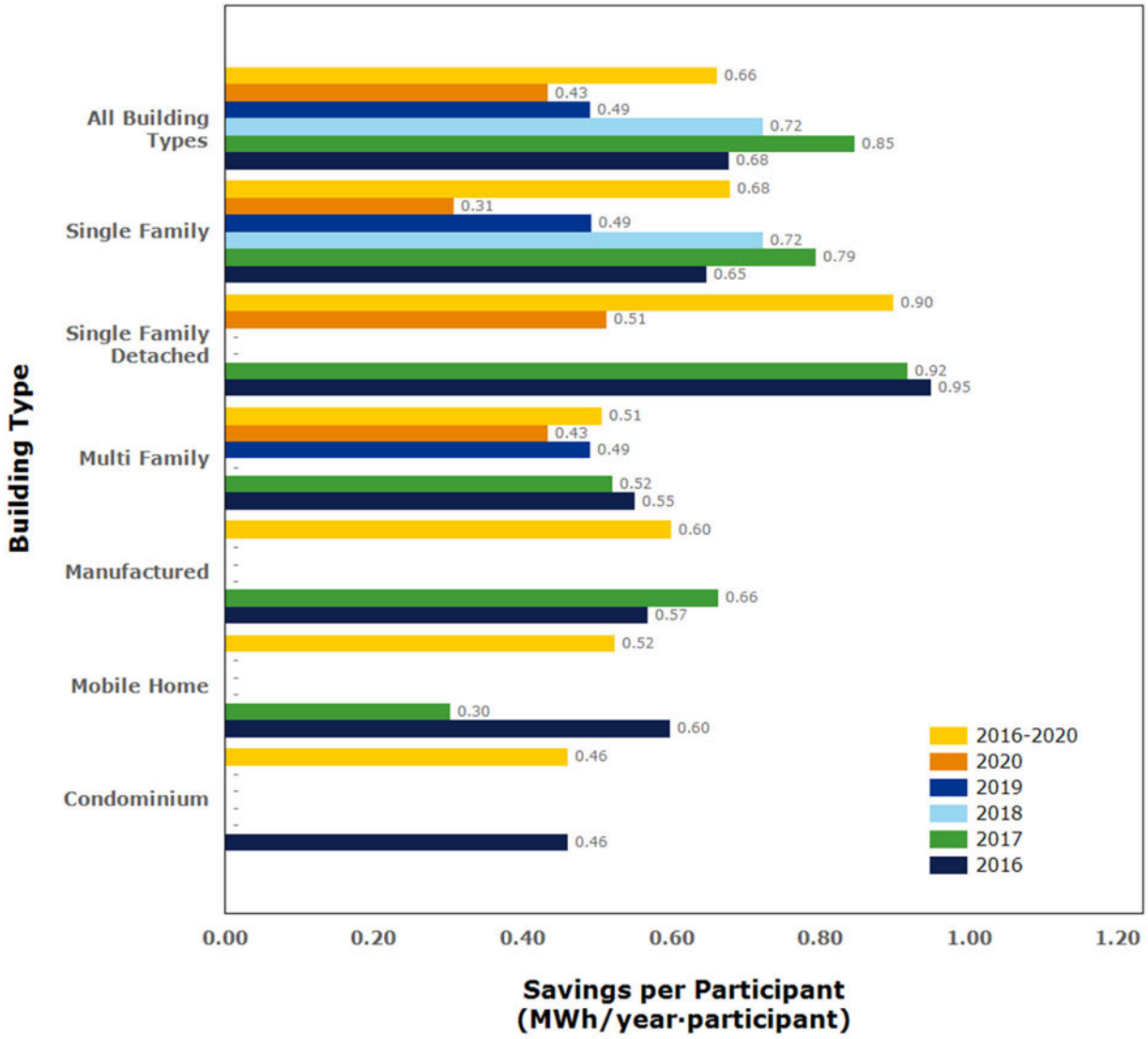


Historically, single family and single family detached buildings with the largest gross average savings per participant values across all program years from 2016 to 2020 (orange) dominated with values nearly greater than or equal to 0.7 MWh/year per participant. The remaining building types had average per participant savings less than or equal to 0.60 MWh/year per participant (Figure 4-14). In 2020, single-family detached buildings reappeared in the building type mix after being absent since 2017, and the presence of multifamily buildings was modest compared to 2019. Perhaps the focus on single family

[47] Note that the data reported here for 2017 differs slightly to Table 4-5, due to changes made to the January 2017 reported savings. For additional information, see that table's footnote.

building types and multifamily buildings accounts for the absence of manufactured, mobile homes, and condominium building types.

Figure 4-14. North Carolina Residential Income and Age Qualifying Home Improvement Program Average Gross Annualized Energy Savings per Participant (kWh/year per participant) by Building Type and Year[48]



[48] Note that the data reported here for 2017 differs slightly to Table 4-5, due to changes made to the January 2017 reported savings. For additional information, see that table's footnote.

4.1.3.5 Comparison of Savings with Usage in Virginia

See Table 4-7 for a comparison of the 2020 program net adjusted savings in Virginia with the system-wide planned savings for the program, the annual usage for an average rate schedule, and the annual usage for eligible customers in the rate schedule.

Table 4-7. Virginia Residential Income and Age Qualifying Home Improvement Program Comparison of Savings with Usage by Rate Schedule (2020)

Comparisons	Item		Value
	Schedule 1		
Comparison of Savings	Net Systemwide Planned Savings		371.2 kWh/year per participant
	Net Adjusted Savings		304 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings		82%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[49]		13,651 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage		2.2%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage		See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage		
	Schedule DP-R		
Comparison of Savings	Net Systemwide Planned Savings		371.2 kWh/year per participant
	Net Adjusted Savings		1,168 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings		315%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[50]		12,648 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage		9.2%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage		See "Comparison to Average Annual Usage for Rate Schedule"
	Schedule GS-1		
Comparison of Savings	Net Systemwide Planned Savings		371.2 kWh/year per participant
	Net Adjusted Savings		419 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings		113%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[51]		19,498 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage		2.1%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage		See "Comparison to Average Annual Usage for Rate Schedule"

[49] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 2, Column E (kWh of Sales Per Customer).

[50] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 27, Column D (kWh of Sales Per Customer).

[51] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 27, Column D (kWh of Sales Per Customer).

4.2 Residential Appliance Recycling – Virginia and North Carolina

Virginia

Case #: PUE-2018-00168

RESIDENTIAL APPLIANCE RECYCLING

2019-PRESENT
499 kWh/yr Average Net Savings Per Unit Recycled

Eligibility

- Owner of an operational refrigerator or freezer that is at least 10 years old and between 10 and 32 cubic feet

Measures

- Refrigerator recycling
- Freezer recycling

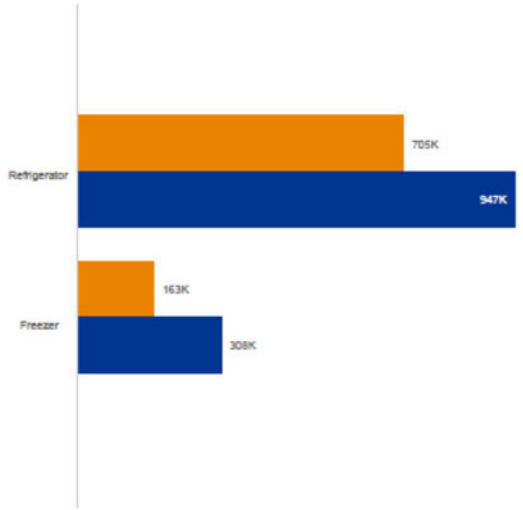
Incentivized **2,551** units, **18%** of planned units

Achieved net annual energy savings of **1,274 MWh/year**, **18%** of planned energy savings

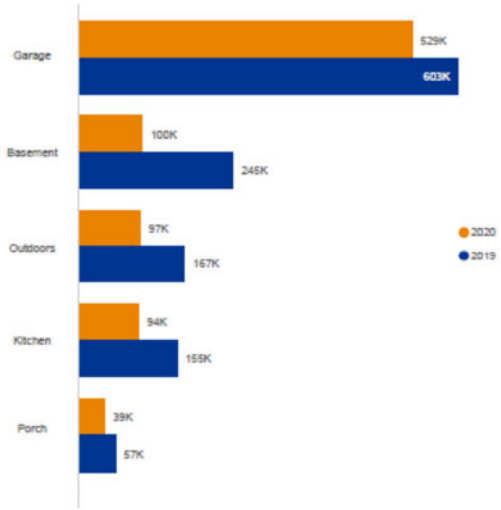
Spent **29%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)				384,884	473,111	857,995
Total Program Participants (#)				1,579	972	2,551
Total Gross Incremental Savings (kWh/yr)				1,255,513	868,091	
Total Net Incremental Savings (kWh/yr)				753,308	520,855	
Average Gross Incremental Demand Reduction (kW)				188	130	
Average Net Incremental Demand Reduction (kW)				113	78	
Total Net Lifetime Savings (kWh)				157,865	1,260,862	10,193,301
Average Lifetime Demand Reduction (kW)				113	191	191

TOTAL SAVING BY MEASURE TYPE
ALL IN KWH



TOTAL SAVINGS BY LOCATION
TOP 5 IN KWH



4.2.1 Program Description

The Residential Appliance Recycling Program provides an incentive to residential customers for recycling old, inefficient refrigerators and freezers. A multimedia campaign (printed materials, digital ads) creates program awareness and elicits participation from eligible customers. The program offers an incentive payment of $20 per eligible appliance coupled with a convenient and environmentally optimal removal and disposal service. To qualify for the program, Dominion Energy customers must currently receive Electric Supply Service and Electric Delivery Service in accordance with a residential rate schedule, be the party that is responsible for the electric bill, and also be the owner of the refrigerator or freezer. Also, the refrigerator or freezer must be at least ten years old, between 10 and 32 cubic feet, and in working condition and in use.

Dominion Energy customers are eligible to recycle two units through the program. To participate in the program, customers may contact and submit an application through ReCleim, the appliance recycling implementation contractor. The Virginia SCC approved this program, as part of the DSM Phase VII programs, on May 2, 2019 (Case No. PUR-2018-00168) for a five-year period of July 1, 2019, through June 30, 2024. The North Carolina Utilities Commission approved this program on November 13, 2019 (Docket No. E-22, SUB 569). Upon approval, the Company worked to finalize data systems, determine program logistics with program implementers, and finalize implementation details.

Participation tracking in Virginia began in September 2019 with the approval of the first rebates. The assessment of this program used the algorithms and assumptions specified in the STEP Manual (APPENDIX F).

Table 4-8 maps the applicable sections in this report to reporting requirements listed in the EM&V Rule section 50, “Standard Requirements for Evaluation, Measurement, and Verification Reporting.”[52]

The Residential Appliance Recycling Program was suspended from March 16, 2020 through June 29, 2020 because of the COVID-19 pandemic. Economic conditions and the ongoing pandemic impacted the contractor’s ability to implement the program after the restart and the program is currently suspended. The Company is evaluating options, including another program implementation vendor, and hopes to have the program operational again by late spring or early summer of 2021.

[52] 20 VAC 5-318-50

Table 4-8. Residential Appliance Recycling Program Compliance with EM&V Rule Section 50

Subsection within 20 VAC 5-318-50	Location and Description
A. EM&V Plan	APPENDIX I. EM&V Plan
B. Utilizing utility-specific data or other data	**Per 20 VAC 5-318-40 A and B** 1. See APPENDIX F. STEP Manual v2020 for a description of all data or estimates used as inputs for this program and the measures within it. 2. See the Methodologies section (Section 3) of this report for a description of the overarching EM&V methodologies used to produce results in this report. **Per 20 VAC 5-318-40 C** 3. See subsections of this report section, and Table 4-11 for measure-level estimates of kilowatt and kilowatt-hour, before and after adjustments for free-ridership, as appropriate.
C. Changes to measure-level inputs and assumptions, and inputs to cost/benefit estimates	1. See Table 4-9 for program planning assumptions 2. See documents filed with the Virginia State Corporation Commission Docket PUR-2018-00168 for approved measure-level inputs and assumptions, and the impact of such changes on original cost/benefit estimates for DSM programs or measures.
D. Measure-level data collection methodology	See response to A. and B. above.
E. Explanation of eligibility requirements for each rate schedule that program is offered	See program description above.
F. Comparison of measured annual measure or program savings estimates to the annual usage of the average rate schedule usage, and eligible customer in each rate schedule	See section 4.2.3.5 Comparison of Savings with Usage in Virginia
G. Explanation of controls undertaken by utility	Program is currently suspended.

4.2.2 Methods for the Current Reporting Period

The next section describes the program's progress towards planned participants, energy savings, and demand reduction.

DNV developed an EM&V Plan for this program, which is included in APPENDIX I. For the current period, the approach included reviewing the tracking data and then estimating net energy savings and demand reduction using STEP Manual calculations. Table 4-9 outlines Dominion Energy's initial program planning assumptions that were used to design the program.

Table 4-9. Residential Appliance Recycling Program Planning Assumptions System-wide

Assumption	Value
Target Market	Residential customers
NTG Factor	60%
Measure Life (years)	8
Gross Average Annual Energy Savings per Participant (kWh/year)	784.2
Gross Average Coincident Peak Demand Reduction per Participant (kW)	0.09
Net Average Annual Energy Savings (per Participant (kWh/year)	470.5
Average Rebate per Participant (US$)	$20

4.2.3 Assessment of Program Progress towards Plan

The next section describes the program's progress towards planned participants, energy savings, and demand reduction.

4.2.3.1 Key Virginia Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for Virginia appear below. Following this summary, Table 4-10 provides performance indicator data annually and from program inception through 2020. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.2, cumulative gross savings are in Appendix C.2 and cumulative net savings are in Appendix D.2.

- In 2020, the program recycled a total of 795 refrigerators and 177 freezers.
- Participation in 2020 represented 11% of the planned value (8,927).
- From September 2019 through the end of 2020, a total of 2,551 refrigerators and freezers were recycled in the program.

- Total annual net energy savings in 2020 was 520,885 kWh/year, which was 8% of planned. Total annual net demand reduction was 78 kW.
- Average annual gross energy savings and demand reduction per participant were 893 kWh/year and 0.13 kW in 2020.
- The total program annual net energy savings and demand reduction were 1,274,163 kWh and 190.7 kW, respectively, from September 2019 through **the end of** 2020.
- Gross energy savings per participant was 832 kWh and demand reduction per participant was 0.12 kW from September to December 2020.

- 2020 program spending was 26% of planned. The rebate for recycling a refrigerator or freezer was $20.

Table 4-10. Residential Appliance Recycling Indicators (2019-2020)

Category	Item	2019	2020	Program Total (2019-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]		
	Direct Implementation			
	Direct EM&V			
	Indirect Other (Administrative)	$13,009	$24,834	$37,843
Total Costs ($)	Total[53]	$384,884	$473,111	$857,995
	Planned	$1,094,670	$1,828,534	$2,923,203

[53] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Category	Item	2019	2020	Program Total (2019-2020)
	Variance	-$709,785	-$1,355,423	-$2,065,208
	Annual % of Planned	35%	26%	29%
Participants	Total (Gross)	1,579	972	2,551
	Planned (Gross)	5,225	8,927	14,152
	Variance	-3,646	-7,955	-11,601
	Annual % of Planned (Gross)	30%	11%	18%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	1,255,513	868,091	2,123,604
	Realization Rate Adjustment (100%)	0	0	0
	Adjusted Gross Savings	1,255,513	868,091	2,123,604
	Net-to-Gross Adjustment (60%)	-502,205	-347,237	-849,442
	Net Adjusted Savings	753,308	520,855	1,274,163
	Planned Savings (Net)	644,850	6,269,479	6,914,329
	Annual % Toward Planned Savings (Net)	117%	8%	18%
	Avg. Savings per Participant (Gross)	795	893	832
	Avg. Savings per Participant (Net)	477	536	499
Installed Demand Reduction (kW)	Total Gross Deemed Demand	188	129.9	317.9
	Realization Rate Adjustment (100%)	0.0	0.0	0.0
	Adjusted Gross Demand	188	129.9	317.9
	Net-to-Gross Adjustment (60%)	-75	-52.0	-127.1
	Net Adjusted Demand	113	78.0	190.7
	Planned Demand (Net)	0.0	977.3	977.3
	Annual % Toward Planned Demand (Net)	N/A	8%	20%
	Avg. Peak Demand per Participant (Gross)	0.1	0.1	0.1
	Avg. Demand per Participant (Net)	0.1	0.1	0.1
Program Performance	Annual $Admin. per Participant (Gross)	$8	$26	$15
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.03	$0.02
	Annual $Admin. per kW (Gross)	$69	$191	$119
	Annual $EM&V per Total Costs ($)	7%	11%	9%
	Annual $Rebate per Participant (Gross)	$20	$20	$20

The following table (Table 4-11) provides gross and net annualized energy savings and demand reduction for program years 2019 and 2020, in Virginia, by measure type. Seventy-eight percent of the net savings resulted from recycling refrigerators and 22% from recycling freezers.

Table 4-11. Virginia Residential Appliance Recycling Program Measure-Level Performance Indicators (2019-2020)

Program	kWh/year		kW	
Residential Appliance Recycling Program – Virginia (DSM VII)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	60%	100%	60%
Measure	**Gross**	**Net**	**Gross**	**Net**
Refrigerator	1,652,508	991,505	247.3	148.4
Freezer	471,096	282,658	70.5	42.3
Total	2,123,604	1,274,163	317.9	190.7

4.2.3.2 Key North Carolina Program Data

Table 4-12 provides performance indicator data for the year. Shaded cells are considered extraordinarily sensitive information. There were no participants in 2020. Detailed program indicators by year and month are provided in Appendix B.2.

Table 4-12. Residential Appliance Recycling Indicators (2020)

Category	Item	2020
Operations and Management Costs ($)	Direct Rebate	[redacted]
	Direct Implementation	
	Direct EM&V	
	Indirect Other (Administrative)	$881
Total Costs ($)	Total[54]	$17,270
	Planned	$116,132
	Variance	-$98,861
	Annual % of Planned	15%
Participants	Total (Gross)	0
	Planned (Gross)	573
	Variance	-573
	Annual % of Planned (Gross)	0%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	0
	Realization Rate Adjustment (100%)	0
	Adjusted Gross Savings	0
	Net-to-Gross Adjustment (60%)	0
	Net Adjusted Savings	0
	Planned Savings (Net)	402,421

[54] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Category	Item	2020
	Annual % Toward Planned Savings (Net)	0%
	Avg. Savings per Participant (Gross)	N/A
	Avg. Savings per Participant (Net)	N/A
Installed Demand Reduction (kW)	Total Gross Deemed Demand	0.0
	Realization Rate Adjustment (100%)	0.0
	Adjusted Gross Demand	0.0
	Net-to-Gross Adjustment (60%)	0.0
	Net Adjusted Demand	0.0
	Planned Demand (Net)	66.1
	Annual % Toward Planned Demand (Net)	0%
	Avg. Peak Demand per Participant (Gross)	N/A
	Avg. Demand per Participant (Net)	N/A
Program Performance	Annual $Admin. per Participant (Gross)	N/A
	Annual $Admin. per kWh/year (Gross)	N/A
	Annual $Admin. per kW (Gross)	N/A
	Annual $EM&V per Total Costs ($)	15%
	Annual $Rebate per Participant (Gross)	N/A

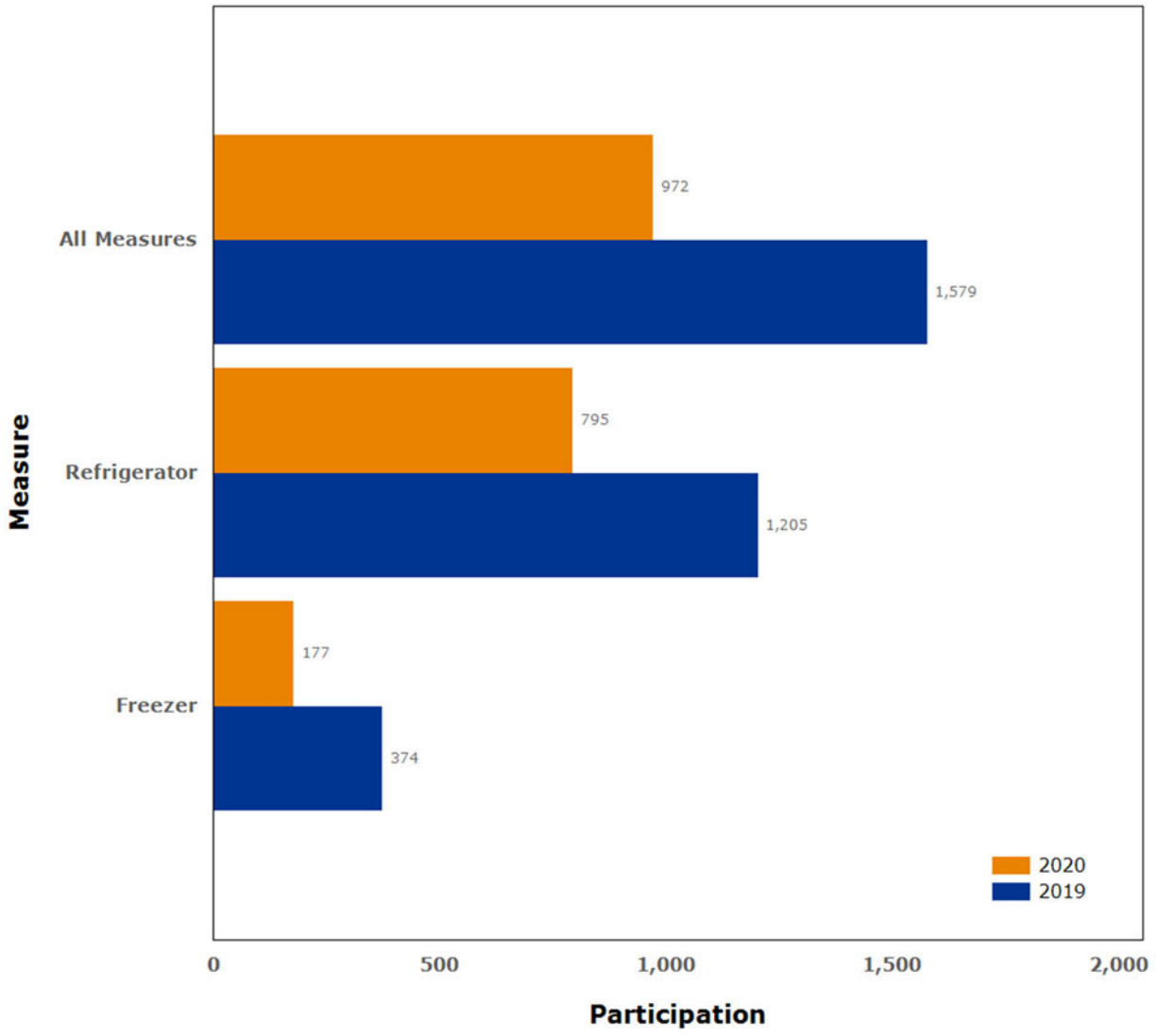
4.2.3.3 Additional Virginia Program Data

Figure 4-15 through Figure 4-17 show the Virginia program's participation, gross annualized energy savings, and average gross annualized energy savings per participant (for participants who installed the measure in the respective years) by measure type. Note that the definition of participants for Residential Appliance Recycling Program is the number of refrigerators and freezers recycled.

Note participation in these charts are the count of new unique customers in the "all measures" presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

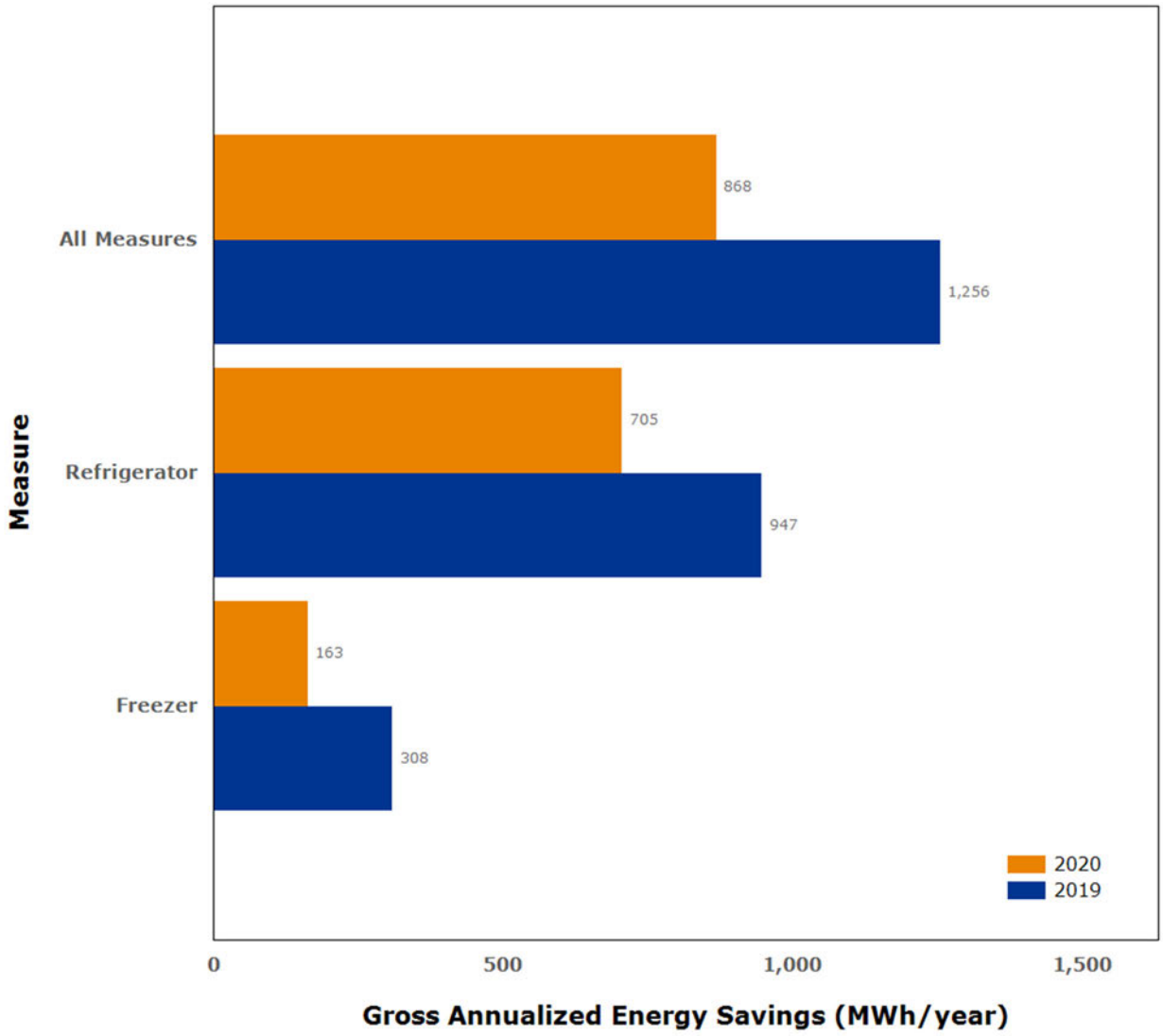
In 2020, there were a total of 972 appliances recycled through the program (Figure 4-15). Approximately 82% of the recycled units were refrigerators (795) and one-quarter were freezers (177).

Figure 4-15. Virginia Residential Appliance Recycling Program Participation by Measure and Year



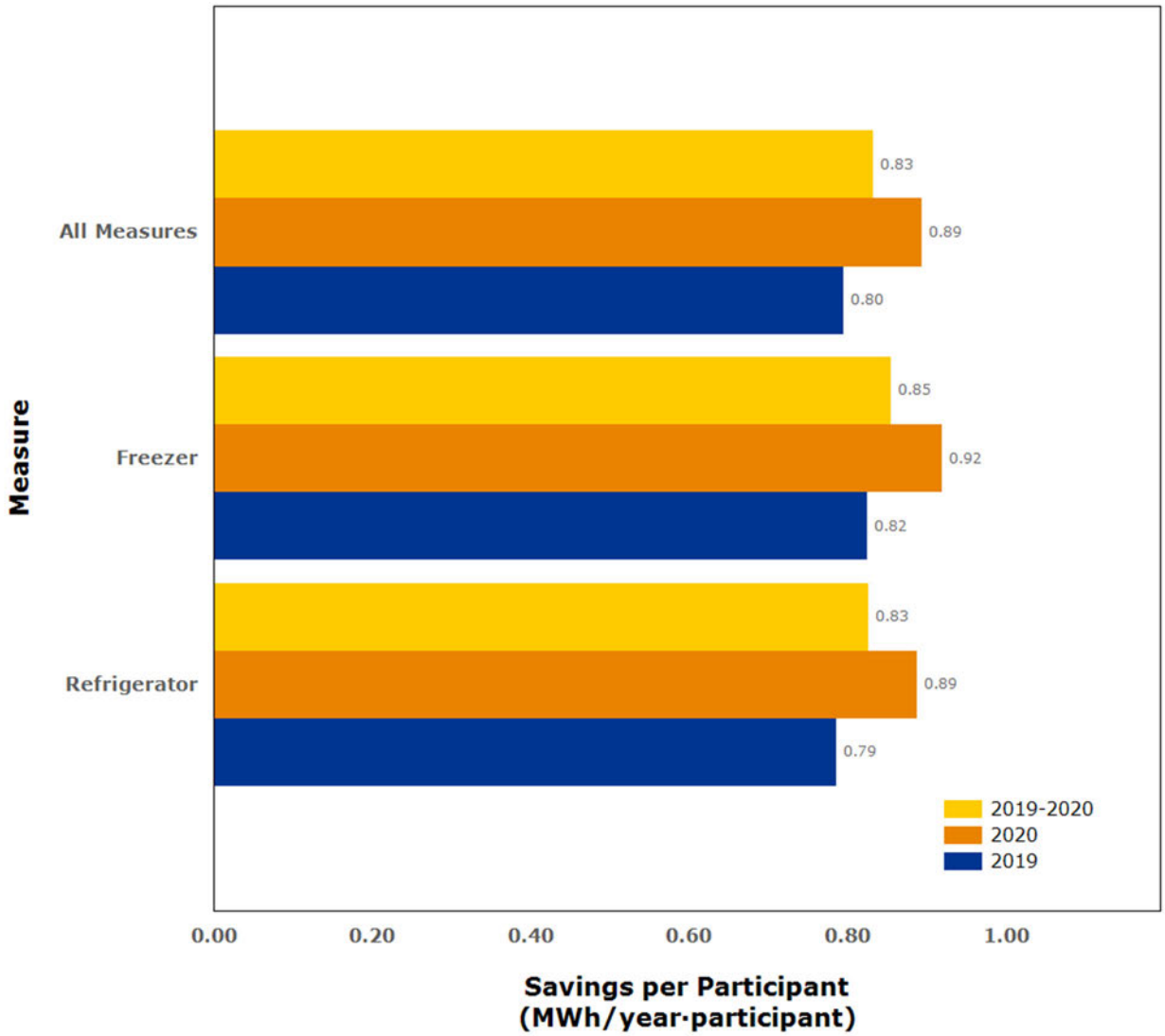
In 2020, the Residential Appliance Recycling program had 868,091 kWh in gross annualized energy savings. Of that, 82% of the gross annualized savings resulted from refrigerators and 18% resulted from freezers.

Figure 4-16. Virginia Residential Appliance Recycling Program Gross Annualized Energy Savings by Measure and Year (MWh/year)



Although most of the participation and savings comes from the recycling of refrigerators, the recycling of freezers had greater savings per participant than refrigerators (919 kWh per freezer as compared to 887 kWh per refrigerator). A greater percentage of refrigerators and freezers were not replaced in 2020 (60%) than 2019 (42%) and because non-replaced units yield greater savings than replaced units, the overall per unit savings increased from 800 kWh in 2019 to 890 kWh in 2020.

Figure 4-17. Virginia Residential Appliance Recycling Program Average Gross Annualized Energy Savings per Participant (MWh/year per participant) by Measure and Year



4.2.3.4 Additional North Carolina Program Data

No North Carolina customers have participated in the program through 2020.

4.2.3.5 Comparison of Savings with Usage in Virginia

See Table 4-13 for a comparison of the 2020 program net adjusted savings in Virginia with the system-wide planned savings for the program, the annual usage for an average rate schedule, and the annual usage for eligible customers in the rate schedule.

Table 4-13. Virginia Residential Appliance Recycling Program Comparison of Savings with Usage by Rate Schedule (2020)

Comparisons	Item	Value
Schedule 1		
Comparison of Savings	Net Systemwide Planned Savings	470.5 kWh/year per participant
	Net Adjusted Savings	499 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	106%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[55]	13,651 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	4%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule 1EV		
Comparison of Savings	Net Systemwide Planned Savings	470.5 kWh/year per participant
	Net Adjusted Savings	206 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	44%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[56]	19,957 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	1%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule 1P		
Comparison of Savings	Net Systemwide Planned Savings	470.5 kWh/year per participant
	Net Adjusted Savings	811 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	172%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[57]	34,596 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	2.3%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule 1S		
Comparison of Savings	Net Systemwide Planned Savings	470.5 kWh/year per participant

[55] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 2, Column E (kWh of Sales Per Customer).

[56] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 17, Column E (kWh of Sales Per Customer).

[57] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 4, Column E (kWh of Sales Per Customer).

Comparisons	Item	Value
	Net Adjusted Savings	414 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	88%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[58]	30,114 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	1.4%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
Schedule 1T		
Comparison of Savings	Net Systemwide Planned Savings	470.5 kWh/year per participant
	Net Adjusted Savings	862 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	183%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[59]	20,467 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	4.2%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	

[58] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 3, Column E (kWh of Sales Per Customer).

[59] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 5, Column E (kWh of Sales Per Customer).

4.3 Residential Efficient Products Marketplace – Virginia and North Carolina

Virginia

Case #: PUE-2018-00168

RESIDENTIAL EFFICIENT PRODUCTS MARKETPLACE

2019-PRESENT
22 kWh/yr Average Net Savings Per Unit

Eligibility

- Active residential customer in the Commonwealth of Virginia
- Customer must be the party that is responsible for electric bill and either own the home or otherwise able to secure permission and authorization to complete the rebate submission
- Product must be a new ENERGY STAR® certified/labeled and operate with electricity

Measures

- LEDs
- Refrigerator
- Freezer
- Clothes washer
- Electric clothes dryer
- Room air purifier
- Dehumidifier
- Dishwasher

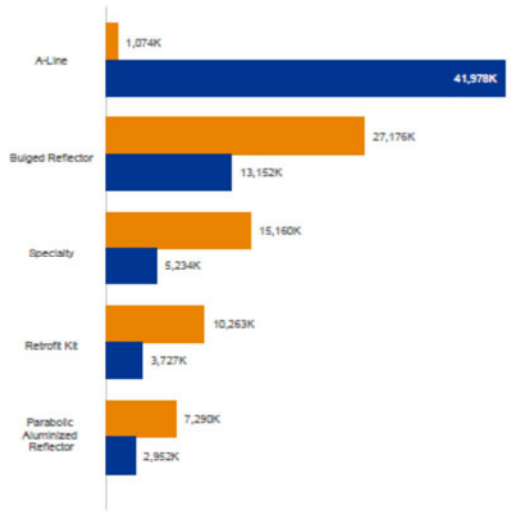
Incentivized **4,853,947** units, **94%** of planned units

Achieved net annual energy savings of **105,313 MWh/year**, **77%** of planned energy savings

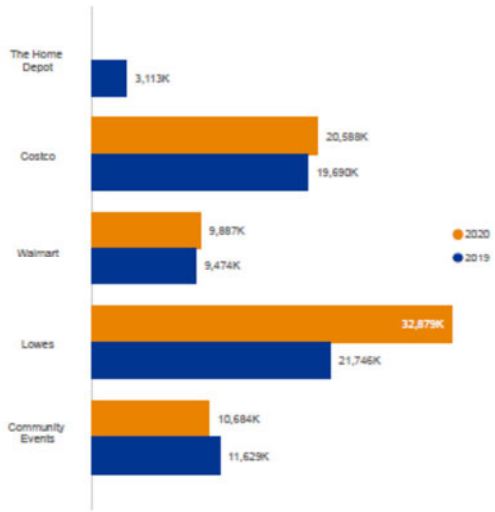
Spent **94%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)				4,636,049	8,063,058	12,699,107
Total Program Participants (#)				2,507,265	2,339,401	4,846,666
Total Gross Incremental Savings (kWh/yr)				73,007,561	81,186,888	
Total Net Incremental Savings (kWh/yr)				51,105,293	54,207,486	
Average Gross Incremental Demand Reduction (kW)				6,679	7,500	
Average Net Incremental Demand Reduction (kW)				4,675	4,995	
Total Net Lifetime Savings (kWh)				10,883,411	91,591,665	1,746,436,908
Average Lifetime Demand Reduction (kW)				4,675	9,670	9,670

TOTAL SAVING BY LAMP TYPE
TOP 5 IN KWH



TOTAL SAVINGS BY RETAILER
TOP 5 IN KWH



DNV

North Carolina

Docket #: E-22 Sub 539

RESIDENTIAL EFFICIENT PRODUCTS MARKETPLACE

2019-PRESENT
21 kWh/yr Average Net Savings Per Unit

Eligibility

- A customer may not purchase more than 12 packages of LEDs

Measures

- LED lamps

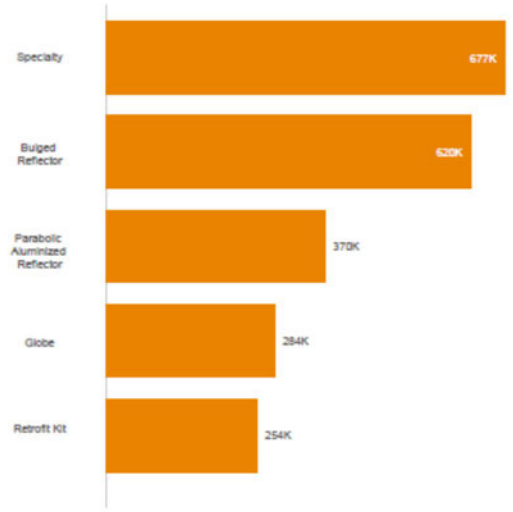
Incentivized **86,493** units, **62%** of planned units

Achieved net annual energy savings of **1,796 MWh/year**, **23%** of planned energy savings

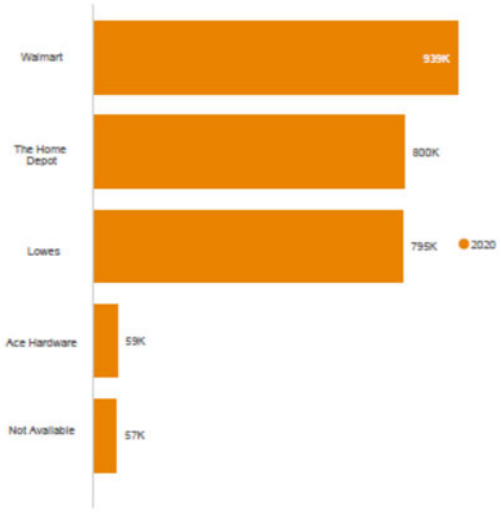
Spent **56%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)					238,201	238,201
Total Program Participants (#)					86,493	86,493
Total Gross Incremental Savings (kWh/yr)					2,707,492	
Total Net Incremental Savings (kWh/yr)					1,796,481	
Average Gross Incremental Demand Reduction (kW)					249	
Average Net Incremental Demand Reduction (kW)					165	
Total Net Lifetime Savings (kWh)					910,176	29,791,639
Average Lifetime Demand Reduction (kW)					165	165

TOTAL SAVING BY LAMP TYPE
TOP 5 IN KWH



TOTAL SAVINGS BY RETAILER
TOP 5 IN KWH



4.3.1 Program Description

The Residential Efficient Products Marketplace Program provides rebates for the purchase and installation of ENERGY STAR® qualified LED lamps and fixtures, and appliances. The Program has the following eligibility requirements:

A Customer must receive electric supply service and electric delivery service on a residential rate schedule, be the party that is responsible for the electric bill, and either owns the home or otherwise be able to secure permission and authorization to participate.

The Product must be purchased new, ENERGY STAR® qualified/labeled, and installed and functional at customer premises receiving electric services from Dominion. A list of ENERGY STAR qualified/labeled products is located at https://dominion.myrebateportal.com/.

There are three delivery channels for this program: 1) lighting discounts are delivered at the point of sale; 2) appliance rebates for qualifying equipment are processed through the Dominion rebate portal; and 3) the online Dominion Energy Marketplace (https://www.poweredbyefi.org/dominionenergy/). For the online rebate portal, customers must provide a legible copy of the entire sales receipt of the product. Customers are eligible for two rebates for dishwashers, clothes washers, refrigerators, and freezers, and up to four rebates for dehumidifiers and air purifiers.

The Virginia SCC approved this program as part of the DSM Phase VII programs on May 2, 2019 (Case No. PUR-2018-00168) for five years from July 1, 2019, through June 30, 2024. The North Carolina Utilities Commission approved this program on November 13, 2019 (Docket No. E-22, SUB 568). Upon approval, the Company immediately began building the necessary data infrastructure and rebate portal, determining appropriate store locations with program implementers, and implementing the program. Program activity and EM&V tracking started in August 2019 for Virginia and January 2020 for North Carolina.

Table 4-14 cross-references the applicable sections in this report to reporting requirements of EM&V Rule section 50, “Standard Requirements for Evaluation, Measurement, and Verification Reporting.”[60]

[60] 20 VAC 5-318-50

Table 4-14. Residential Efficient Products Marketplace Program Compliance with EM&V Rule Section 50

Subsection within 20 VAC 5-318-50	Location and Description
A. EM&V Plan	APPENDIX J. EM&V Plan Residential Efficient Products Marketplace Program
B. Utilizing utility-specific data or other data	**Per 20 VAC 5-318-40 A and B** 1. See the Methodologies section (section 3) of this report for a description of the overarching EM&V methodologies used to report results in this report. 2. See APPENDIX F. STEP Manual v2020 for a description of all data or estimates used as inputs for this program and the measures within it. **Per 20 VAC 5-318-40 C** 3. See subsections of this report section, and Table 4-19. For measure-level estimates of kilowatt and kilowatt-hour, before and after adjustments for free-ridership, as appropriate.
C. Changes to measure-level inputs and assumptions, and inputs to cost/benefit estimates	1. See Table 4-15 for program planning assumptions 2. See documents filed with the Virginia State Corporation Commission Docket PUR-2018-00168 for approved measure-level inputs and assumptions, and the impact of such changes on original cost/benefit estimates for DSM programs or measures.
D. Measure-level data collection methodology	See response to A. and B. above.
E. Explanation of eligibility requirements for each rate schedule that program is offered.	See program description above
F. Comparison of measured annual measure or program savings estimates to the annual usage of the average rate schedule usage, and eligible customer in each rate schedule	See section 4.4.3.5, Comparison of Savings with Usage
G. Explanation of controls undertaken by utility	See APPENDIX JJ

4.3.2 Methods for the Current Reporting Period

The next section describes the program's progress towards planned participant, energy savings, and demand reduction goals. DNV developed an EM&V Plan for this program, which is included in APPENDIX J. For the current period, the approach included reviewing the tracking data and then estimating net energy savings and demand reduction using STEP Manual calculations. Table 4-15 outlines Dominion Energy's initial program planning assumptions that were used to design the program in the first iteration of the program, and in the most recent program extension.

Table 4-15. Residential Efficient Products Marketplace Program Planning Assumptions System-wide

Assumption	2019 Value	2020 and After Value
Target Market	Residential customers	Residential customers
NTG Factor	70%	70%
Measure Life (years)	16.5	16.5
Gross Average Annual Savings per Participant (kWh/year)	32.55	37.68
Gross Average Demand Reduction Per Participant (kW)	0.004	0.004
Net Average Annual Energy Savings per Participant (kWh/year)	22.79	26.38
Average Rebate per Participant (US$)	$1.56	$2.01

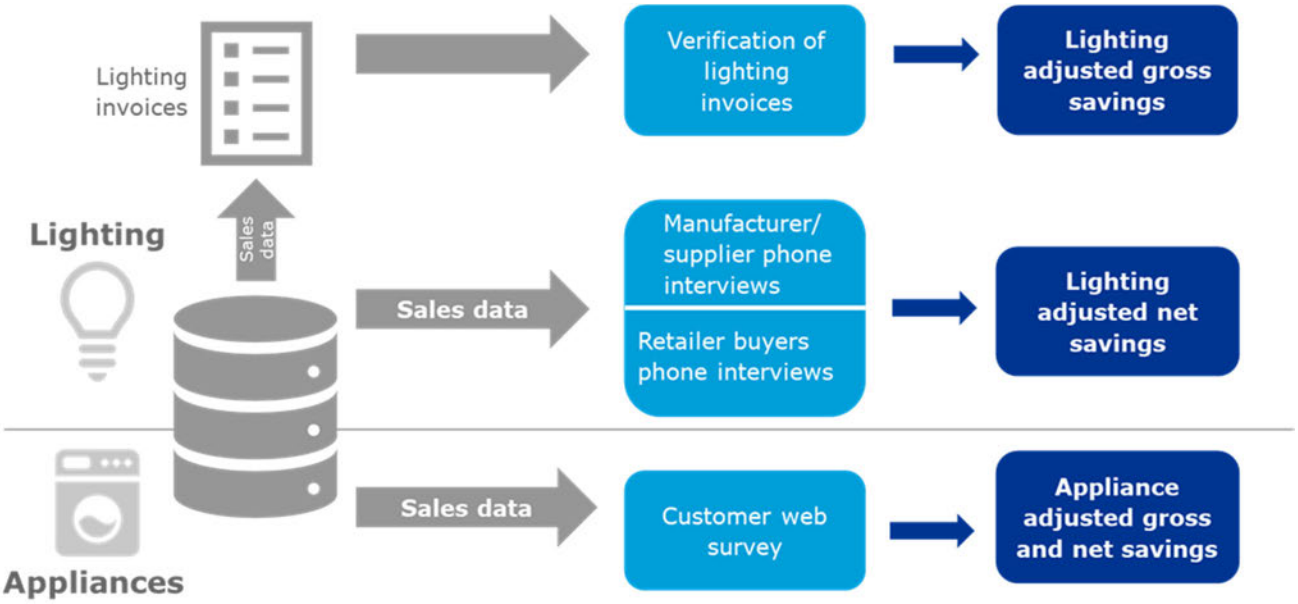
4.3.3 Impact Evaluation of Program

This section provides an overview of the key findings from the impact evaluation of the Residential Efficient Products Marketplace Program.

4.3.3.1 Methodology and approach

This section describes how DNV calculated the adjusted gross savings factors and adjusted NTG ratios. Figure 4-18 provides a high-level overview of the methodology.

Figure 4-18. Methodology overview



The study followed the Residential Efficient Products Marketplace Program EM&V Plan (Version 1.0) and national protocols for designing survey and survey samples and measuring net savings such as the Uniform Methods Project (UMP).[61] The evaluation used well-established survey methodologies to estimate program impacts. First, the DNV team interviewed the Dominion program manager and staff from the program implementer, CLEAResult, to gain greater insights and background knowledge of the program. These interviews helped the DNV team write informed questions for the impact, marketing, and satisfaction sections of the survey instruments.

For the lighting portion of the study, the DNV team conducted in-depth interviews (IDI) with lighting manufacturers and retailers who participated in the program. It first asked them to confirm their sales through the program as stated in the program tracking data. It then asked the manufacturers and retailers to estimate the impact on their sales if the Marketplace Program, with its price discounts and point-of-purchase promotional materials, had not been available. The team asked this series of program attribution (NTG) questions for four different classes of LED lighting products: 1) A-line lamps, 2) reflectors, 3) specialty lamps, and 4) fixtures and retrofit kits.

The team then asked the manufacturers and retailers questions about market trends including possible barriers to LED product demand and the future direction of LED product pricing. Finally, it asked the manufacturers and retailers to rate their satisfaction with the Marketplace Program. The survey instruments for the suppliers and retailers can be found in the full report.

[61] Daniel M. Violette and Pamela Rathbun, (2017) *Chapter 21: Estimating Net Savings – Common Practices, The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures*. Golden, CO; National Renewable Energy Laboratory. NREL/SR-7A40-68578; Robert Baumgartner. (2017). *Chapter 12: Survey Design and Implementation for Estimating Gross Savings Cross-Cutting Protocol, The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures*. Golden, CO; National Renewable Energy Laboratory. NREL/ SR-7A40-68568.

4.3.3.2 Sample design

For the lighting part of the evaluation, the DNV team reviewed the July 2019–July 2020 Marketplace Program tracking data and identified 22 participating lighting manufacturers and 15 participating large retailers. These small populations allowed for a census approach to the data collection where the team attempted to complete interviews with all participating manufacturers and large retailers. Therefore, no formal sample design was needed.

For the appliance part of the evaluation, the team sent out web survey invitations to all Marketplace Program participants in the July 2019–July 2020 tracking data. To reduce respondent fatigue, if participants had received more than two appliances through the program, they were only asked about two of these. In such cases, to determine which appliances to ask about, the team gave priority to the less common appliances (i.e., ENERGY STAR freezer, ENERGY STAR dehumidifier, and ENERGY STAR air purifier).

4.3.3.3 Adjusted gross savings

This study determined that no adjustment is needed to the Marketplace Program's gross energy savings claims because:

1. All the interviewed lighting manufacturers and retail buyers confirmed the summary of their July 2019–July 2020 program sales that the DNV team had emailed them before the interviews.
2. The DNV team verified that all the quantities of LED product types that appeared in the sample of lighting manufacturer invoices for November–December 2019 (which accounted for nearly half of program sales during the July 2019–July 2020 period) matched those in the program tracking data.
3. Only two of the 1,519 surveyed appliance participants described a situation where the program should lose some savings—either because the appliance had not been installed or it had been installed outside the Dominion service territory.

4.3.3.4 Net savings for lighting

The DNV team calculated adjustment factors for net savings using self-reported values from in-depth interviews. These values were applied to each supplier's sales after averaging the suppliers' NTG estimates with their partnered retail buyer's NTG estimates. The breakdown of each bulb category's NTG estimates is shown in Table 4-16.

Table 4-16. Lighting NTG summary by LED product type

	A-line Lamps	Specialty Lamps[62]	Fixtures & Retrofit Kits	Reflector Lamps[63]
NTG Ratio	60%	59%	60%	76%
Standard Error	0.3%	0.5%	0.2%	1.1%
Lower Confidence Interval	59.2%	58.6%	59.9%	74.6%
Upper Confidence Interval	60.2%	60.2%	60.6%	78.1%

[62] Specialty includes Specialty, Globe, Candle, and Candelabra base lighting types.
[63] Reflector includes Reflector, Bulged Reflector, Multifaceted Reflector, and Parabolic Aluminized Reflectors lighting types.

4.3.3.5 Net savings for appliances

The DNV team also estimated net savings for the appliance component of the program using a methodology described in the full report. Figure 4-19 shows total attributable energy savings for the appliance component of the program (the ratio between program-attributable energy savings and total program savings is the NTG ratio). Figure 4-19 breaks down the program attributable savings by appliance. The smaller appliances (dehumidifiers, air purifiers) had higher NTG ratios than the larger appliances.

One possible reason for this, as discussed later in the report, is that the program accelerated the purchase of dehumidifiers and air purifiers more than any other appliances (this timing attribution is a key component of program attribution). This is likely because participants can delay purchasing a new dehumidifier or air purifier with less inconvenience than would be the case if they delayed the purchase of a new refrigerator, clothes washer, or clothes dryer, especially when these larger appliances are replacements for non-functioning equipment.

The ratio between the program rebate and the average equipment purchase prices was also much higher for air purifiers (40%) than any of the other appliances. As discussed in the body of the report, there is some evidence that this might be related to its higher level of program attribution.

Figure 4-19. Total attributable energy savings for the appliance component of the program

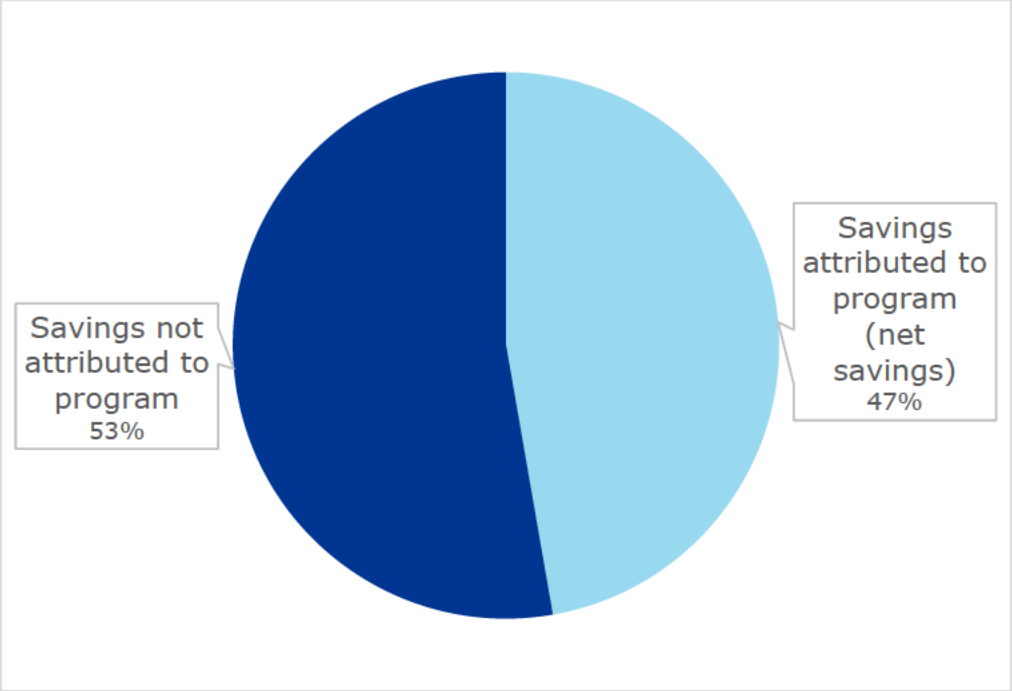


Figure 4-20: Program-attributable energy savings by appliance

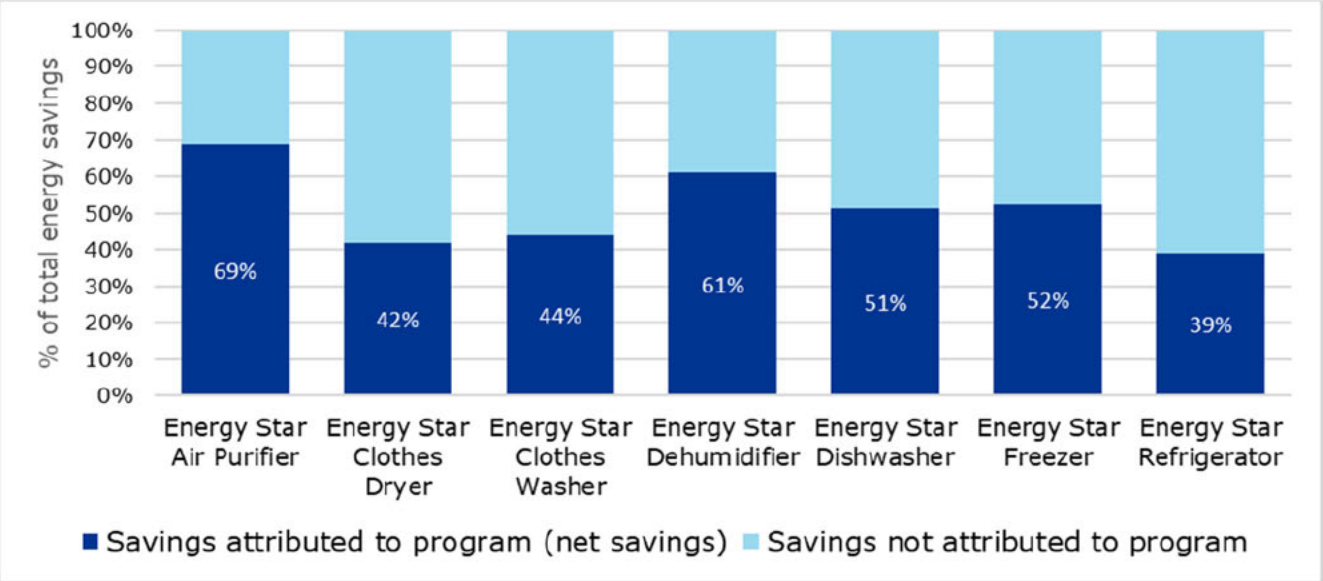


Table 4-17. Summary of simple program attribution (SPA) by appliance

Measure	Number of Respondents	Mean	Standard Error	One-Sided Lower C.I.	One-Sided Upper C.I.
ENERGY STAR Air Purifier	58	0.7	0.1	0.5	0.8
ENERGY STAR Clothes Dryer	502	0.4	0.0	0.4	0.5
ENERGY STAR Clothes Washer	607	0.4	0.0	0.4	0.5
ENERGY STAR Dehumidifier	85	0.6	0.1	0.5	0.7
ENERGY STAR Dishwasher	265	0.5	0.0	0.4	0.6
ENERGY STAR Freezer	21	0.5	0.1	0.3	0.8
ENERGY STAR Refrigerator	476	0.4	0.0	0.3	0.4

4.3.4 Assessment of Program Progress towards Plan

The next section describes the program's progress towards planned participants, energy savings, and demand reduction.

4.3.4.1 Key Virginia Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for Virginia appear below. Following this summary, Table 4-18 provides performance indicator data annually and from program inception through 2020. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.3, cumulative gross savings are in Appendix C.3 and cumulative net savings are in Appendix D.3. Participation in the point of sale lighting channel of the program began August 2019 and in the appliances channel in January 2020. Note that participation in this program is defined as the number of measures installed.

- During 2020, there were 2,339,401 measures installed through the program, representing 108% of its participation goal.

- Total annual net energy savings in 2020 was 54,207,486 kWh/year. Total annual net demand reduction was 4,995.0 kW.
- Average annual gross energy savings per participant was 35 kWh/year.

- Total 2020 program spending was at 120% of plan.
- Average rebate per unit in 2020 was $3.

Table 4-18. Residential Efficient Products Marketplace Indicators (2019-2020)

Category	Item	2019	2020	Program Total (2019-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]		
	Direct Implementation			
	Direct EM&V			
	Indirect Other (Administrative)	$156,691	$421,278	$577,969
Total Costs ($)	Total[64]	$4,636,049	$8,063,058	$12,699,107
	Planned	$6,860,889	$6,694,699	$13,555,588
	Variance	-$2,224,840	$1,368,359	-$856,481
	Annual % of Planned	68%	120%	94%
Participants	Total (Gross)	2,507,265	2,339,401	4,846,66
	Planned (Gross)	2,972,475	2,172,678	5,145,153
	Variance	-465,210	166,723	-298,487
	Annual % of Planned (Gross)	84%	108%	94%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	73,007,561	81,186,888	154,194,449
	Realization Rate Adjustment (100%)	0	0	0
	Adjusted Gross Savings	73,007,561	81,186,888	154,194,449
	Net-to-Gross Adjustment	-21,902,268	-26,979,403	-48,881,671
	Net Adjusted Savings	51,105,293	54,207,486	105,312,778
	Planned Savings (Net)	16,098,286	120,913,020	137,011,305
	Annual Percent Toward Planned Savings (Net)	317%	45%	77%
	Avg. Savings per Participant (Gross)	29	35	32

[64] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Category	Item	2019	2020	Program Total (2019-2020)
	Avg. Savings per Participant (Net)	20	23	22
Installed Demand Reduction (kW)	Total Gross Demand Reduction	6,679	7,499.6	14,178.7
	Realization Rate Adjustment (100%)	0.0	0.0	0.0
	Adjusted Gross Demand Reduction	6,679	7,499.6	14,178.7
	Net-to-Gross Adjustment	-2,004	-2,504.6	-4,508.3
	Net Adjusted Demand Reduction	4,675	4,995.0	9,670.4
	Planned Demand (Net)	0.00	1,571.8	1,571.8
	Annual % Toward Planned Demand (Net)	N/A	318%	615%
	Avg. Peak Demand per Participant (Gross)	0.0	0.0	0.0
	Avg. Demand per Participant (Net)	0.0	0.0	0.0
Program Performance	Annual $Admin. per Participant (Gross)	$0.06	$0.18	$0.12
	Annual $Admin. per kWh/year (Gross)	$0.00	$0.01	$0.00
	Annual $Admin. per kW (Gross)	$23	$56	$41
	Annual $EM&V per Total Costs ($)	1.9%	2.4%	2.2%
	Annual $Rebate per Participant (Gross)	$1.24	$2.52	$1.86

Table 4-19 provides 2020 Virginia gross and net annualized energy savings and demand reduction by measure type.

Table 4-19. Residential Efficient Products Marketplace Program Measure-Level Performance Indicators (Virginia 2019-2020)

Program	kWh/year		kW	
Residential Efficient Products Marketplace Virginia (DSM VII)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	68%	100%	68%
Measure	**Gross**	**Net**	**Gross**	**Net**
A-Line	43,051,734	30,028,815	3,938.6	2,747.2
ENERGY STAR Air Purifier	500,392	345,270	57.4	39.6
ENERGY STAR Clothes Dryer	800,174	336,073	80.0	33.6
ENERGY STAR Clothes Washer	1,119,626	492,635	122.5	53.9
ENERGY STAR Dehumidifier	86,633	52,846	19.6	12.0
ENERGY STAR Dishwasher	87,473	44,611	10.8	5.5
ENERGY STAR Freezer	8,556	4,449	1.4	0.7
ENERGY STAR Refrigerator	264,754	103,254	42.8	16.7
Fixture and Retrofit Kit	20,421,970	12,786,639	1,868.3	1,169.8
Reflector	55,553,397	41,166,798	5,082.3	3,766.1
Specialty	32,299,739	19,951,386	2,954.9	1,825.3
Total	154,194,449	105,312,778	14,178.7	9,670.4

4.3.4.2 Key North Carolina Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for North Carolina appear below. Following this summary, Table 4-20 provides performance indicator data for the year. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix B.3, cumulative gross savings are in Appendix C.3 and cumulative net savings are in Appendix D.3.

Participation in the point of sale lighting channel of the program began January 2020 and in the appliances channel of the program in March 2020. Note that participation in this program is defined as the number of measures installed.

- During 2020, there were 86,493 measures installed through the program.
- Participation in 2020 represented 62% of the annual goal (139,454).

- Total annual net energy savings in 2020 was 1,796,481kWh/year, which was 23% of plans. Total annual net demand reduction was 165.0 kW.
- Average annual gross energy savings per participant was 31 kWh/year.

- Total 2020 program spending was at 56% of plan.
- Average rebate per unit in 2020 was $22.

Table 4-20. Residential Efficient Products Marketplace Indicators (2020)

Category	Item	2020
Operations and Management Costs ($)	Direct Rebate	[redacted]
	Direct Implementation	
	Direct EM&V	
	Indirect Other (Administrative)	$12,075
Total Costs ($)	Total[65]	$238,201
	Planned	$425,185
	Variance	-$186,984
	Annual % of Planned	56%
Participants	Total (Gross)	86,493
	Planned (Gross)	139,454
	Variance	-52,961
	Annual % of Planned (Gross)	62%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	2,707,492
	Realization Rate Adjustment (100%)	0
	Adjusted Gross Savings	2,707,492
	Net-to-Gross Adjustment (70%)	-911,011
	Net Adjusted Savings	1,796,481
	Planned Savings (Net)	7,760,839
	Annual Percent Toward Planned Savings (Net)	23%
	Avg. Savings per Participant (Gross)	31
	Avg. Savings per Participant (Net)	21
Installed Demand Reduction (kW)	Total Gross Demand Reduction	249.1
	Realization Rate Adjustment (100%)	0.0
	Adjusted Gross Demand Reduction	249.1
	Net-to-Gross Adjustment (70%)	-84.1
	Net Adjusted Demand Reduction	165.0
	Planned Demand (Net)	100.9

[65] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Category	Item	2020
	Annual % Toward Planned Demand (Net)	164%
	Avg. Peak Demand per Participant (Gross)	0.0
	Avg. Demand per Participant (Net)	0.0
Program Performance	Annual $Admin. per Participant (Gross)	$0.14
	Annual $Admin. per kWh/year (Gross)	$0.00
	Annual $Admin. per kW (Gross)	$48
	Annual $EM&V per Total Costs ($)	4%
	Annual $Rebate per Participant (Gross)	$1.86

Table 4-21 provides 2020 North Carolina gross and net annualized energy savings and demand reduction by measure type.

Table 4-21. Residential Efficient Products Marketplace Program Measure-Level Performance Indicators (North Carolina 2020)

Program	kWh/year		kW	
Residential Efficient Products Marketplace North Carolina (DSM VII)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	66%	100%	66%
Measure	**Gross**	**Net**	**Gross**	**Net**
ENERGY STAR Air Purifier	6,630	4,575	0.8	0.5
ENERGY STAR Clothes Dryer	17,087	7,177	1.7	0.7
ENERGY STAR Clothes Washer	23,166	10,171	2.5	1.1
ENERGY STAR Dehumidifier	739	451	0.2	0.1
ENERGY STAR Dishwasher	3,427	1,748	0.4	0.2
ENERGY STAR Freezer	110	57	0.02	0.01
ENERGY STAR Refrigerator	6,041	2,356	1.0	0.4
Fixture and Retrofit Kit	378,714	227,229	34.6	20.8
Reflector	1,190,927	905,105	109.0	82.8
Specialty	1,080,701	637,614	98.9	58.3
Total	2,707,492	1,796,481	249.1	165.0

4.3.4.3 Additional Virginia Program Data

Figure 4-21 through Figure 4-23 show Virginia participants, gross annualized energy savings, and average gross annualized energy savings by measure and year. Lighting represented 99% of all measures installed in this program and 96% of savings. Sales of A-Line bulbs stopped at the end of 2019 but were later reintroduced to the program in September at certain stores and through the online marketplace channel. Air purifiers have the highest savings per participant yielding 0.72 MWh per unit followed by clothes washers (0.18 MWh per unit) and clothes dryers (0.17 MWh per unit).

Note participation in these charts are the count of new unique customers in the “all measures” presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they

participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

Figure 4-21. Residential Efficient Products Marketplace Program Participation by Measure and Year

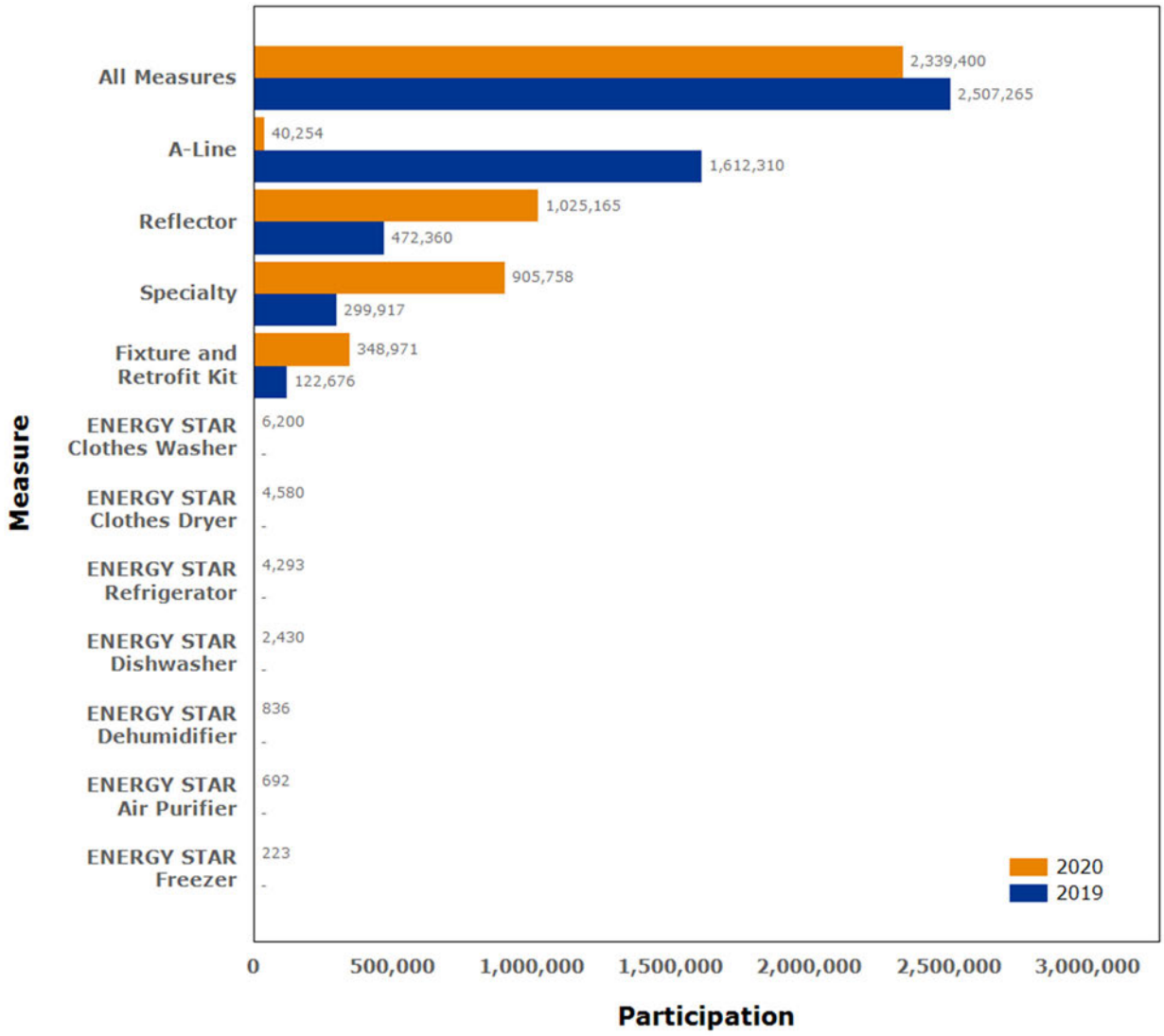


Figure 4-22. Virginia Residential Efficient Products Marketplace Program Gross Annualized Energy Savings by Measure and Year (MWh/year)

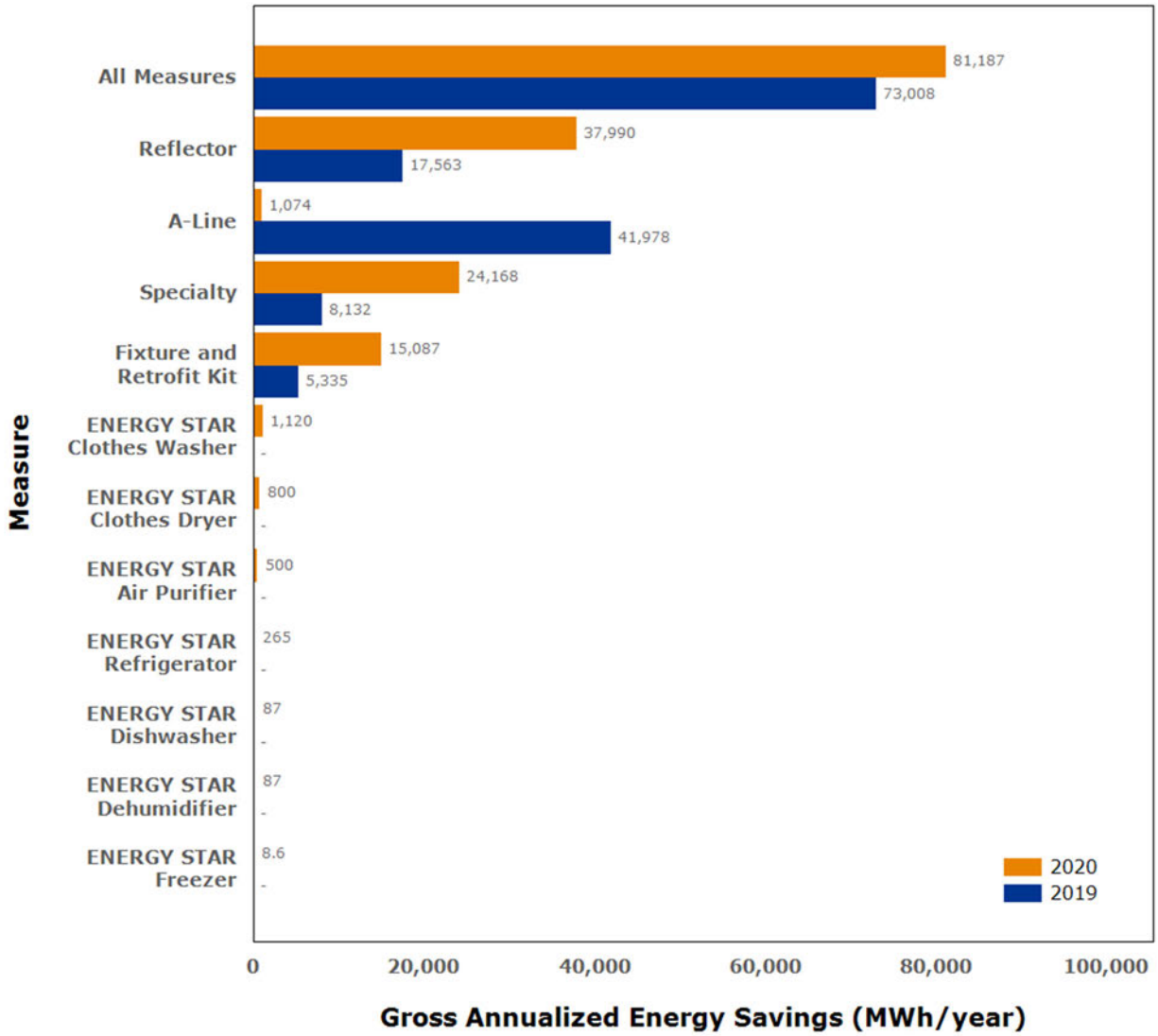
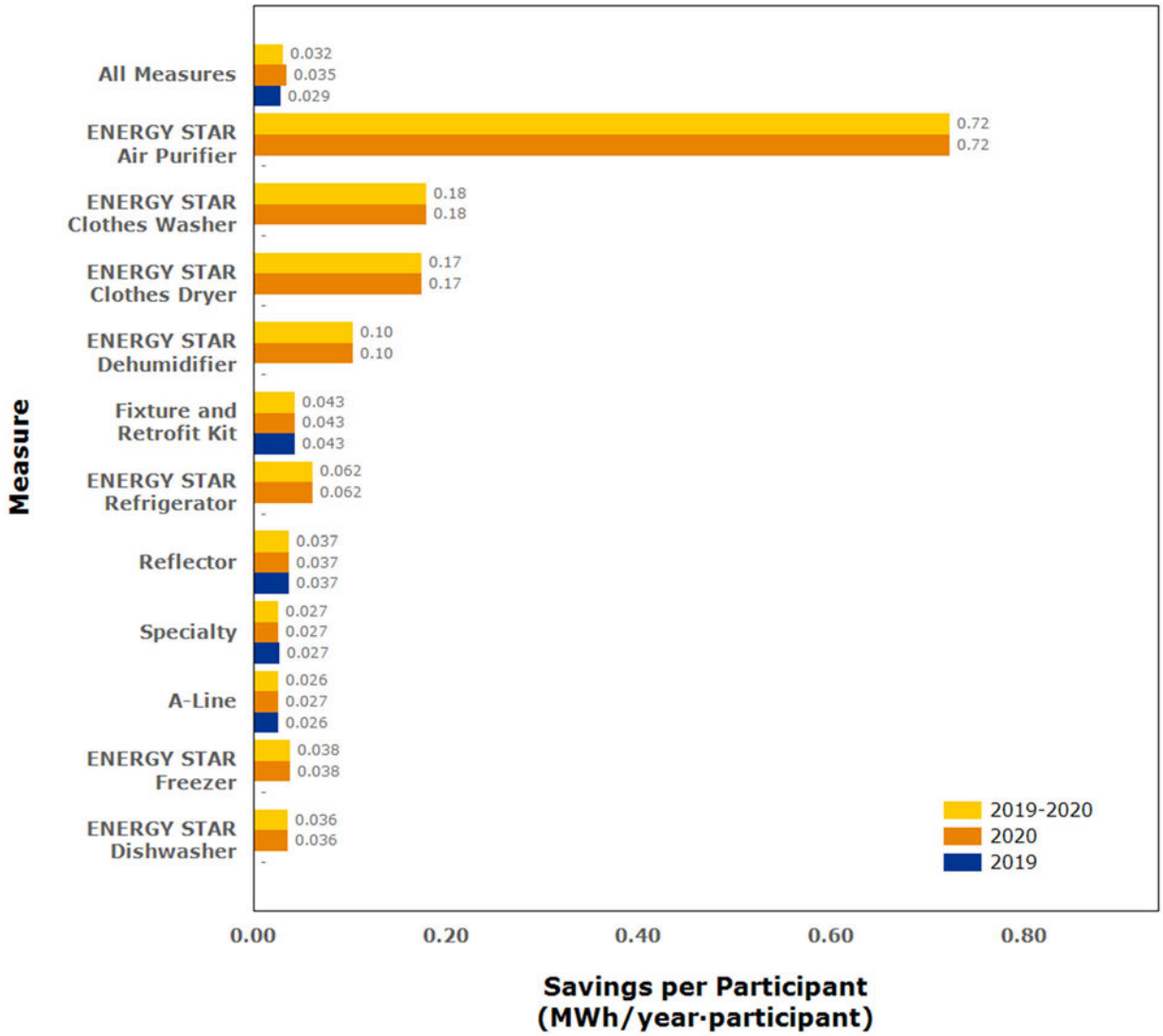


Figure 4-23. Virginia Residential Efficient Products Marketplace Program Gross Annualized Energy Savings per Participant by Measure and Year (MWh/year)



Bulged reflectors represented 35% of lighting gross annualized kWh savings followed by specialty bulbs (19%), and retrofit kits (13%) (Figure 4-24). In 2020, customers purchased incentivized LED lamps and fixtures made by 23 manufacturers as shown in Figure 4-25. In terms of gross annualized kWh savings, the top five manufacturers were Feit Electric, General Electric, Leedarson America, Inc, Dangoo Electronics, Ltd, and TCP. Lamps and fixtures from these manufacturers produced approximately 76% of lighting savings. Customers purchased program incentivized LED lamps from 15 retailers in 2020 (Figure 4-26). The top four retailers (Home Depot, Costco, Walmart, and Lowe's) accounted for approximately 95% of the lighting savings in 2020.

Figure 4-24. Virginia 2020 Residential Efficient Products Marketplace Gross Annualized Energy Savings by Lighting Measure and Year

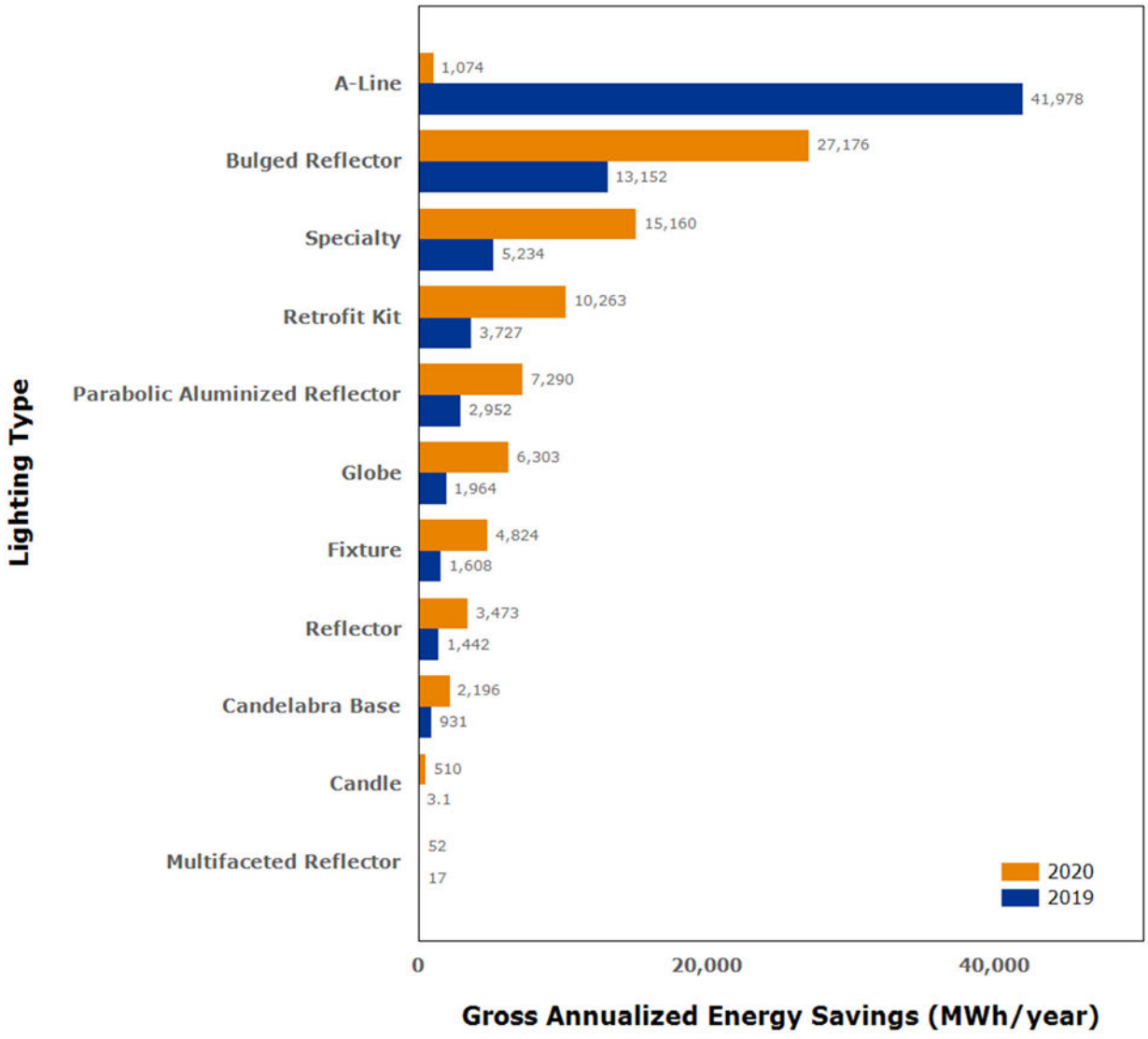


Figure 4-25. Virginia Residential Efficient Products Marketplace Program Gross Annualized Energy Savings by Manufacturer and Year (MWh/year)

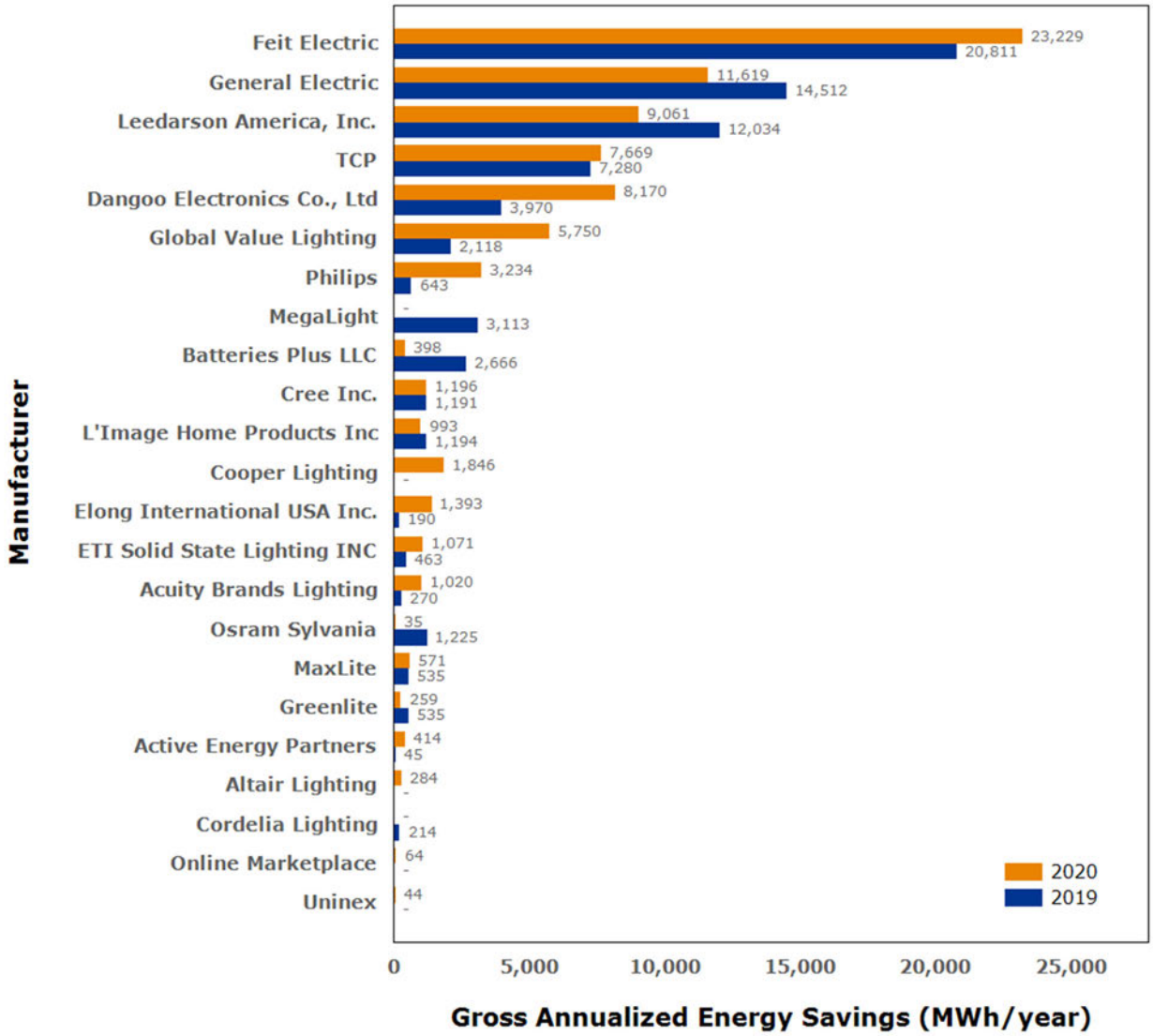
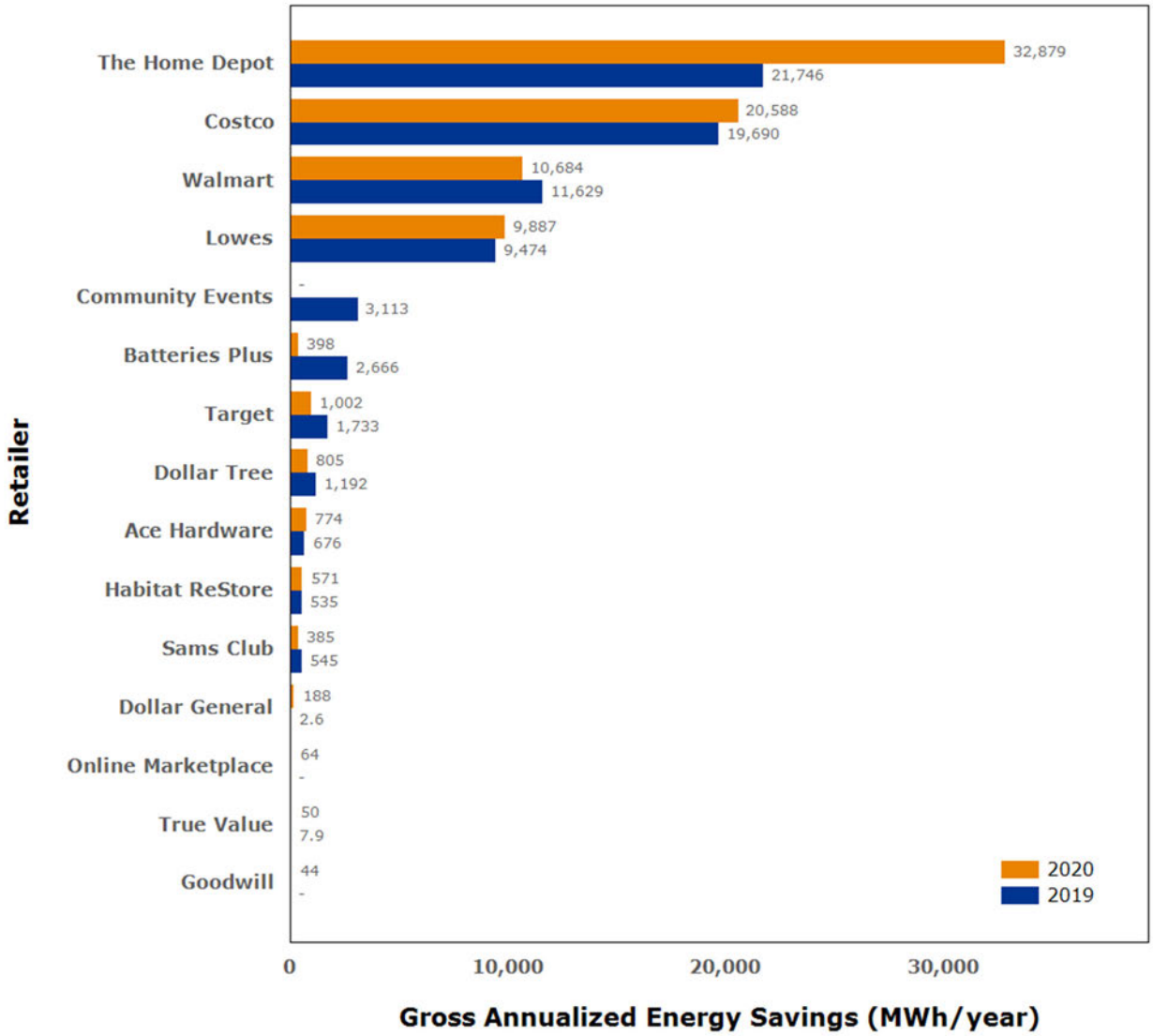


Figure 4-26. Virginia Residential Efficient Products Marketplace Program Average Gross Annualized Energy Savings (MWh/year) by Retailer and Year



4.3.4.4 Additional North Carolina Program Data

Figure 4-27 through Figure 4-29 show the North Carolina participants, gross annualized energy savings, and average gross annualized energy savings by measure and year. Lighting represented 99% of the measures installed in the program and 98% of savings. Air purifiers have the highest savings per participant yielding 0.66 MWh per unit followed by clothes washers (0.20 MWh per unit) and clothes dryers (0.17 MWh per unit).

Note participation in these charts are the count of new unique customers in the "all measures" presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

Figure 4-27. North Carolina Residential Efficient Products Marketplace Program Participation by Measure and Year

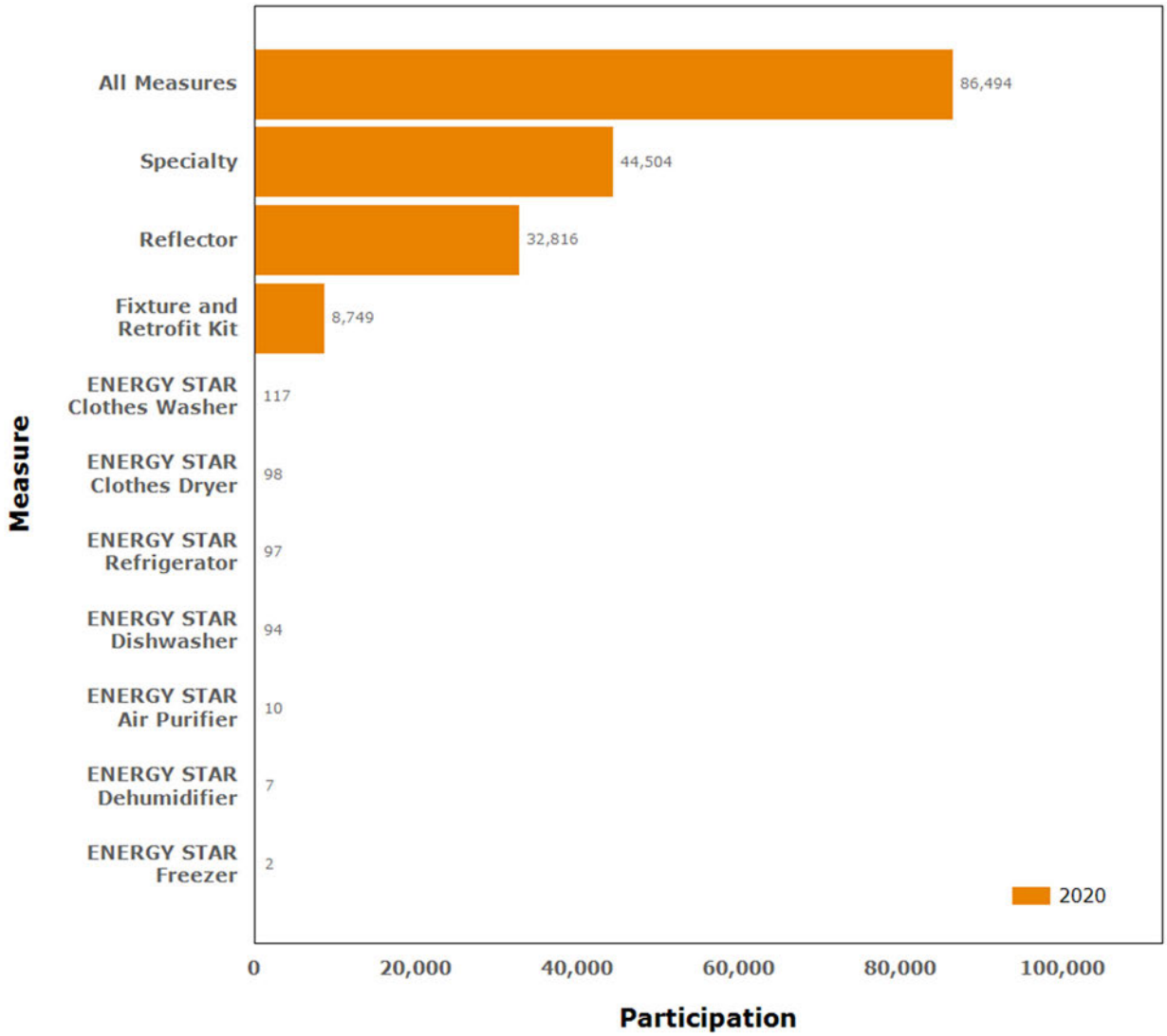


Figure 4-28. North Carolina Residential Efficient Products Marketplace Program Gross Annualized Energy Savings by Measure and Year (kWh/year)

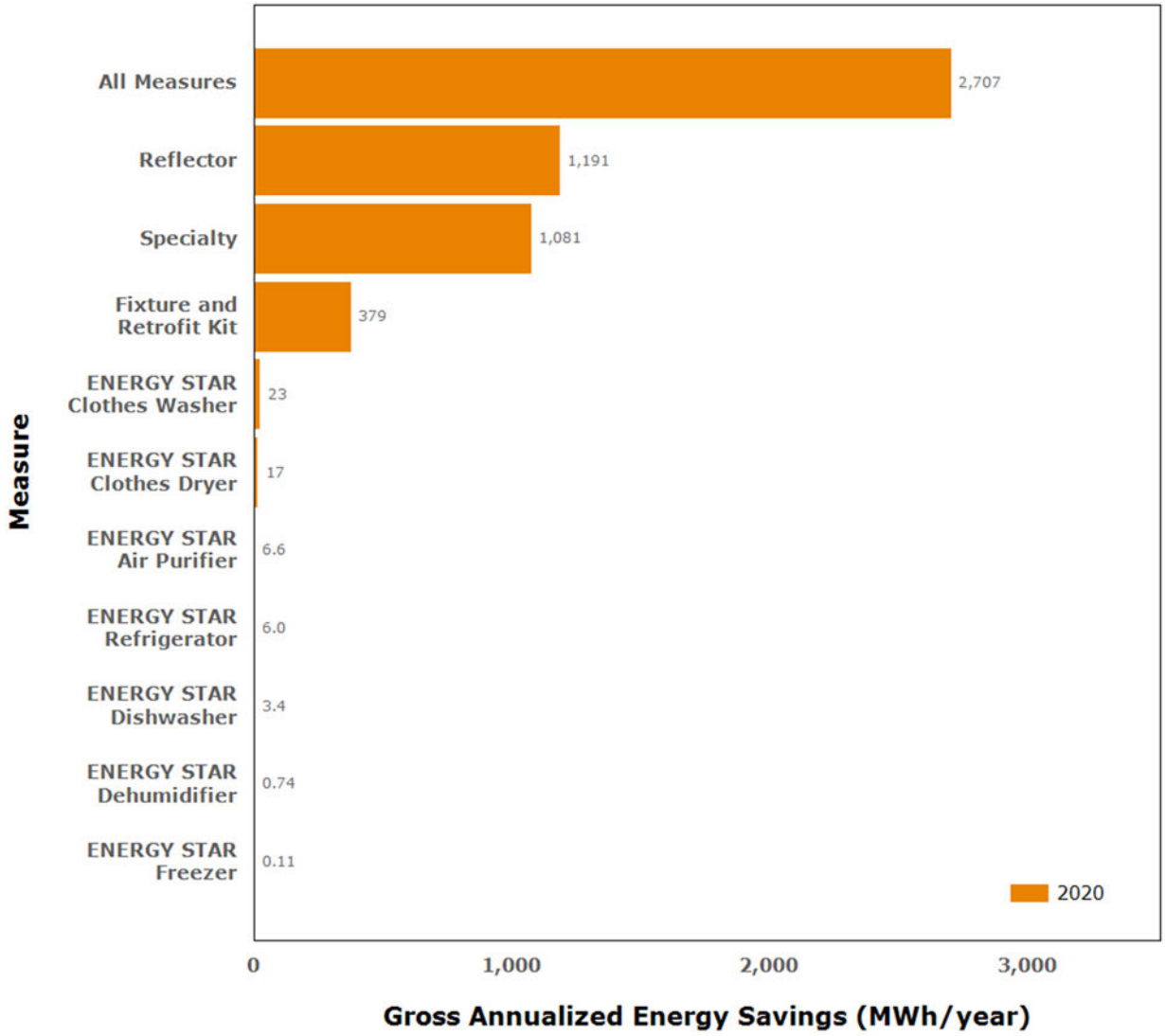
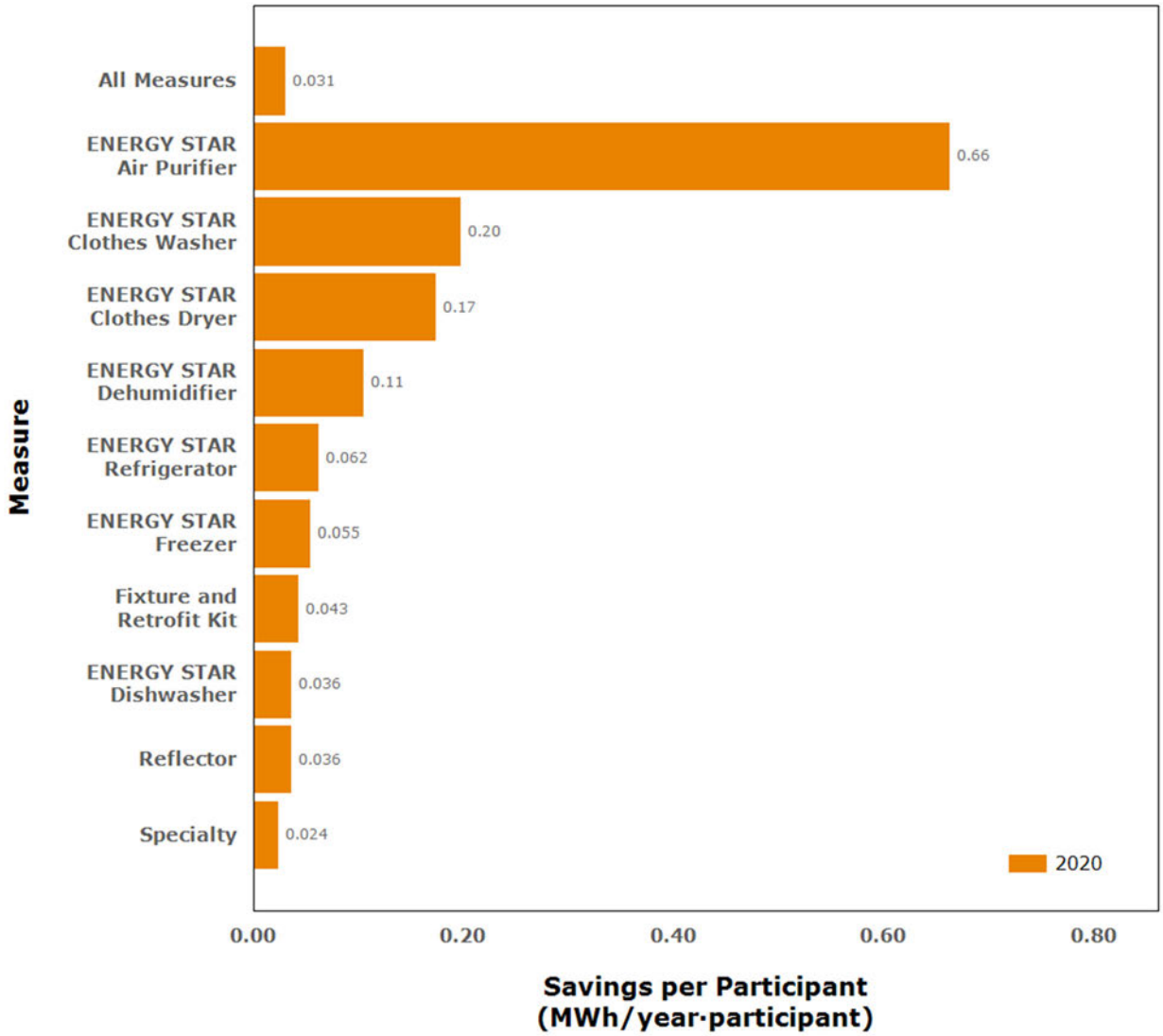


Figure 4-29. North Carolina Residential Efficient Products Marketplace Program Gross Annualized Energy Savings per Participant by Measure and Year (MWh/year-participant)



Specialty bulbs represented 26% of gross annualized kWh savings followed by bulged reflectors (23%) and parabolic aluminized reflectors (14%) (Figure 4-30). In 2020, customers purchased incentivized LED lamps and fixtures made by 15 manufacturers as shown in Figure 4-31. In terms of gross annualized kWh savings and kW reduction, the top five manufacturers were General Electric, TCP, Dangoo Electronics, Ltd, and Leedarson America, Inc. Lamps and fixtures from these manufacturers produced approximately 78% of total program savings. Customers purchased program incentivized LED lamps from 7 retailers in 2020 (Figure 4-32). The top three retailers (Walmart, Home Depot, and Lowe's) accounted for approximately 96% of the total lighting savings in 2020.

Figure 4-30. North Carolina Residential Efficient Products Marketplace Gross Annualized Energy Savings by Lighting Measure and Year

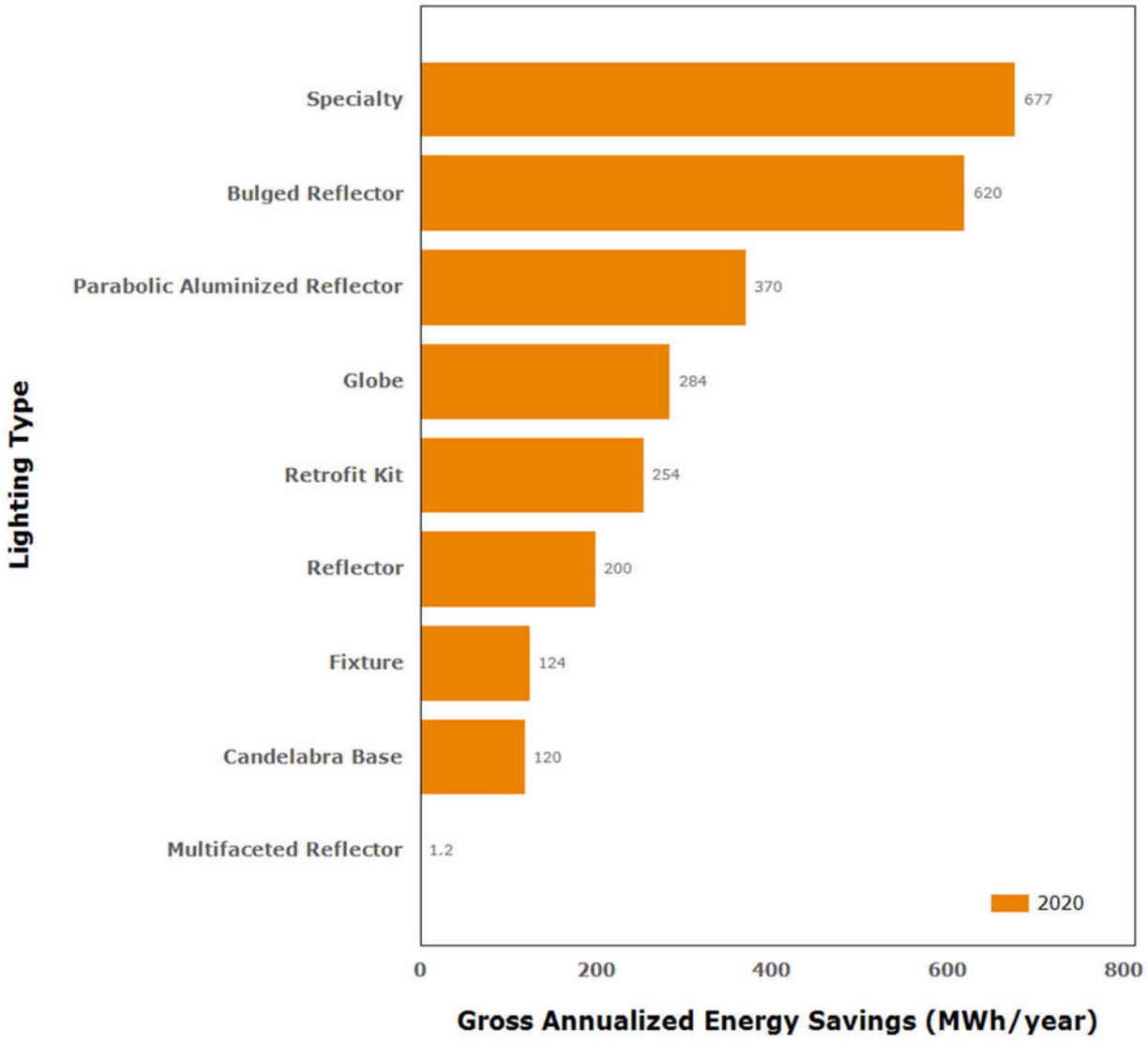


Figure 4-31. North Carolina Residential Efficient Products Marketplace Program Gross Annualized Energy Savings by Manufacturer and Year (MWh/year)

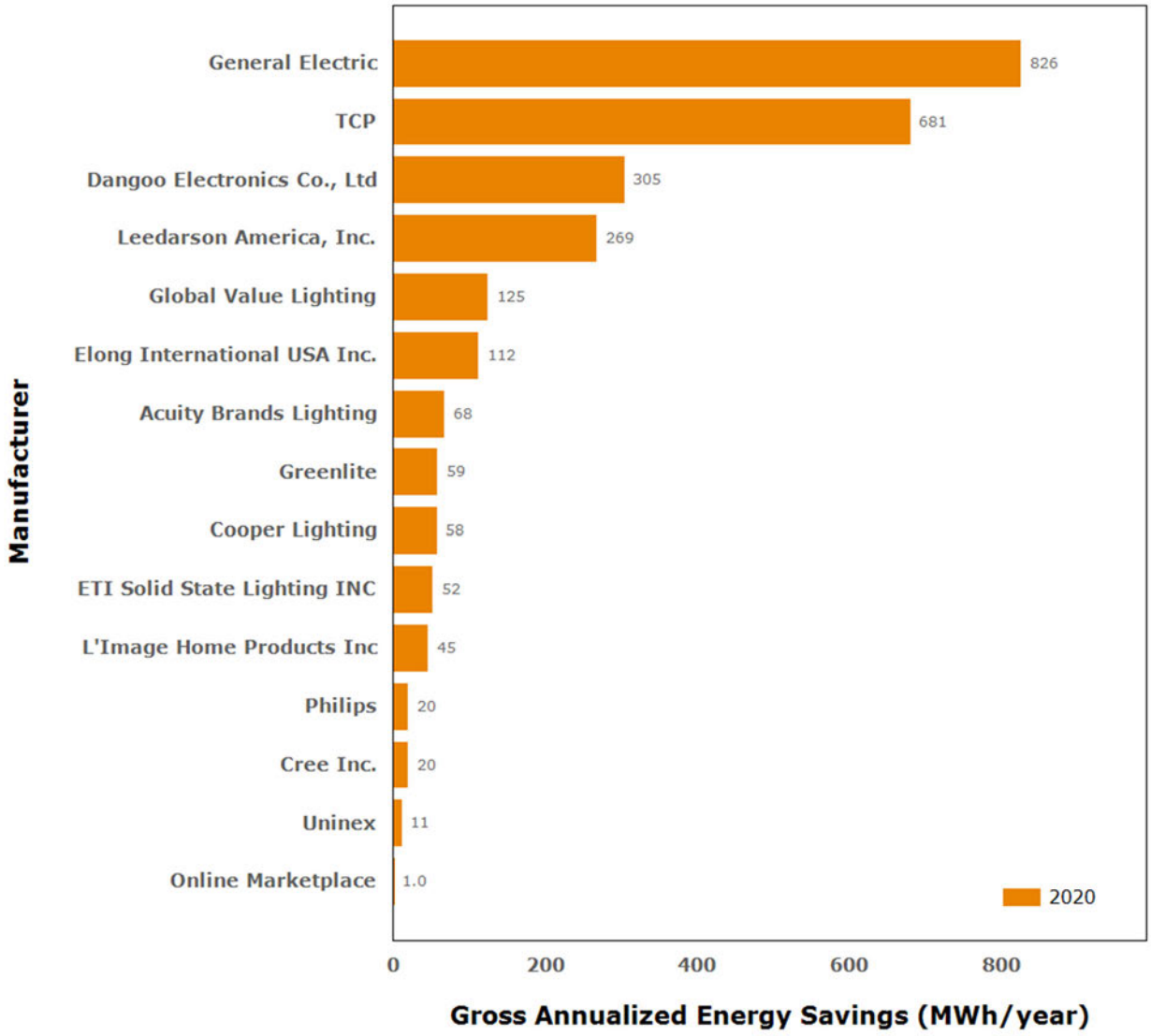
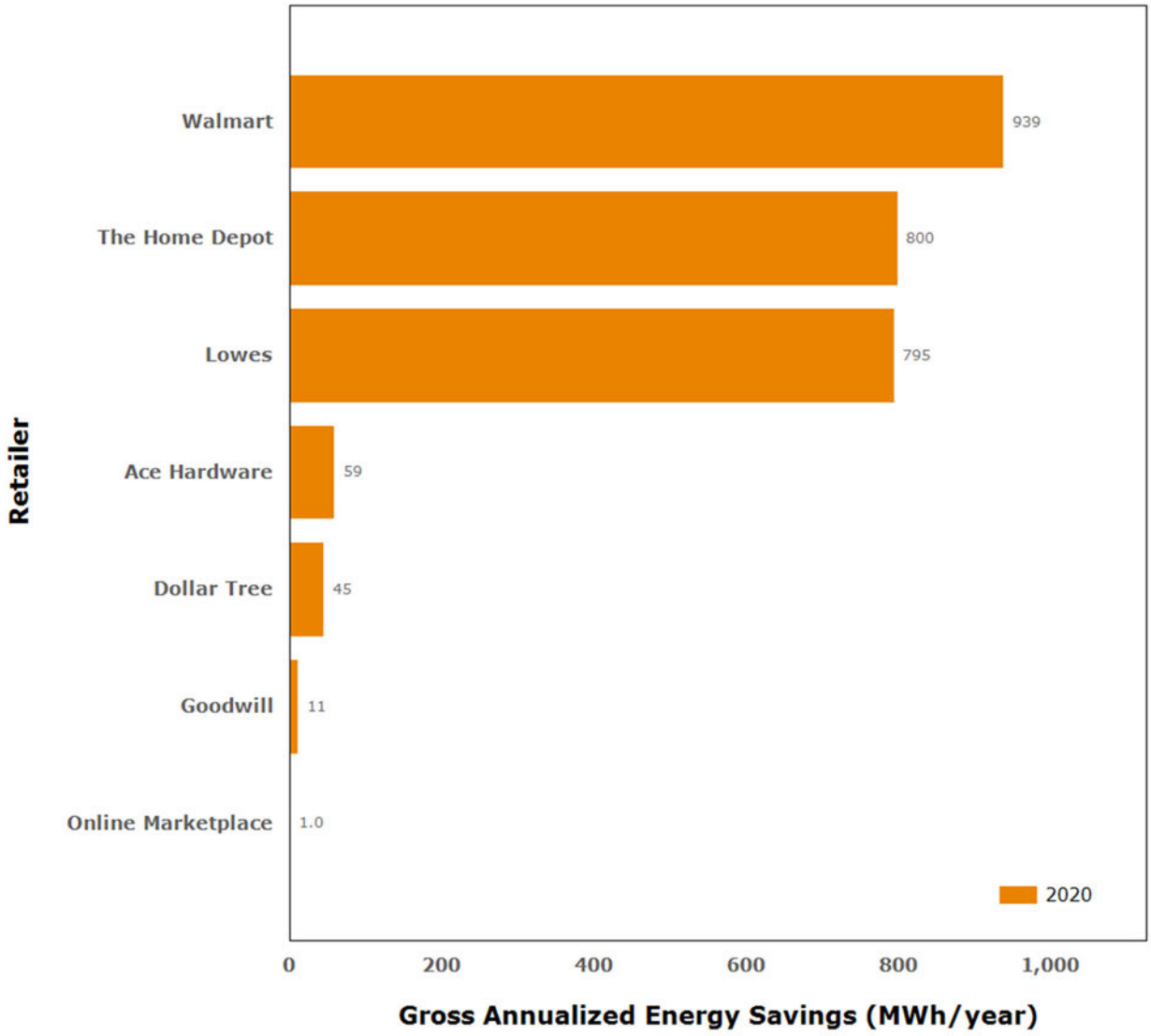


Figure 4-32. North Carolina 2020 Residential Efficient Products Marketplace Program Average Gross Annualized Energy Savings (MWh/year) by Retailer and Year



4.3.4.5 Comparing Savings with Usage

See Table 4-22 for a comparison of the 2020 program net adjusted savings in Virginia with the system-wide planned savings for the program, the annual usage for an average rate schedule, and the annual usage for eligible customers in the rate schedule.

Table 4-22. Virginia 2020 Residential Efficient Products Marketplace Comparison of Savings with Usage by Rate Schedule

Comparisons	Item	Value
Schedule 1		
Comparison of Savings	Net Systemwide Planned Savings per Participant	26.38 kWh/year
	Net Adjusted Savings per Participant	21.73 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	83%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[66]	13,651 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	0.16%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule 1EV		
Comparison of Savings	Net Systemwide Planned Savings per Participant	26.38 kWh/year
	Net Adjusted Savings per Participant	53.09 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	201%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[67]	19,957 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	0.27%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule 1P		
Comparison of Savings	Net Systemwide Planned Savings per Participant	26.38 kWh/year
	Net Adjusted Savings per Participant	605.13 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	2294%
Comparison to Average Annual	Average Annual Usage[68]	34,596 kWh/participant

[66] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 2, Column E (kWh of Sales Per Customer).

[67] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 17, Column E (kWh of Sales Per Customer).

[68] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 3, Column E (kWh of Sales Per Customer).

Comparisons	Item	Value
Usage for Rate Schedule	Net Adjusted Savings as Percent of Average Annual Usage	1.75 %
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule 1S		
Comparison of Savings	Net Systemwide Planned Savings per Participant	26.38 kWh/year
	Net Adjusted Savings per Participant	51.07 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	194%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[69]	30,114 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	0.17 %
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule 1T		
Comparison of Savings	Net Systemwide Planned Savings per Participant	26.38 kWh/year
	Net Adjusted Savings per Participant	67.35 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	255%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[70]	20,467 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	0.33 %
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule DP-R		
Comparison of Savings	Net Systemwide Planned Savings per Participant	26.38 kWh/year
	Net Adjusted Savings per Participant	346.10 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	1,312%

[69] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 5, Column E (kWh of Sales Per Customer).

[70] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 16, Column E (kWh of Sales Per Customer).

Comparisons	Item	Value
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[71]	12,648 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	2.74%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"

[71] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 16, Column E (kWh of Sales Per Customer).

4.4 Residential Home Energy Assessment – Virginia and North Carolina

Virginia

Case #: PUE-2018-00168

RESIDENTIAL HOME ENERGY ASSESSMENT

2019-PRESENT
1,449 kWh/yr Average Net Savings Per Participant

Eligibility

- Active residential customer in the Commonwealth of Virginia and live in a single-family detached or attached residence
- Customer must be the party that is responsible for electric bill and either own the home or otherwise able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Direct install lighting
- Hot water appliances
- Faucets aerators
- Low flow showerheads
- Heat pump tune-up and upgrade
- Duct sealing and duct Insulation
- Cool roof

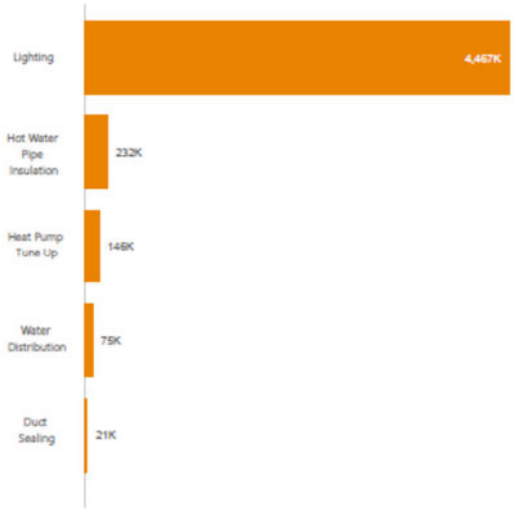
Enrolled **2,738** customers, **7%** of planned participation

Achieved net annual energy savings of **3,969 MWh/year**, **40%** of planned energy savings

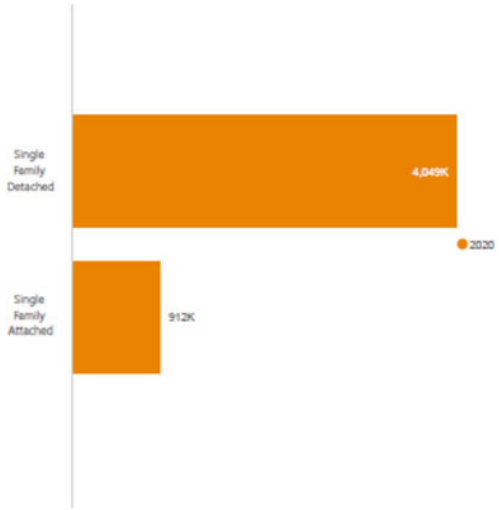
Spent **56%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)				715,145	2,981,049	3,696,195
Total Program Participants (#)				0	2,738	2,738
Total Gross Incremental Savings (kWh/yr)				0	4,960,666	
Total Net Incremental Savings (kWh/yr)				0	3,968,533	
Average Gross Incremental Demand Reduction (kW)				0	411	
Average Net Incremental Demand Reduction (kW)				0	329	
Total Net Lifetime Savings (kWh)				0	1,886,889	49,606,663
Average Lifetime Demand Reduction (kW)				0	329	329

TOTAL SAVING BY MEASURE TYPE
TOP 5 IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



DNV

North Carolina

Docket #: E-22, Sub 567

RESIDENTIAL HOME ENERGY ASSESSMENT

2019-PRESENT
914 kWh/yr Average Net Savings Per Participant

Eligibility

- Active residential customer in the North Carolina and live in a single-family detached or attached residence
- Customer must be the party that is responsible for electric bill and either own the home or otherwise able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Direct install lighting
- Hot water appliances
- Faucets aerators
- Low flow showerheads
- Heat pump tune-up and upgrade
- Duct sealing and duct Insulation
- Cool roof

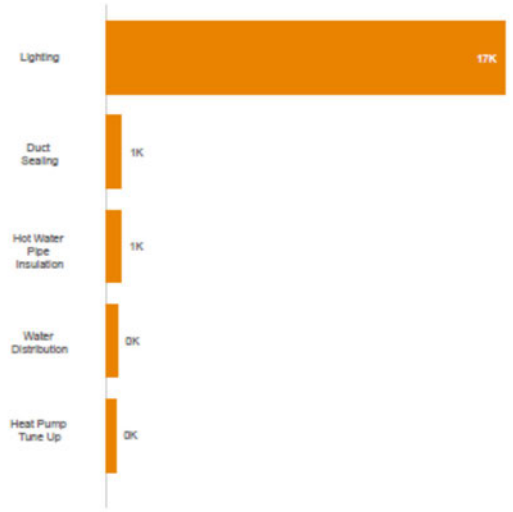
Enrolled **17** customers, **1%** of planned participation

Achieved net annual energy savings of **15,530 kWh/year**, **3%** of planned energy savings

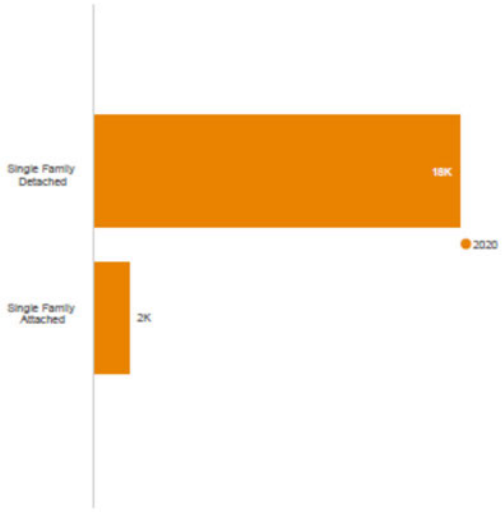
Spent **36%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)				0	96,955	96,955
Total Program Participants (#)				0	17	17
Total Gross Incremental Savings (kWh/yr)				0	19,413	
Total Net Incremental Savings (kWh/yr)				0	15,530	
Average Gross Incremental Demand Reduction (kW)				0	1	
Average Net Incremental Demand Reduction (kW)				0	1	
Total Net Lifetime Savings (kWh)				0	3,494	194,127
Average Lifetime Demand Reduction (kW)				0	1	1

TOTAL SAVING BY MEASURE TYPE
TOP 5 IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



4.4.1 Program Description

The Residential Home Energy Assessment Program provides owners and occupants of single-family homes and townhomes with a home energy audit. This includes a walk-through audit of customer homes, direct install measures, and recommendations for additional home energy improvements. Customers receive the recommendations in a personalized report showing the projected energy and cost savings from implementing the options identified during the check-up.

Residential customers living in single-family residences or townhomes with Dominion electric service are eligible for this program. Customers must contact a participating contractor to receive the home energy audit. Customers are not considered to have fully participated in the program until a completed application form is processed and a rebate is issued. This process can take several months, as customers have 45 days to submit their rebate application, and the Company has 90 days to process it.

The eligible improvements are primarily energy efficiency measures that impact electricity consumption, and include:

- Direct install lighting
- Hot water appliances
- Efficient faucets and aerators
- Heat pump tune-up and upgrade
- Duct sealing and duct insulation
- Cool roof

The Virginia SCC approved this program, as part of the DSM Phase VII programs, on May 2, 2019 (Case No. PUR-2018-00168) for a five-year period of July 1, 2019, through June 30, 2024. The North Carolina Utilities Commission approved this program on November 13, 2019 (Docket No. E-22, SUB 567). Upon approval, the Company worked to finalize data systems, build contractor networks, and finalize implementation details. The program officially launched on October 1, 2019.

The COVID-19 pandemic made 2020 an extraordinary year by all accounts. In response to the pandemic, this program was suspended in March for health and safety reasons and resumed on June 29, 2020. Upon reopening, the implementation vendors set up new health and safety protocols such as requiring contractors to wear personal protective equipment (PPE) against COVID-19, conducting temperature checks, implementing contact tracing (if there is a suspected COVID-19 exposure), social distancing when at the customer site or offer to visit the customer site after hours.

Also, in response to the pandemic, the company suspended marketing during the March through May period, which included bill inserts and online marketing. They resumed marketing activities in June. To try to maintain customer contacts despite the suspension of these mass marketing campaigns, the implementation vendors increased direct marketing to customers in the form of one-on-one customer outreach via leads generated on the program website.

Table 4-23 maps the applicable sections in this report to reporting requirements listed in the EM&V Rule section 50, “Standard Requirements for Evaluation, Measurement, and Verification Reporting.”[72]

[72] 20 VAC 5-318-50

Table 4-23. Residential Home Assessment Program Compliance with EM&V Rule Section 50

Subsection within 20 VAC 5-318-50	Location and Description
A. EM&V Plan	APPENDIX K. EM&V Plan
B. Utilizing utility-specific data or other data	**Per 20 VAC 5-318-40 A and B** 1. See APPENDIX F. STEP Manual v2020 for a description of all data or estimates used as inputs for this program and the measures within it. 2. See the Methodologies section (section 3) of this report for a description of the overarching EM&V methodologies used to produce results in this report. **Per 20 VAC 5-318-40 C** 3. See subsections of this report section, and Table 4-26 for measure-level estimates of kilowatt and kilowatt-hour, before and after adjustments for free-ridership, as appropriate.
C. Changes to measure-level inputs and assumptions, and inputs to cost/benefit estimates	1. See Table 4-24 for program planning assumptions 2. See documents filed with the Virginia State Corporation Commission Docket PUR-2018-00168 for approved measure-level inputs and assumptions, and the impact of such changes on original cost/benefit estimates for DSM programs or measures.
D. Measure-level data collection methodology	See response to A. and B. above.
E. Explanation of eligibility requirements for each rate schedule that program is offered	See program description above.
F. Comparison of measured annual measure or program savings estimates to the annual usage of the average rate schedule usage, and eligible customer in each rate schedule	See section 4.4.3.5 Comparison of Savings with Usage
G. Explanation of controls undertaken by utility	See APPENDIX KK

4.4.2 Methods for the Current Reporting Period

DNV developed an EM&V Plan for this program, which is included in APPENDIX K. For the current period, the approach included reviewing the tracking data.

Table 4-24 outlines Dominion Energy's initial program planning assumptions that were used to design the program. DNV uses the planned NTG factor in its net savings calculations until it can be verified through EM&V.

Table 4-24. Residential Home Energy Assessment Program Planning Assumptions System-wide

Assumption	Description
Target Market	Residential customers
NTG Factor	80%
Measure Life (years)	12.4
Gross Average Annual Energy Savings per Participant (kWh/year)	447
Gross Average Coincident Peak Demand Reduction per Participant (kW)	0.10
Net Average Annual Energy Savings per Participant (kWh/year)	358
Net Average Coincident Peak Demand Reduction per Participant (kW)	0.08
Average Rebate (US$) per Participant	$82

4.4.3 Assessment of Program Progress towards Plan

The next section describes the program's progress towards planned participants, energy savings, and demand reduction.

4.4.3.1 Key Virginia Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for Virginia appear below. Following this summary, Table 4-25 provides performance indicator data annually and from program inception through 2020. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.4, cumulative gross savings are in Appendix C.4 and cumulative net savings are in Appendix D.4.

- In 2020, 2,738 customers participated in the program, approximately 10% of planned participation.
- From program inception through 2020, 2,738 customers participated in the program, approximately 7% of planned participation.

- In 2020, the program achieved net energy savings of 3,968,533 kWh/year, approximately 45% of planned savings.
- In 2020, the average net energy savings per participant was 1,449 kWh, approximately 405% of planned savings per participant from Table 4-25.
- From program inception through 2020, the program achieved net energy savings of 3,968,533 kWh/year, approximately 40% of planned savings.
- In 2020, the program achieved net demand reduction of 328.9 kW, approximately 20% of planned reduction.
- In 2020, the average net energy demand reduction per participant was 0.1 kW, approximately 125% of planned demand reduction per participant from Table 4-25.
- From program inception through 2020, the program achieved net demand reduction of 328.9 kW, approximately 20% of planned reduction.

- In 2020, program costs were 70% of planned costs.
- From program inception through 2020, program costs were 56% of planned costs.

Table 4-25. Residential Home Energy Assessment Indicators (2019-2020)

Category	Item	2019	2020	Program Total (2019-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]		
	Direct Implementation			
	Direct EM&V			
	Indirect Other (Administrative)	$24,171	$153,132	$177,302

Category	Item	2019	2020	Program Total (2019-2020)
Total Costs ($)	Total[73]	$715,145	$2,981,049	$3,696,195
	Planned	$2,326,635	$4,257,214	$6,583,848
	Variance	-$1,611,489	-$1,276,164	-$2,887,654
	Annual % of Planned	31%	70%	56%
Participants	Total (Gross)	0	2,738	2,738
	Planned (Gross)	11,030	28,526	39,556
	Variance	-11,030	-25,788	-36,818
	Annual % of Planned (Gross)	0%	10%	7%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	0	4,960,666	4,960,666
	Realization Rate Adjustment (100%)	0	0	0
	Adjusted Gross Savings	0	4,960,666	4,960,666
	Net-to-Gross Adjustment (80%)[74]	0	-992,133	-992,133
	Net Adjusted Savings	0	3,968,533	3,968,533
	Planned Savings (Net)	1,073,361	8,763,799	9,837,161
	Annual % Toward Planned Savings (Net)	0%	45%	40%
	Avg. Savings per Participant (Gross)	N/A	1,812	1,812
	Avg. Savings per Participant (Net)	N/A	1,449	1,449
Installed Demand Reduction (kW)	Total Gross Deemed Demand	0.0	411.2	411.2
	Realization Rate Adjustment (100%)	0.0	0.0	0.0
	Adjusted Gross Demand	0.0	411.2	411.2
	Net-to-Gross Adjustment (80%)[75]	0.0	-82.2	-82.2
	Net Adjusted Demand	0.0	328.9	328.9
	Planned Demand (Net)	0.0	1,658.4	1,658.4
	Annual % Toward Planned Demand (Net)	N/A	19.8%	19.8%
	Avg. Peak Demand per Participant (Gross)	N/A	0.2	0.2
	Avg. Demand per Participant (Net)	N/A	0.1	0.1
Program Performance	Annual $Admin. per Participant (Gross)	N/A	$56	$65
	Annual $Admin. per kWh/year (Gross)	N/A	$0.03	$0.04
	Annual $Admin. per kW (Gross)	N/A	$372	$431
	Annual $EM&V per Total Costs ($)	14.1%	5.8%	7.4%
	Annual $Rebate per Participant (Gross)	N/A	$473	$473

[73] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

[74] On the rebate application form the program implementation vendor included the question, "Did the rebate incentive offered by Dominion Energy have any influence in your decision to have the work performed?" Of all participants who responded (from program inception to the end of this reporting period), the implementation vendor has calculated that 88% answered yes at the time they filled out the rebate application. This is not a substitute for a net-to-gross analysis conducted by an independent evaluator. See section 3.1.3 Net Savings Estimation for a description of net-to-gross estimation approaches.

[75] Ibid.

Table 4-26 shows the program's gross and net annualized energy savings (kWh/year) and demand reduction (kW/year) by measure, from program inception through 2020, in Virginia.

Table 4-26. Virginia Residential Home Energy Assessment Measure-Level Performance Indicators (2019-2020)

Program	kWh/year		kW	
Residential Home Energy Assessment– Virginia (DSM VII)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	80%	100%	80%
Measure	**Gross**	**Net**	**Gross**	**Net**
	Gross	Net	Gross	Net
Duct Insulation	2,567	2,053	2.1	1.7
Duct Sealing	20,900	16,720	11.6	9.3
ECM Fan Motor	897	717	0.2	0.1
Heat Pump Tune Up	145,850	116,680	115.9	92.7
Heat Pump Upgrade	15,696	12,556	1.4	1.1
Hot Water Pipe Insulation	232,466	185,973	26.5	21.2
Lighting	4,466,597	3,573,277	250.1	200.0
Water Distribution	75,287	60,230	3.4	2.7
Water Heater Turndown 10 Degrees	408	326	0.05	0.04
Total	4,960,666	3,968,533	411.2	328.9

4.4.3.2 Key North Carolina Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for North Carolina appear below. Following this summary, Table 4-27 provides performance indicator data for the year. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix B.4, cumulative gross savings are in Appendix C.4 and cumulative net savings are in Appendix D.4.

- In 2020, 17 customers participated in the program, approximately 1% of planned participation.

- In 2020, the program achieved net energy savings of 15,530 kWh/year, approximately 3% of planned savings.
- The average net energy savings per participant was 914 kWh, approximately 255% of planned savings per participant from Table 4-27.
- In 2020, the program achieved net demand reduction of 1.2 kW, approximately 1% of planned reduction.
- The average net energy demand reduction per participant was 0.1 kW, approximately 125% of planned demand reduction per participant from Table 4-27.

- In 2020, program costs were 36% of planned costs.

Table 4-27. Residential Home Energy Assessment Indicators (2020)

Category	Item	2020
Operations and Management Costs ($)	Direct Rebate	[redacted]
	Direct Implementation	
	Direct EM&V	
	Indirect Other (Administrative)	$5,032
Total Costs ($)	Total[76]	$96,955
	Planned	$270,379
	Variance	-$173,423
	Annual % of Planned	36%
Participants	Total (Gross)	17
	Planned (Gross)	1,831

[76] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Category	Item	2020
	Variance	-1,814
	Annual % of Planned (Gross)	1%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	19,413
	Realization Rate Adjustment (100%)	0
	Adjusted Gross Savings	19,413
	Net-to-Gross Adjustment (80%)	-3,883
	Net Adjusted Savings	15,530
	Planned Savings (Net)	562,522
	Annual % Toward Planned Savings (Net)	3%
	Avg. Savings per Participant (Gross)	1,142
	Avg. Savings per Participant (Net)	914
Installed Demand Reduction (kW)	Total Gross Deemed Demand	1.4
	Realization Rate Adjustment (100%)	0.0
	Adjusted Gross Demand	1.4
	Net-to-Gross Adjustment (80%)	-0.3
	Net Adjusted Demand	1.2
	Planned Demand (Net)	106.4
	Annual % Toward Planned Demand (Net)	1.1%
	Avg. Peak Demand per Participant (Gross)	0.1
	Avg. Demand per Participant (Net)	0.1
Program Performance	Annual $Admin. per Participant (Gross)	$296
	Annual $Admin. per kWh/year (Gross)	$0.26
	Annual $Admin. per kW (Gross)	$3,488
	Annual $EM&V per Total Costs ($)	9.2%
	Annual $Rebate per Participant (Gross)	$262

Table 4-28 shows the program's gross and net annualized energy savings (kWh/year) and demand reduction (kW/year) by measure, in 2020, in North Carolina.

Table 4-28. North Carolina Residential Home Energy Assessment Measure-Level Performance Indicators (2020)

Program	kWh/year		kW	
Residential Home Energy Assessment– North Carolina (DSM VII)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	80%	100%	80%
Measure	**Gross**	**Net**	**Gross**	**Net**
Duct Sealing	616	493	0.3	0.2
Heat Pump Tune Up	356	285	0.3	0.3
Hot Water Pipe Insulation	609	487	0.07	0.06
Lighting	17,387	13,910	0.7	0.6

Program	kWh/year		kW	
Water Distribution	445	356	0.04	0.03
Total	19,413	15,530	1.4	1.2

4.4.3.3 Additional Virginia Program Data

Figure 4-33 through Figure 4-35 show the program's participation, gross annualized energy savings, and average annualized energy savings per participant (for participants who installed the measure in the respective year) by measure type.

Note participation in these charts are the count of new unique customers in the "all measures" presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

In 2020, the most frequently adopted measure was the installation of lighting measures, which are all LED lamps, adopted by 82% of program participants, as shown in Figure 4-33. Heat pump tune-ups were the second most adopted measure, completed by 18% of participants. Accordingly, lighting measures produced 90% of gross annualized energy savings (Figure 4-34) and the highest savings per participant (Figure 4-35).

Figure 4-33. Virginia Residential Home Energy Assessment Program Participation by Measure and Year

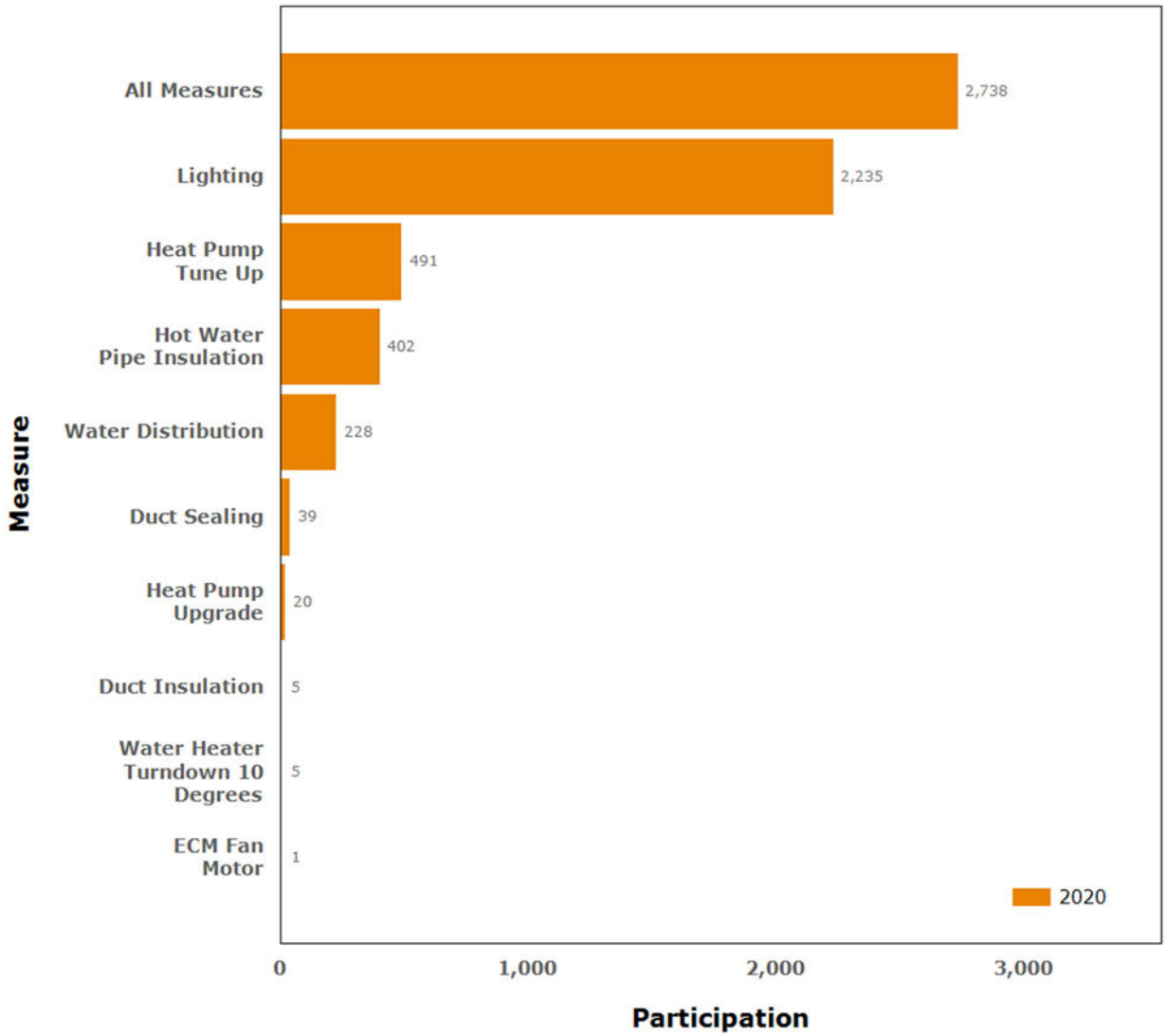


Figure 4-34. Virginia Residential Home Energy Assessment Program Gross Annualized Energy Savings by Measure and Year (MWh/year)

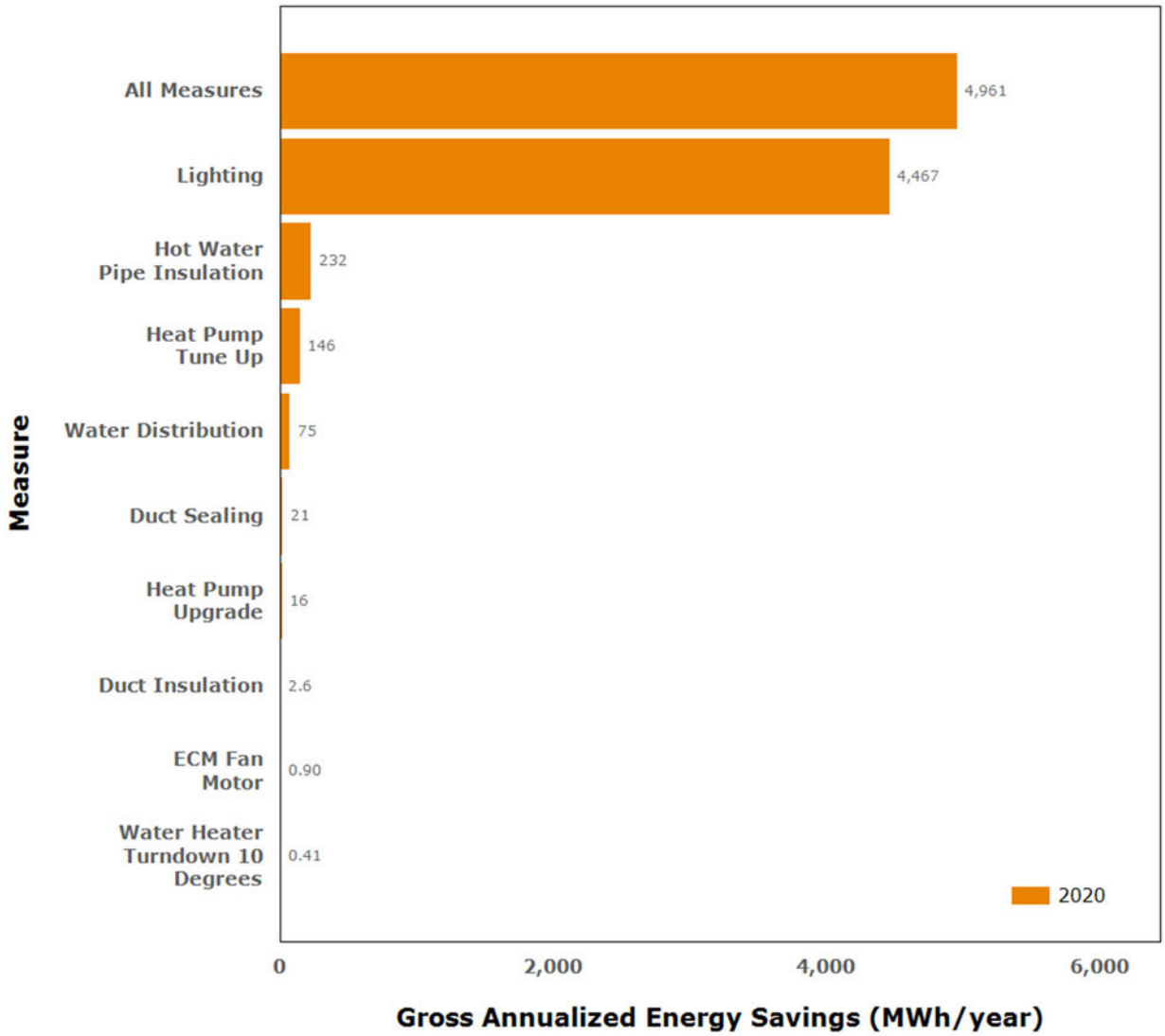


Figure 4-35. Virginia Residential Home Energy Assessment Program Average Gross Annualized Energy Savings per Participant (MWh/year per participant) by Measure and Year

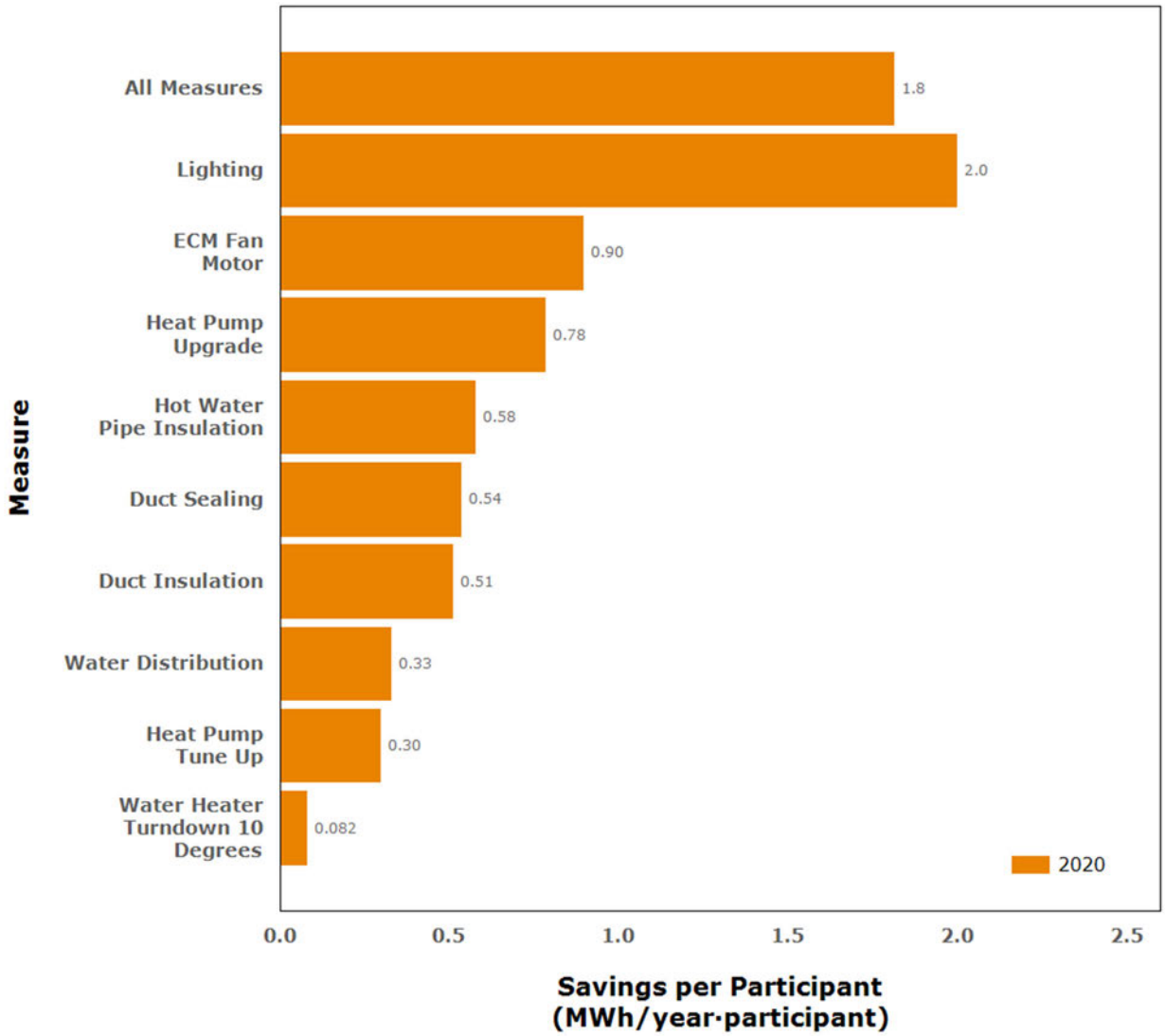


Figure 4-36 through Figure 4-38 show participation, gross annualized energy savings, and average annualized energy savings per participant by building type.

A participant in these charts is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

Only single family detached and single family attached (townhomes) homes are eligible for participation. Eighty-two percent of participants resided in single family detached homes, 18% resided in single family homes, as shown in Figure 4-36. A similar percentage (81%) of gross annualized savings were produced from single family detached homes (Figure 4-37).

Figure 4-36. Virginia Residential Home Energy Assessment Program Participation by Building Type and Year

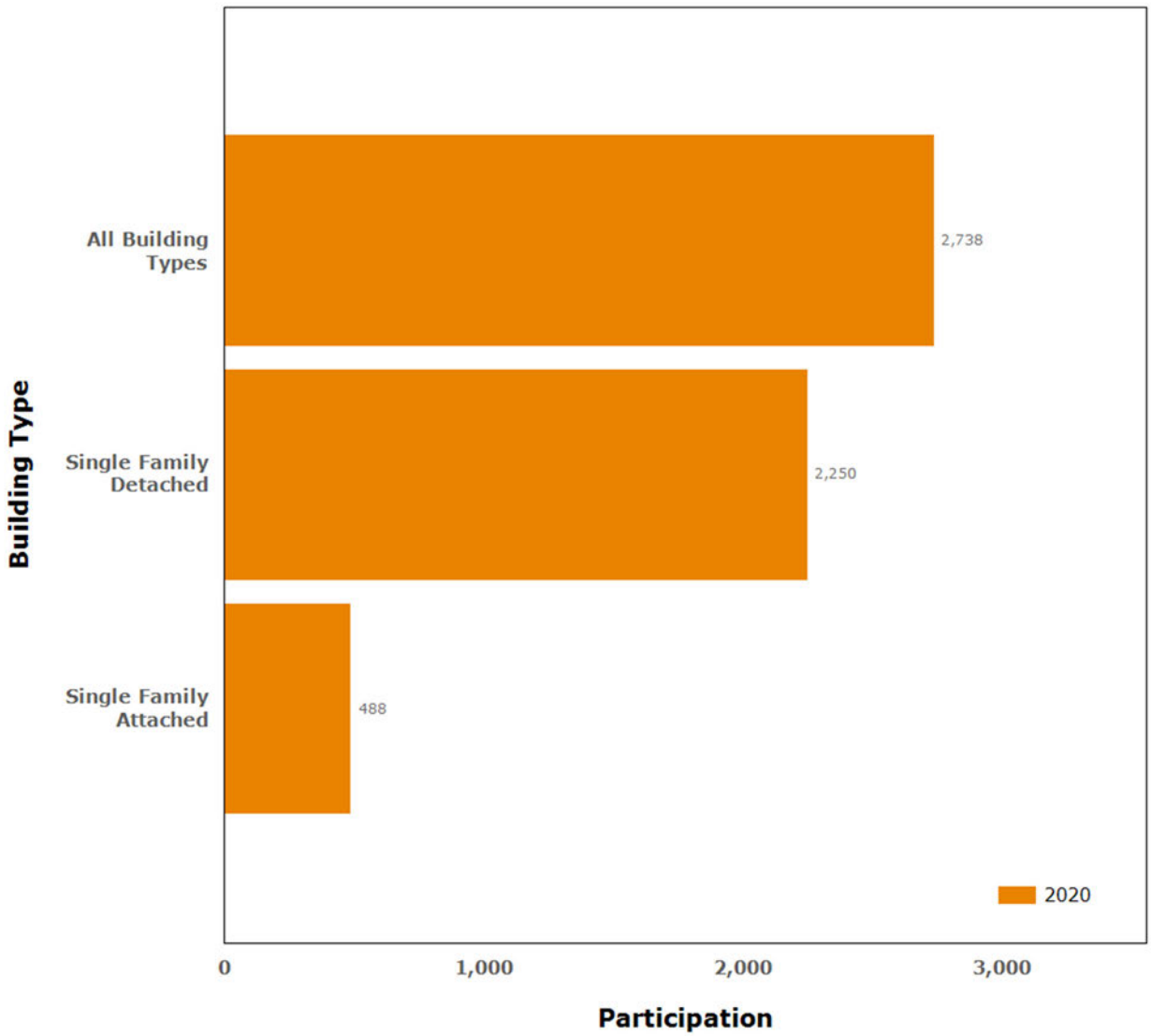


Figure 4-37. Virginia Residential Home Energy Assessment Program Gross Annualized Energy Savings by Building Type and Year (MWh/year)

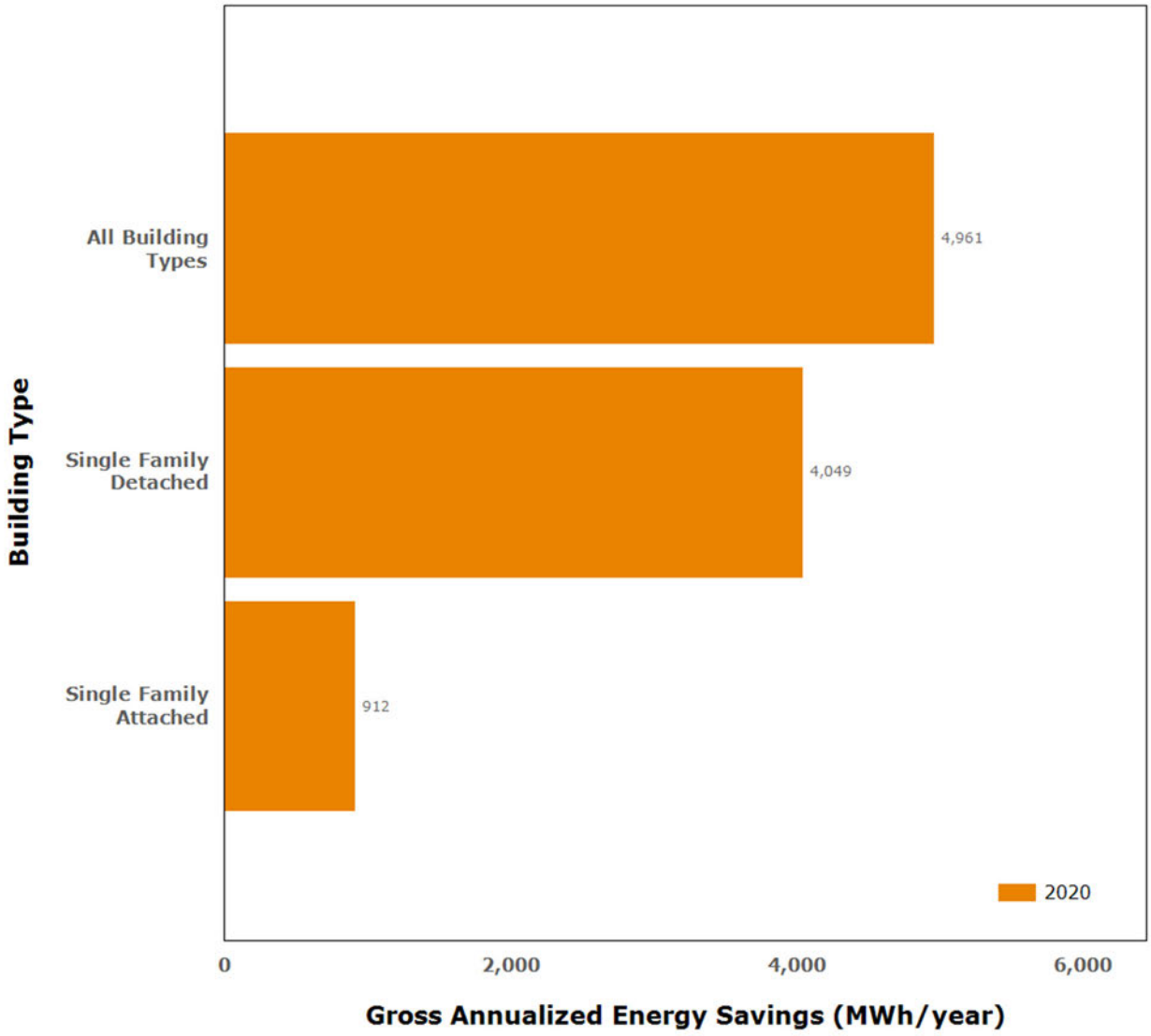
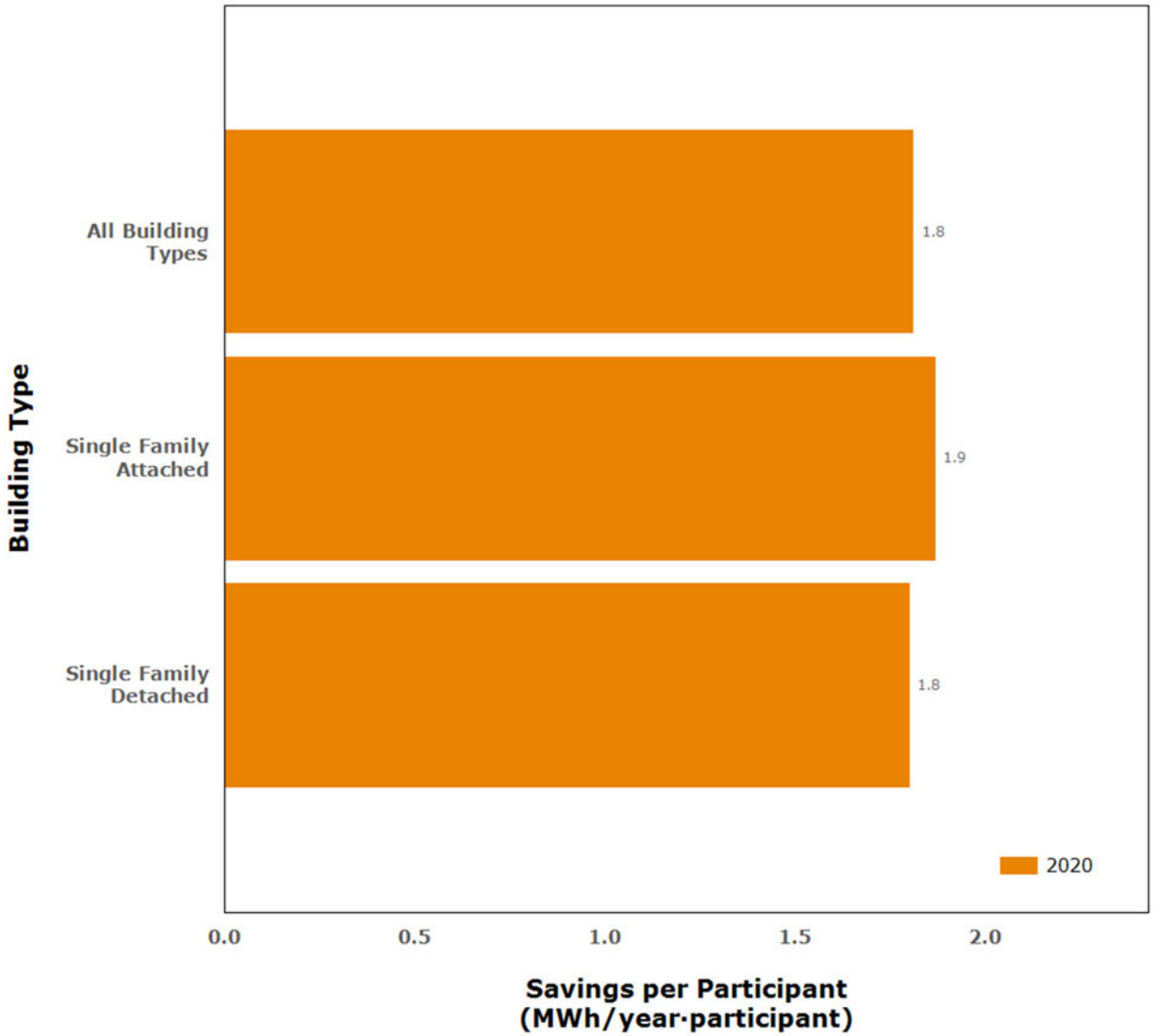


Figure 4-38 shows that single family attached homes saved slightly more energy per participant than detached homes.

Figure 4-38. Virginia Residential Home Energy Assessment Program Average Gross Annualized Energy Savings per Participant (kWh/year per participant) by Building Type and Year



4.4.3.4 Additional North Carolina Program Data

Figure 4-39 through Figure 4-41 show the program's participation, gross annualized energy savings, and average annualized energy savings per participant (for participants who installed the measure in the respective year) by measure type.

Note participation in these charts are the count of new unique customers in the "all measures" presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

In 2020, the most frequently adopted measure was the installation of lighting measures, which are all LED lamps, adopted by 65% of program participants, as shown in Figure 4-39. Water distribution and hot water pipe insulation measures were each installed by 47% of program participants, the second most adopted measures. Accordingly, lighting measures produced the majority (89%) of gross annualized energy savings (Figure 4-40) and the highest energy savings per participant (Figure 4-41).

Figure 4-39. North Carolina Residential Home Energy Assessment Program Participation by Measure and Year

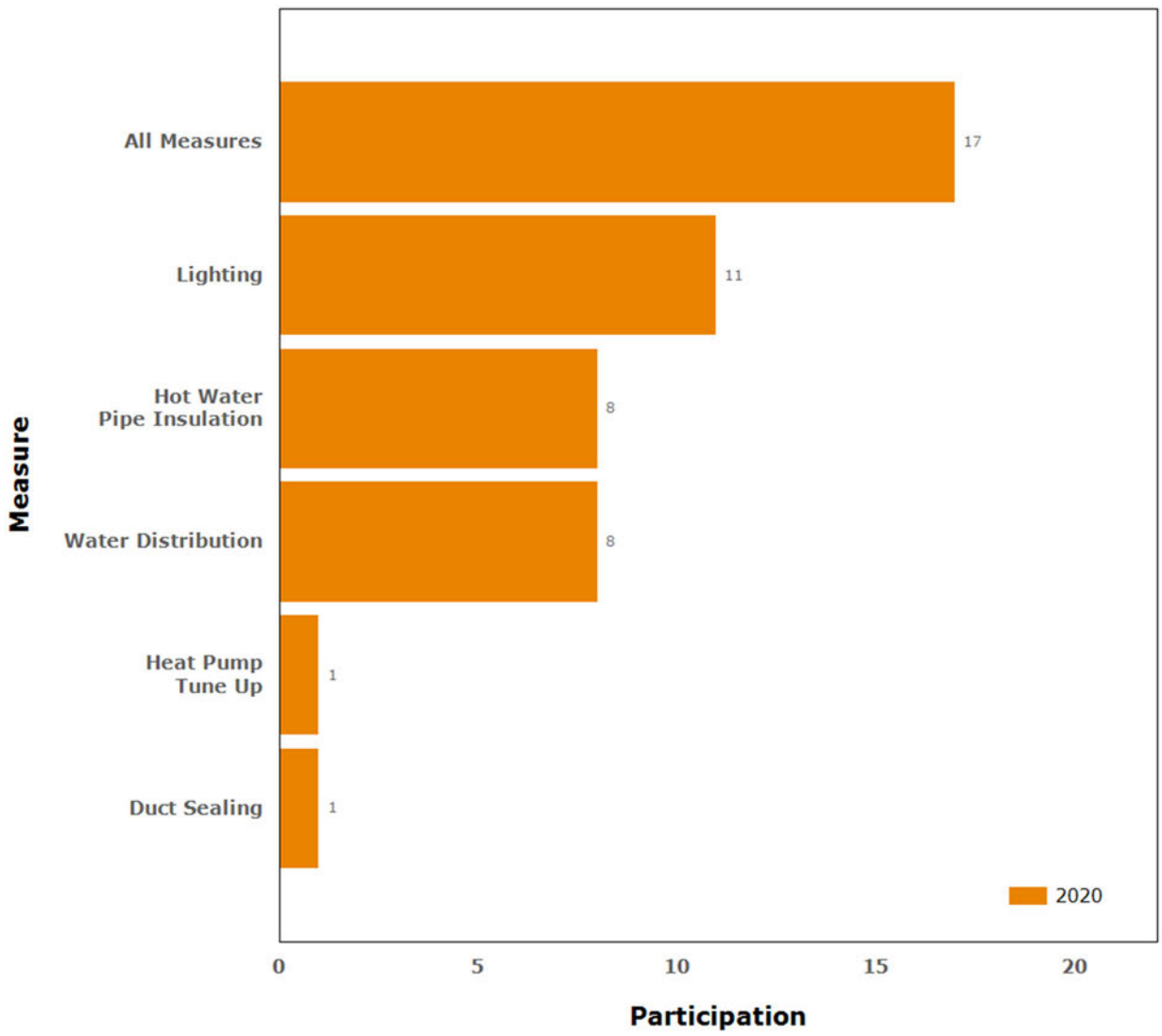


Figure 4-40. North Carolina Residential Home Energy Assessment Program Gross Annualized Energy Savings by Measure and Year (MWh/year)

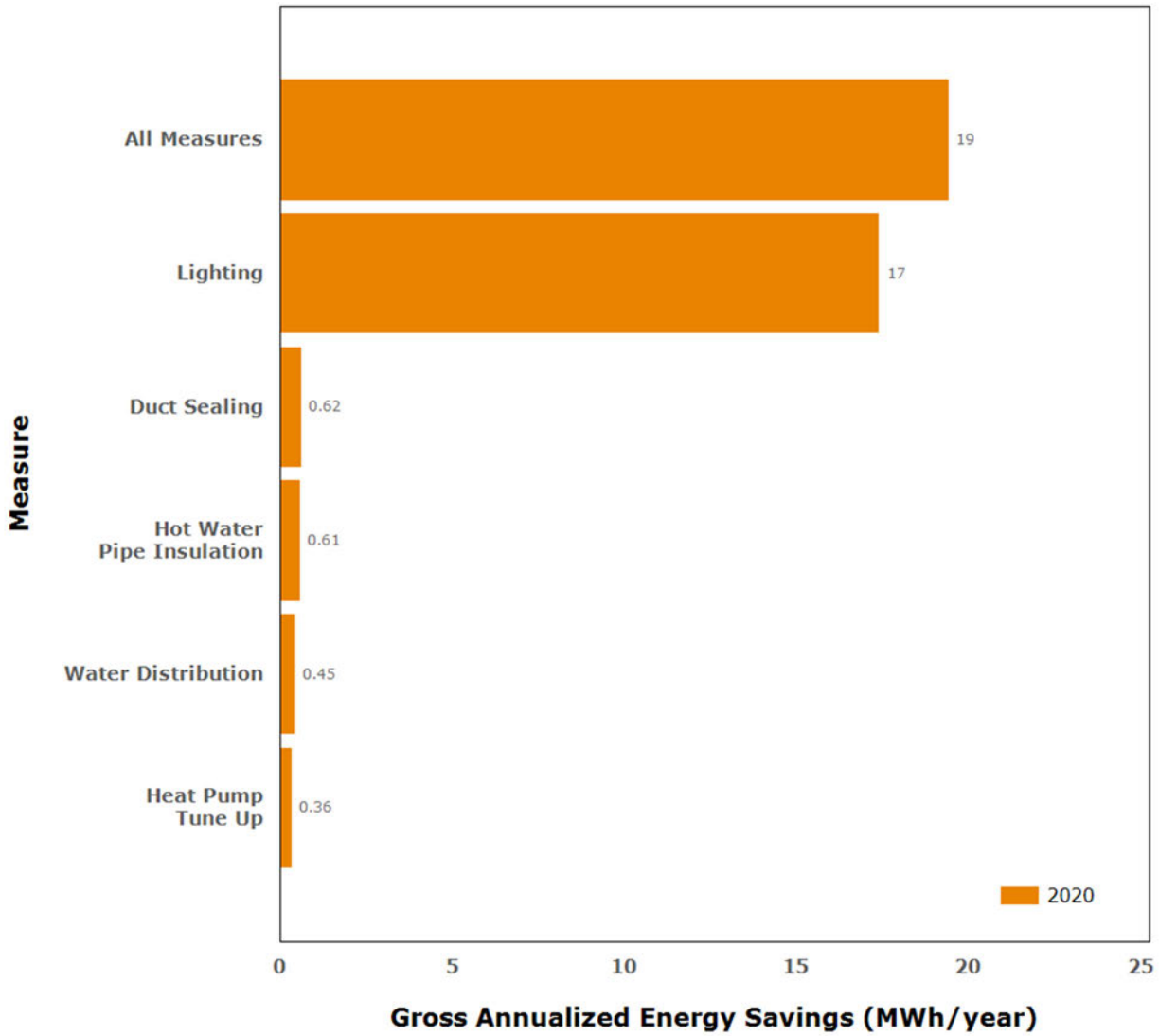


Figure 4-41. North Carolina Residential Home Energy Assessment Program Average Gross Annualized Energy Savings per Participant (MWh/year per participant) by Measure and Year

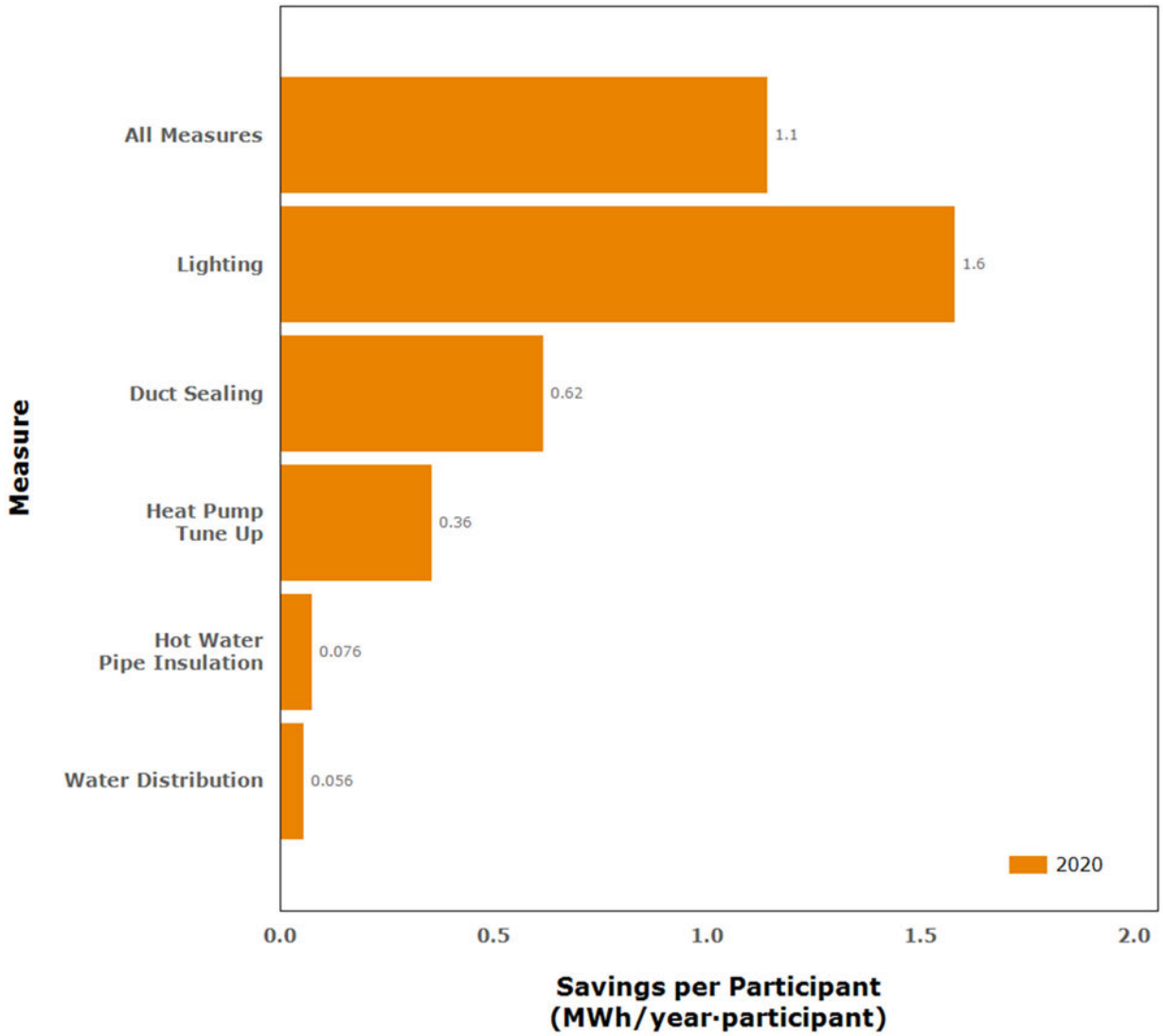


Figure 4-42 through Figure 4-44 show participation, gross annualized energy savings, and average annualized energy savings per participant by building type and program year.

A participant in these charts is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

Only single family detached and single family attached (townhomes) homes are eligible for participation. Fifty-three percent of participants resided in single family detached homes, 47% resided in single family homes, as shown in Figure 4-42. An even higher percentage (95%) of gross annualized savings were produced from single family detached homes (Figure 4-43), which could be because single family detached homes are generally larger than attached homes, consume more energy,

and therefore have more opportunities for energy efficiency improvements. Accordingly, single family detached homes saved the most energy per participant (Figure 4-44).

Figure 4-42. North Carolina Residential Home Energy Assessment Program Participation by Building Type and Year

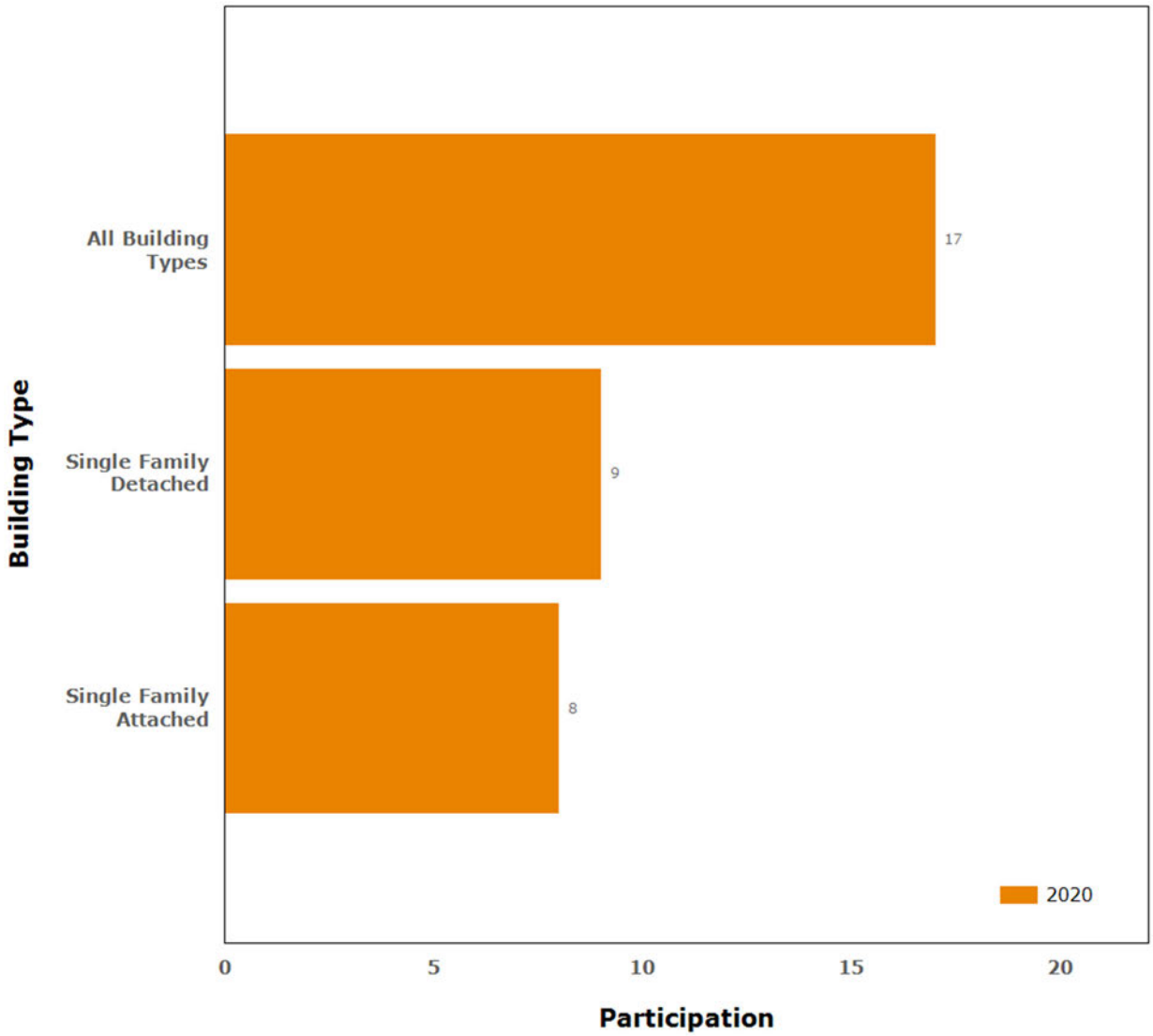


Figure 4-43. North Carolina Residential Home Energy Assessment Program Gross Annualized Energy Savings by Building Type and Year (MWh/year)

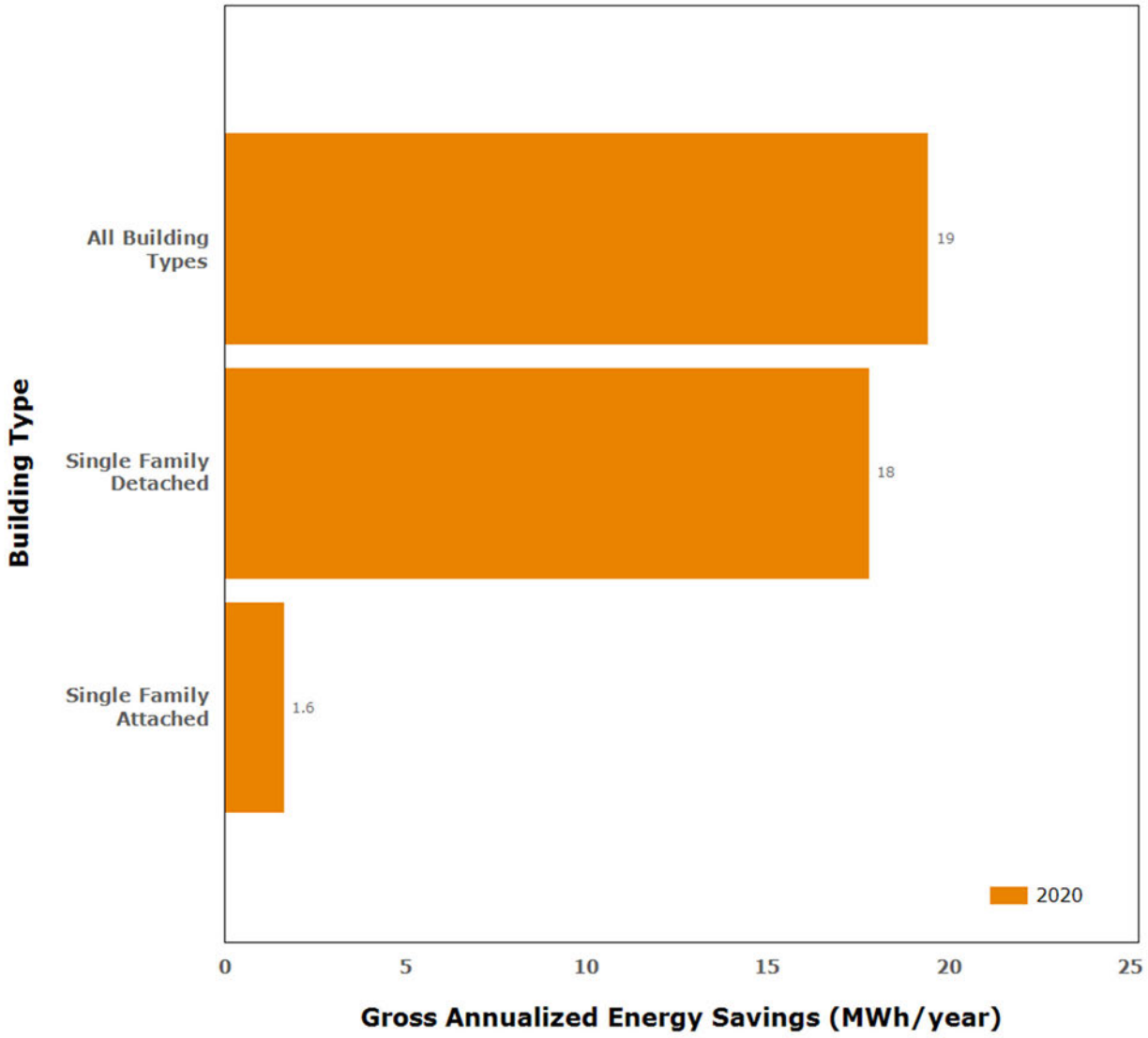
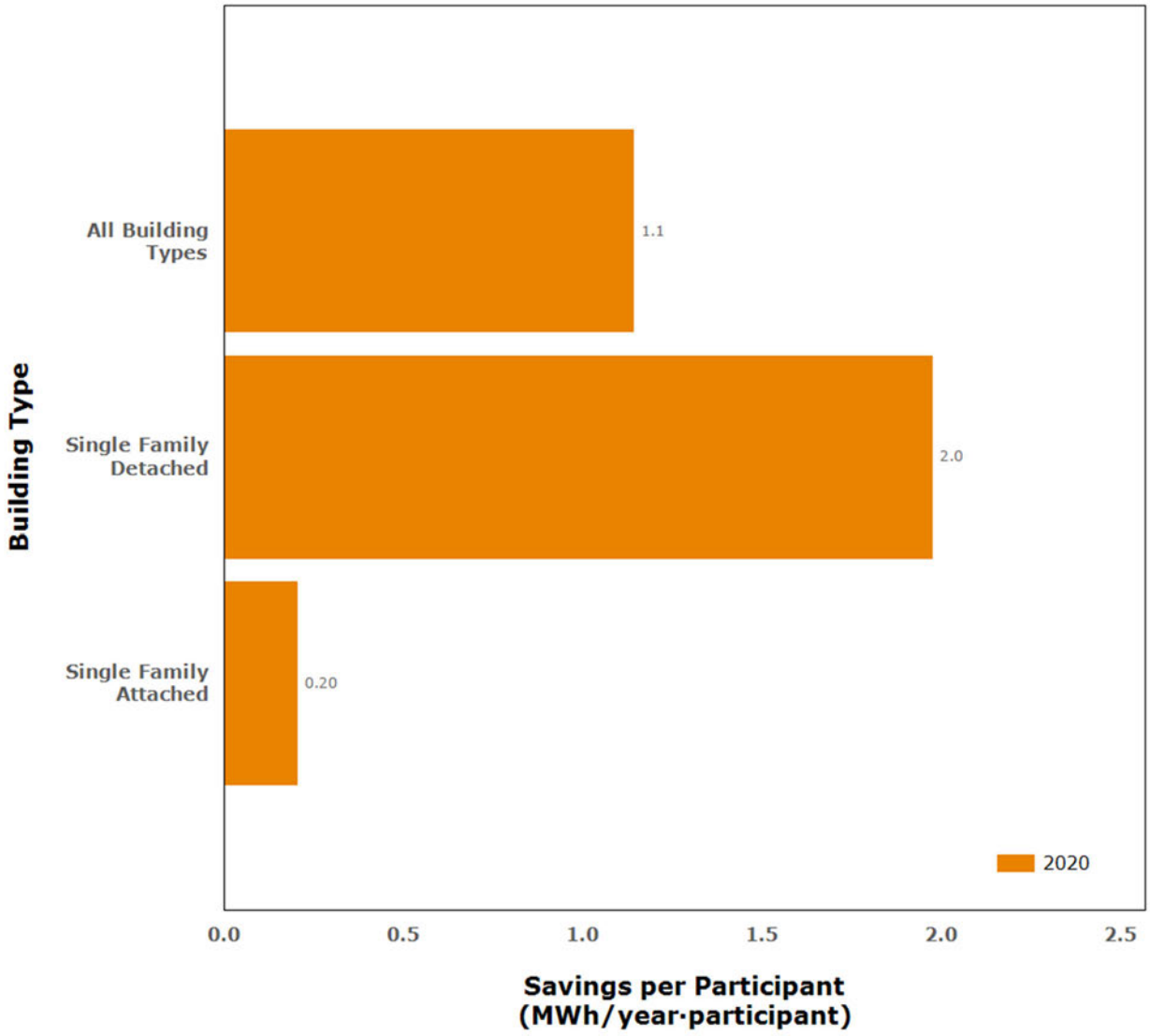


Figure 4-44. North Carolina Residential Home Energy Assessment Program Average Gross Annualized Energy Savings per Participant (kWh/year per participant) by Building Type and Year



4.4.3.5 Comparison of Savings with Usage

See Table 4-29 for a comparison of the 2020 program net adjusted savings in Virginia with the system-wide planned savings for the program, the annual usage for an average rate schedule, and the annual usage for eligible customers in each rate schedule that participated in the program.

Table 4-29. Virginia 2020 Residential Home Energy Assessment Comparison of Savings with Usage by Rate Schedule

Comparisons	Item	Value
Schedule 1		
Comparison of Savings	Net Systemwide Planned Savings per Participant	357.8 kWh/year
	Net Adjusted Savings per Participant	1,448.6 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	405%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[77]	13,651 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	10.6%
Comparison to Annual Usage of Elig ble Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
Schedule 1EV		
Comparison of Savings	Net Systemwide Planned Savings per Participant	357.8 kWh/year
	Net Adjusted Savings per Participant	5,487.1 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	1,534%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[78]	19,957 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	27.49%
Comparison to Annual Usage of Elig ble Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
Schedule 1S		
Comparison of Savings	Net Systemwide Planned Savings per Participant	357.8 kWh/year
	Net Adjusted Savings per Participant	1,594.8 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	446%

[77] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 2, Column E (kWh of Sales Per Customer).

[78] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 17, Column E (kWh of Sales Per Customer).

Comparisons	Item	Value
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[79]	30,114 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	5.3%
Comparison to Annual Usage of Elig ble Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
Schedule 1T		
Comparison of Savings	Net Systemwide Planned Savings per Participant	357.8 kWh/year
	Net Adjusted Savings per Participant	1,641.6 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	459%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[80]	20,467 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	8.0%
Comparison to Annual Usage of Elig ble Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
Schedule 24		
Comparison of Savings	Net Systemwide Planned Savings per Participant	357.8 kWh/year
	Net Adjusted Savings per Participant	2,506.0 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	350%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[81]	- kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	-%
Comparison to Annual Usage of Elig ble Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
Schedule 27		
Comparison of Savings	Net Systemwide Planned Savings per Participant	357.8 kWh/year
	Net Adjusted Savings per Participant	1,449.9 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	405%

[79] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 17, Column E (kWh of Sales Per Customer).

[80] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 3, Column E (kWh of Sales Per Customer).

[81] Information not available in FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019.

Comparisons	Item	Value
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[82]	- kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	-%
Comparison to Annual Usage of Elig ble Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
Schedule 28		
Comparison of Savings	Net Systemwide Planned Savings per Participant	357.8 kWh/year
	Net Adjusted Savings per Participant	758.4 kWh/year
	Net Adjusted Savings as Percent of Planned Savings	212%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[83]	- kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	-%
Comparison to Annual Usage of Elig ble Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"

[82] Information not available in FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Schedule 27 is a Virginia Lighting Schedule.

[83] Information not available in FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Schedule 27 is a Virginia Lighting Schedule.

4.5 Residential Smart Thermostat Purchase and WeatherSmart[SM] – Virginia

Virginia

Case No. PUR-2019-00201

RESIDENTIAL THERMOSTAT ENERGY EFFICIENCY

2020-PRESENT
- **kWh/yr** Average Net Savings Per Participant

Eligibility

- Active residential customer in Virginia who lives in a single family detached, attached, or manufactured home
- Customer must be responsible for electric bill and able to secure permission to complete measures
- Must be an ENERGY STAR® smart thermostat with a confirmed connection to customer's wireless internet connection that controls the HVAC
- Customer must have a heat pump for smart thermostat purchase rebate
- Customer must have central air conditioning or a heat pump for annual optimization rebate

Measures

- ENERGY STAR® certified smart thermostat
- Optimization of thermostat schedule
- Monthly report with personalized energy-saving tips

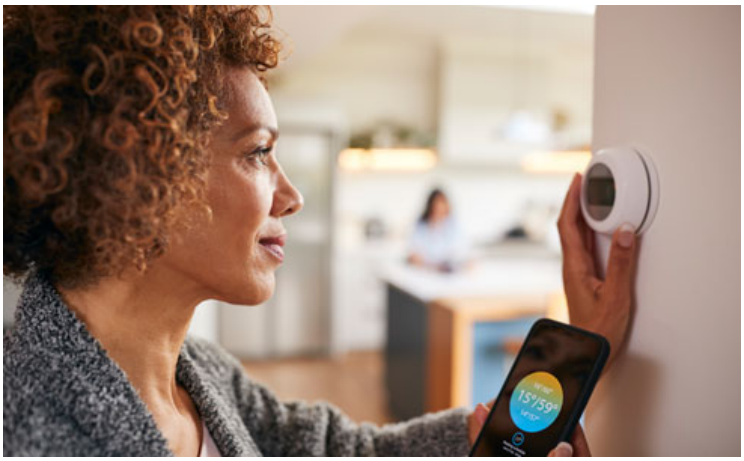
Enrolled **0** customers

Achieved net annual energy savings of **0 MWh/year**

Spent - of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)					99,671	99,671
Total Program Participants (#)					0	
Total Gross Incremental Savings (kWh/yr)					0	
Total Net Incremental Savings (kWh/yr)					0	
Average Gross Incremental Demand Reduction (kW)					0	
Average Net Incremental Demand Reduction (kW)					0	
Total Net Lifetime Savings (kWh)					0	
Average Lifetime Demand Reduction (kW)					0	

4.5.1 Program Description



The Residential Smart Thermostat Purchase and WeatherSmart Program is a two-component program. To participate in either component of this program, the customer must be a Dominion Energy residential customer in a single-family detached, attached, or manufactured home.

The Residential Smart Thermostat Purchase component provides an incentive for purchasing an ENERGY STAR® certified smart thermostat. The smart thermostat must have a confirmed connection to the customer's wireless internet, and it must be connected to a heat pump.

An additional incentive is provided under the WeatherSmart component of the program. The WeatherSmart component provides an annual incentive for customers who allow for remote optimization of their smart thermostat. The customer would also receive a monthly report with personalized energy-saving tips. A customer does not need to participate in the Smart Thermostat Purchase component of the program to enroll in the WeatherSmart optimization component. However, to participate in the WeatherSmart component they are required to have an ENERGY STAR® certified smart thermostat capable of remote control. The thermostat must be connected to a central air conditioning system or heat pump.

The SCC first approved this program, as part of the DSM Phase VII programs, on May 2, 2019 (Case No. PUR-2018-00168). It was approved by the NCUC in North Carolina on November 13, 2019 (Docket No. E-22, SUB 569). Due to a clerical error, the program was refiled in Virginia at the end of 2019 and approved on July 30, 2020 as part of the DSM Phase VIII programs (Case No.PUR-2019-00201), to run through June 30, 2024. Upon approval, the Company worked to finalize data systems, determine program logistics with program implementers, and finalize implementation details. It was launched in Virginia on November 1, 2020.

Table 5-36 maps the applicable sections in this report to reporting requirements listed in the EM&V Rule section 50, "Standard Requirements for Evaluation, Measurement, and Verification Reporting." [84]

[84] 20 VAC 5-318-50

Table 4-30. Residential Smart Thermostat Purchase and WeatherSmart Program Compliance with EM&V Rule Section 50

Subsection within 20 VAC 5-318-50	Location and Description
A. EM&V Plan	APPENDIX M. EM&V Plan
B. Utilizing utility-specific data or other data	**Per 20 VAC 5-318-40 A and B** 1. There were no program participants in this program in 2020. 2. See the Methodologies section (section 3) of this report for a description of the overarching EM&V methodologies used to produce results in this report. **Per 20 VAC 5-318-40 C** 3. There were no program participants in this program in 2020
C. Changes to measure-level inputs and assumptions, and inputs to cost/benefit estimates	1. See Table 5- for program planning assumptions 2. See documents filed with the Virginia State Corporation Commission Docket PUR-2019-00201 for approved measure-level inputs and assumptions, and the impact of such changes on original cost/benefit estimates for DSM programs or measures.
D. Measure-level data collection methodology	See response to A. and B. above.
E. Explanation of eligibility requirements for each rate schedule that program is offered	See program description above.
F. Comparison of measured annual measure or program savings estimates to the annual usage of the average rate schedule usage, and eligible customer in each rate schedule	There were no program participants in this program in 2020
G. Explanation of controls undertaken by utility	See APPENDIX KK

4.5.2 Methods for the Current Reporting Period

This section describes the program's planned participants, energy savings, and demand reduction.

Table 4-31. Residential Smart Thermostat Purchase Program (Phase VIII) Planning Assumptions System-wide

Assumption	Value
Target Market	Residential customers
NTG Factor	80%
Measure Life (years)	10.00
Average Annual Energy Savings per Participant (kWh/year)	537.50
Average Coincident Peak Demand Reduction per Participant (kW)	0.10
Average Rebate per Participant (US$)	$50.00

Table 4-32. Residential Smart Thermostat WeatherSmart Program (Phase VIII) Planning Assumptions System-wide

Assumption	Value
Target Market	Residential customers
NTG Factor	95%
Measure Life (years)	10.00
Average Annual Energy Savings per Participant (kWh/year)	303.00
Average Coincident Peak Demand Reduction per Participant (kW)	0.10
Average Rebate per Participant (US$)	$5.00

4.5.3 Assessment of Program Progress towards Plan

The next section describes the program's progress towards planned participants, energy savings, and demand reduction.

4.5.3.1 Key Virginia Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for Virginia in 2020 appear below. Following this summary, Table 4-33 provides performance indicator data from program inception through December 31, 2020, and shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.6.

- There were no participants in 2020.

- There were no kWh or kW savings because there were no participants in 2020.

- There were no planned costs for 2020.

Table 4-33. Virginia Residential Smart Thermostat Purchase and WeatherSmart Program Performance Indicators (2019)

Category	Item	2020
Operations and Management Costs ($)	Direct Rebate	[redacted]
	Direct Implementation	
	Direct EM&V	
	Indirect Other (Administrative)	$4,253
Total Costs ($)	Total[85]	$99,671
	Planned	$0
	Variance	$99,671
	Annual % of Planned	N/A
Participants	Total (Gross)	0
	Planned (Gross)	9,071
	Variance	- 9,071
	Annual % of Planned (Gross)	0%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	0
	Realization Rate Adjustment (100%)	0
	Adjusted Gross Savings	0
	Net-to-Gross Adjustment (80%)	0
	Net Adjusted Savings	0
	Planned Savings (Net)	1,593,597
	Annual % Toward Planned Savings (Net)	0%
	Avg. Savings per Participant (Gross)	N/A
	Avg. Savings per Participant (Net)	N/A
Installed Demand Reduction (kW)	Total Gross Deemed Demand	0.0
	Realization Rate Adjustment (100%)	0.0
	Adjusted Gross Demand	0.0
	Net-to-Gross Adjustment (90%)	0.0
	Net Adjusted Demand	0.0
	Planned Demand (Net)	286.5
	Annual % Toward Planned Demand (Net)	0%
	Avg. Peak Demand per Participant (Gross)	N/A
	Avg. Demand per Participant (Net)	N/A

[85] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Category	Item	2020
Program Performance	Annual $Admin. per Participant (Gross)	N/A
	Annual $Admin. per kWh/year (Gross)	N/A
	Annual $Admin. per kW (Gross)	N/A
	Annual $EM&V per Total Costs ($)	31.0%
	Annual $Rebate per Participant (Gross)	N/A

4.5.3.2 Additional Virginia Program Data

Since no Virginia customers have participated in the program through 2020, no additional data are available.

4.5.3.3 Comparison of Savings with Usage

Since no Virginia customers have participated in the program through 2020, no comparison of savings to usage is possible.

5 ENERGY EFFICIENCY PROGRAMS – NON-RESIDENTIAL

This section reports on the 2020 progress of eight non-residential energy efficiency programs.

1. Non-residential Lighting Systems & Controls (DSM Phase III) – North Carolina
2. Non-residential Lighting Systems & Controls (DSM Phase VII) – Virginia and North Carolina
3. Non-residential Heating and Cooling Efficiency (DSM Phase VII) – Virginia and North Carolina
4. Non-residential Window Film (DSM Phase VII) – Virginia and North Carolina
5. Non-residential Small Business Improvement (DSM Phase V) – Virginia and North Carolina
6. Non-residential Prescriptive (DSM Phase VI) – Virginia and North Carolina
7. Non-residential Small Manufacturing (DSM Phase VII) – Virginia and North Carolina
8. Non-residential Office (DSM Phase VII) - Virginia and North Carolina

Active 2020 non-residential programs accounted for:

- 17% of new participants for all programs
- 49% of gross annual energy savings
- 56% of spending for both active residential and non-residential programs

Figure 5-1 and Figure 5-2 show the cumulative count of non-residential energy efficiency program participation and gross annualized energy savings in the two states, at the county level, for all active programs, through December 2020. The deeper the color, the greater the participation and gross annualized energy savings.

In Virginia, the three jurisdictions with the highest participation, in descending order, are Fairfax, Henrico, and Virginia Beach City. In North Carolina, Dare, Halifax, and Currituck have the highest participation.

In regard to energy savings, the top three jurisdictions in Virginia, in descending order, are Fairfax, Henrico, and Chesterfield. In North Carolina, Dare, Halifax, and Nash have the most energy savings.

Figure 5-1. Virginia and North Carolina Non-residential Energy Efficiency Program Participation Map, by county, Inception to December 31, 2020

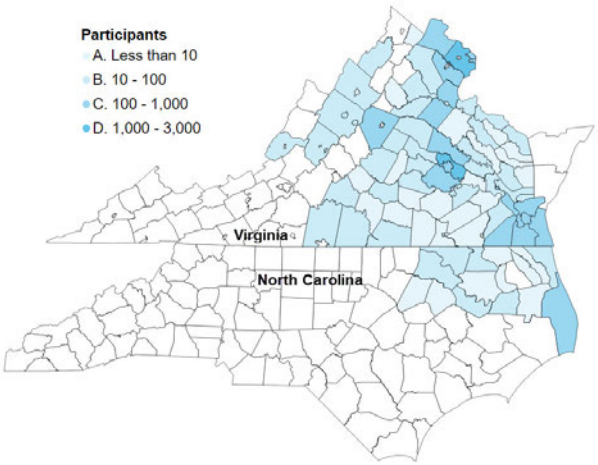
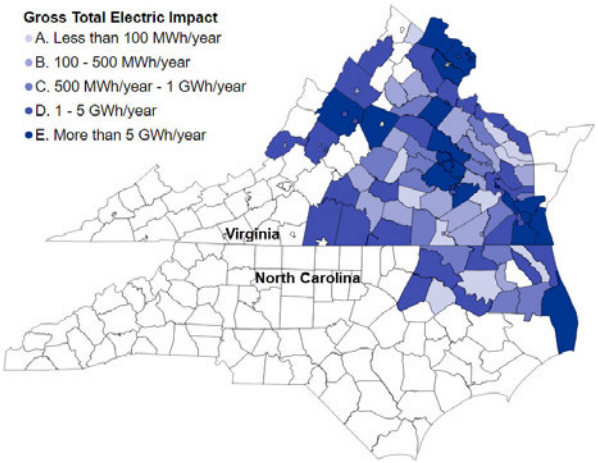


Figure 5-2. Virginia and North Carolina Non-residential Energy Efficiency Program Gross Annualized Energy Savings Map, by County, Inception to December 31, 2020



5.1 Non-residential Lighting Systems & Controls (DSM Phase III) – Virginia and North Carolina

Virginia

Case #: PUE-2013-00072

NON-RESIDENTIAL LIGHTING SYSTEMS & CONTROLS

2014-PRESENT
43,488 kWh/yr Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- T8s with electronic ballast
- High-performance T8s
- T5s with electronic ballast
- CFLs
- LEDs
- Occupancy sensors

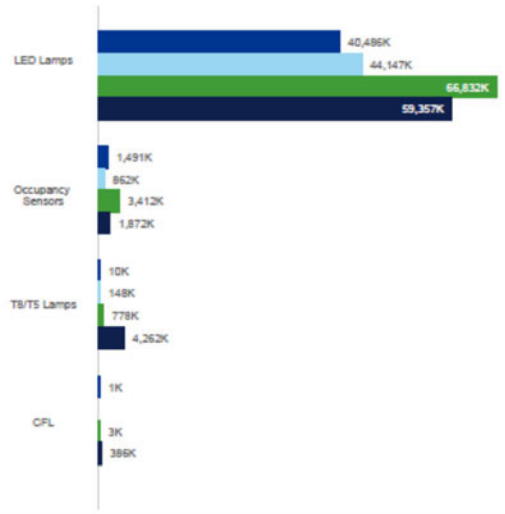
Enrolled **4,501** customers, **64%** of planned participation

Achieved net annual energy savings of **195,738 MWh/year**, **142%** of planned energy savings

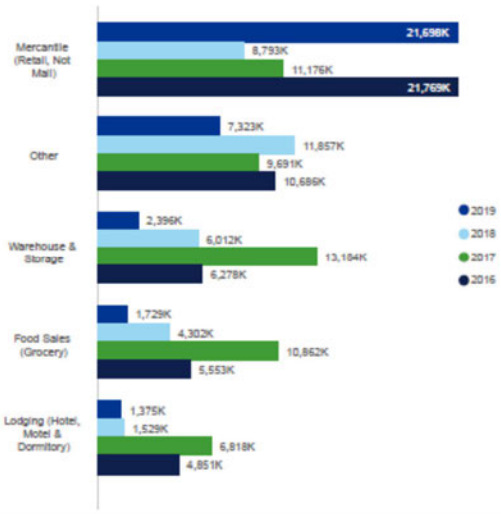
Spent **138%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)	7,070,615	8,931,669	6,229,352	4,806,213	36,137	34,978,746
Total Program Participants (#)	1,203	868	649	422	0	4,501
Total Gross Incremental Savings (kWh/yr)	65,876,985	71,024,607	45,157,541	41,968,907	0	
Total Net Incremental Savings (kWh/yr)	46,113,890	49,717,225	31,610,279	29,392,235	0	
Average Gross Incremental Demand Reduction (kW)	15,380	11,958	7,222	5,638	0	
Average Net Incremental Demand Reduction (kW)	10,766	8,371	5,056	3,946	0	
Total Net Lifetime Savings (kWh)	83,852,758	195,451,936	344,518,050	537,950,026	0	1,761,642,509
Average Lifetime Demand Reduction (kW)	18,937	27,308	32,363	36,309	0	36,309

TOTAL SAVING BY MEASURE TYPE
ALL IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



DNV

North Carolina

Docket #: E-22 Sub 508

NON-RESIDENTIAL LIGHTING SYSTEMS & CONTROLS

2015-PRESENT
50,288 kWh/yr Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- T8s with electronic ballast
- High-performance T8s
- T5s with electronic ballast
- CFLs
- LEDs
- Occupancy sensors

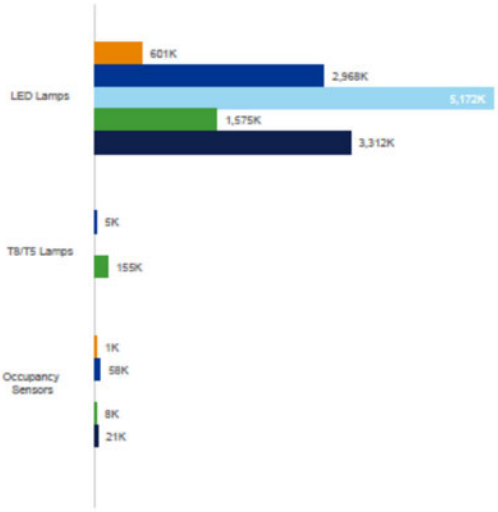
Enrolled **201** customers, **43%** of planned participation

Achieved net annual energy savings of **10,108 MWh/year**, **107%** of planned energy savings

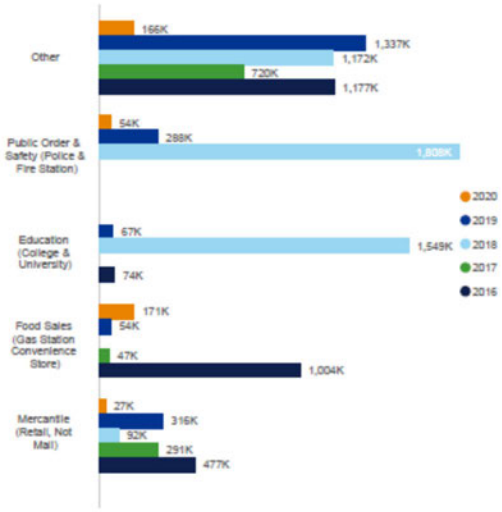
Spent **89%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)	393,406	252,605	249,209	413,562	88,425	1,519,945
Total Program Participants (#)	43	23	43	62	17	201
Total Gross Incremental Savings (kWh/yr)	3,333,527	1,738,121	5,172,076	3,030,032	601,830	
Total Net Incremental Savings (kWh/yr)	2,333,469	1,216,685	3,620,453	2,121,023	421,281	
Average Gross Incremental Demand Reduction (kW)	743	335	1,110	594	95	
Average Net Incremental Demand Reduction (kW)	520	234	777	416	66	
Total Net Lifetime Savings (kWh)	1,699,056	5,150,948	10,123,170	19,177,078	29,231,581	90,971,443
Average Lifetime Demand Reduction (kW)	593	828	1,605	2,021	2,087	2,087

TOTAL SAVING BY MEASURE TYPE
ALL IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



5.1.1 Program Description

The Non-residential Lighting Systems & Controls Program in DSM Phase III offers non-residential customers rebate incentives to retrofit their existing lighting system with a more energy-efficient and cost-effective lighting systems. The program provides rebates for the following types of measures:

- T8 with electronic ballast
- High-performance T8
- T5 with electronic ballast
- CFLs
- LEDs
- Occupancy sensors

This program is implemented through a contractor network, so customers must contact a participating contractor to be eligible for the rebate. All Dominion Energy non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out. Customers are not considered participants until a completed application form is processed and a rebate is issued. This process can take several months, as customers have 45 days to submit their rebate application and Dominion Energy has 90 days to process it.

The Virginia SCC approved this program, as part of the DSM Phase III programs, on April 29, 2014 (Case No. PUE-2013-00072) for a five-year period of May 1, 2014 through April 30, 2019. The North Carolina Utilities Commission approved this program on October 27, 2014 (Docket No. E-22, Sub 508). When the Virginia program expired in April 2019, which triggered the systemwide version of this program to close, the NCUC ordered (on October 16, 2018, Docket No. E-22, Sub 508) for this program to continue implementation only in North Carolina starting in January 1, 2019 until the DSM Phase VII version of the program was available.

5.1.2 Methods for the Current Reporting Period

For the current period, the approach included reviewing the tracking data, then estimating gross energy and demand savings using STEP Manual calculations.

Table 5-1 outlines Dominion Energy's initial program planning assumptions used to design the program. DNV uses the planned NTG factor in its net savings calculations for the program measures that have not yet been verified through EM&V.

Table 5-1. Non-residential Lighting Systems and Controls Program (Phase III) Planning Assumptions System-wide

Assumption	Value
Target Market	Non-residential
NTG Factor	70%
Measure Life (years)	9
Gross Average Annual Energy Savings per Participant (kWh/year)	18,259
Gross Average Peak Demand Reduction (kW) per Participant	5.10
Net Average Annual Energy Savings per Participant (kWh/year)	12,781
Net Average Peak Demand Reduction (kW) per Participant	3.57
Average Rebate (US$) per Participant	$2,957

5.1.3 Assessment of Program Progress towards Plan

The next subsections describe the program's progress towards planned participants, energy savings, and demand reduction.

5.1.3.1 Key Virginia Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for Virginia appear below. Following this summary, Table 5-2 provides performance indicator data annually and from program inception through 2020. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.40, cumulative gross savings are in Appendix C.5 and cumulative net savings are in Appendix D.5.

- From program inception through close, 4,501 customers participated in the program, approximately 64% of planned participation.
- Participation peaked in 2015 (1,241 participants), the first full year the program was offered.

- From program inception through close, the program achieved net energy savings of 195,738,057 kWh/year, approximately 142% of its planned target.
- The average net energy savings per participant was 43,488 kWh/year, approximately 340% of program design assumed savings per participant from Table 5-2.
- From program inception through close, the program achieved a net demand reduction of 36,309.5 kW, approximately 131% of its planned target.
- The average net demand reduction per participant was 8.1 kW, approximately 227% of planned demand reduction per participant from Table 5-2.

- From program inception through close, the program spent approximately 138% of planned program costs.

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Table 5-2. Virginia Non-residential Lighting Systems & Controls Program Performance Indicators (2014-2020)

Category	Item	2014	2015	2016[86]	2017	2018	2019	2020	Program Total (2014-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]							
	Direct Implementation								
	Direct EM&V								
	Indirect Other (Administrative)	$39,157	$191,137	$214,891	$351,449	$351,760	$289,158	$2,081	$1,439,634
Total Costs ($)	Total[87]	$1,295,925	$6,608,836	$7,070,615	$8,931,669	$6,229,352	$4,806,213	$36,137	$34,978,746
	Planned	$3,048,223	$5,355,067	$5,349,167	$5,268,411	$6,289,779	$100,294	$0	$25,410,941
	Variance	-$1,752,298	$1,253,769	$1,721,448	$3,663,258	-$60,427	$4,705,918	$36,137	$9,567,805
	Cumulative % of Planned	43%	123%	132%	170%	99%	4792%	N/A	138%
Participants	Total (Gross)	118	1,241	1,203	868	649	422	0	4,501
	Planned (Gross)	688	1,504	1,531	1,553	1,807	0	0	7,083
	Variance	-570	-263	-328	-685	-1,158	422	0	-2,582
	Cumulative % of planned (Gross)	17%	83%	79%	56%	36%	N/A	N/A	64%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	4,749,693	50,828,062	65,876,985	71,024,607	45,157,541	41,988,907	0	279,625,795
	Realization Rate Adjustment (100%)	0	0	0	0	0	0	0	0
	Adjusted Gross Savings	4,749,693	50,828,062	65,876,985	71,024,607	45,157,541	41,988,907	0	279,625,795

[86] The 2016 total gross deemed savings values reported in this table differs from values in the May 1, 2017 EM&V report and have been refiled with the Commission. The adjustments totalled 14,862,478 kWh/year and 168 kW for 2016 reported savings. The adjustments account for corrections to STEP Manual version 7.0.0 issued on May 1, 2017, in section 9.1.1. The adjustment was to waste heat factors (WHFe and WHFd) applied to lighting fixtures installed in 2016, where the program participant building HVAC systems was assumed to be heat pump heating and cooling systems, rather than the previous assumption of AC cool and non-electric heat systems. This adjustment was made in response to requests by the North Carolina Public Staff Utilities Commission Re: Docket No. E-22, Sub 545, on October 23, 2017. It is reflected in STEP Manual version 8.0.0 in this EM&V report.

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Category	Item	2014	2015	2016[86]	2017	2018	2019	2020	Program Total (2014-2020)
	Net-to-Gross Adjustment (70%)[88]	-1,424,908	-15,248,419	-19,763,096	-21,307,382	-13,547,262	-12,596,672	0	-83,887,739
	Net Adjusted Savings	3,324,785	35,579,643	46,113,890	49,717,225	31,610,279	29,392,235	0	195,738,057
	Planned Savings (Net)	12,317,239	27,461,536	24,119,220	33,214,031	40,368,376	0	0	137,480,402
	% Toward Planned Savings (Net)	27%	130%	191%	150%	78%	N/A	N/A	142%
	Avg. Savings per Participant (Gross)	40,252	40,957	54,761	81,826	69,580	99,500	N/A	62,125
	Avg. Savings per Participant (Net)	28,176	28,670	38,332	57,278	48,706	69,650	N/A	43,488
Installed Demand Reduction (kW)	Total Gross Deemed Demand	998.5	10,674.2	15,380.0	11,958.2	7,222.3	5,637.5	0.0	51,870.7
	Realization Rate Adjustment (100%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Adjusted Gross Demand	998.5	10,674.2	15,380.0	11,958.2	7,222.3	5,637.5	0.0	51,870.7
	Net-to-Gross Adjustment (70%)[89]	-299.5	-3,202.3	-4,614.0	-3,587.5	-2,166.7	-1,691.3	0.0	-15,561.2
	Net Adjusted Demand	698.9	7,472.0	10,766.0	8,370.8	5,055.6	3,946.3	0.0	36,309.5
	Planned Demand (Net)	3,228.9	7,670.4	4,089.4	5,486.3	7,269.0	0.0	0.0	27,744.0
	% Toward Planned Demand (Net)	22%	97%	263%	153%	70%	N/A	N/A	131%
	Avg. Demand per Participant (Gross)	8.5	8.6	12.8	13.8	11.1	13.4	N/A	11.5
	Avg. Demand per Participant (Net)	5.9	6.0	8.9	9.6	7.8	9.4	N/A	8.1

[87] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

[88] On the rebate application form the program implementation vendor included the question, "Did the rebate incentive offered by Dominion Energy have any influence in your decision to have the work performed?" Of all participants who responded (from program inception to the end of this reporting period), the implementation vendor has calculated that 97% answered yes at the time they filled out the rebate application. This is not a substitute for a net-to-gross analysis conducted by an independent evaluator. See section 3.1.3 Net Savings Estimation for a description of net-to-gross estimation approaches.

[89] bid.

Category	Item	2014	2015	2016[86]	2017	2018	2019	2020	Program Total (2014-2020)
Program Performance	$Admin. per Participant (Gross)	$332	$154	$179	$405	$542	$685	N/A	$320
	$Admin. per kWh/year (Gross)	$0.01	$0.00	$0.00	$0.00	$0.01	$0.01	N/A	$0.01
	$Admin. per kW (Gross)	$39	$18	$14	$29	$49	$51	N/A	$28
	$EM&V per Total Costs ($)	5.1%	1.8%	1.5%	1.1%	1.6%	1.3%	94.2%	1.7%
	$Rebate per Participant (Gross)	$4,355	$4,487	$5,025	$8,725	$7,668	$9,892	N/A	$6,410

Table 5-3 shows the program's gross and net annualized energy savings (kWh/year) and demand reduction (kW/year) by measure, from program inception to close, in Virginia.

Table 5-3. Virginia Non-residential Lighting Systems & Controls (DSM Phase III) Measure-Level Performance Indicators (2014-2020)

Program	kWh/year		kW	
Non-residential Lighting Systems & Controls – Virginia (DSM III)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	70%	100%	70%
Measure	Gross	Net	Gross	Net
	Gross	Net	Gross	Net
LED Lamps	252,357,572	176,650,301	46,334.6	32,434.2
Occupancy Sensor	9,574,607	6,702,225	1,296.1	907.3
T8/T5 Lamps	17,223,874	12,056,712	4,108.9	2,876.2
Total	279,625,795	195,738,057	51,870.7	36,309.5

5.1.3.2 Key North Carolina Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for North Carolina appear below. Following this summary, Table 5-4 provides performance indicator data annually and from program inception through 2020. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix B.5, cumulative gross savings are in Appendix C.5, and cumulative net savings are in Appendix D.5.

- In 2020, 17 customers participated in the program, no participants were planned.
- From program inception through 2020, 201 customers participated in the program, approximately 43% of planned participation.

- In 2020, the program achieved net energy savings of 421,181 kWh/year, no savings were planned.
- In 2020, the average net energy savings per participant was 24,781 kWh/year, approximately 194% of planned savings per participant from Table 5-1.
- From program inception through 2020, the program achieved net energy savings of 10,107,938 kWh/year, approximately 107% of planned savings.
- In 2020, the program achieved net demand reduction of 66.4 kW, no demand reduction was planned.
- In 2020, the average net energy demand reduction per participant was 3.9 kW, approximately 109% of planned demand reduction per participant from Table 5-1.
  - From program inception through 2020, the program achieved net demand reduction of 2,086.9 kW, approximately 114% of planned reduction.

- In 2020, there were no planned program costs.
- From program inception through 2020, program costs were 89% of planned costs

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Table 5-4. North Carolina Lighting Systems & Controls Program Performance Indicators (2015-2020)

Category	Item	2015	2016[90]	2017	2018	2019	2020	Program Total (2015-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]						
	Direct Implementation							
	Direct EM&V							
	Indirect Other (Administrative)	$3,511	$11,956	$9,940	$14,072	$22,295	$4,923	$66,698
Total Costs ($)	Total[91]	$122,739	$393,406	$252,605	$249,209	$413,562	$88,425	$1,519,945
	Planned	$357,955	$359,278	$347,298	$403,711	$230,531	$0	$1,698,773
	Variance	-$235,216	$34,128	-$94,693	-$154,502	$183,030	$88,425	-$178,829
	Annual % of Planned	34%	109%	73%	62%	179%	N/A	89%
Participants	Total (Gross)	13	43	23	43	62	17	201
	Planned (Gross)	96	102	104	119	43	0	464
	Variance	-83	-59	-81	-76	62	17	-263
	Annual % of Planned (Gross)	14%	42%	22%	36%	144%	N/A	43%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	564,326	3,333,527	1,738,121	5,172,076	3,030,032	601,830	14,439,912
	Realization Rate Adjustment (100%)	0	0	0	0	0	0	0
	Adjusted Gross Savings	564,326	3,333,527	1,738,121	5,172,076	3,030,032	601,830	14,439,912
	Net-to-Gross Adjustment (70%)	-169,298	-1,000,058	-521,436	-1,551,623	-909,010	-180,549	-4,331,973
	Net Adjusted Savings	395,028	2,333,469	1,216,685	3,620,453	2,121,023	421,281	10,107,938
	Planned Savings (Net)	1,752,864	1,619,973	2,220,165	2,661,116	1,213,184	0	9,467,302

[90] The 2016 total gross deemed savings values reported in this table differs from values in the May 1, 2017 EM&V report and have been refiled with the Commission. The adjustments totalled -481,137 kWh/year and 26 kW for 2016 reported savings. The adjustments account for corrections to STEP Manual version 7.0.0 issued on May 1, 2017, in section 9.1.1. The adjustment was to waste heat factors (WHFe and WHFd) applied to lighting fixtures installed in 2016, where the program participant building HVAC systems was assumed to be heat pump heating and cooling systems, rather than the previous assumption of AC cool and non-electric heat systems. This adjustment was made in response to requests by the North Carolina Public Staff Utilities Commission Re: Docket No. E-22, Sub 545, on October 23, 2017. It is reflected in STEP Manual version 8.0.0 in this EM&V report.

[91] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins

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Category	Item	2015	2016[90]	2017	2018	2019	2020	Program Total (2015-2020)
	Annual % Toward Planned Savings (Net)	23%	144%	55%	136%	175%	N/A	107%
	Avg. Savings per Participant (Gross)	43,410	77,524	75,570	120,281	48,871	35,402	71,840
	Avg. Savings per Participant (Net)	30,387	54,267	52,899	84,197	34,210	24,781	50,288
Installed Demand Reduction (kW)	Total Gross Deemed Demand	104.6	743.2	334.5	1,109.9	594.3	94.8	2,981.3
	Realization Rate Adjustment (100%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Adjusted Gross Demand	104.6	743.2	334.5	1,109.9	594.3	94.8	2,981.3
	Net-to-Gross Adjustment (70%)	-31.4	-223.0	-100.4	-333.0	-178.3	-28.4	-894.4
	Net Adjusted Demand	73.2	520.2	234.2	777.0	416.0	66.4	2,086.9
	Planned Demand (Net)	490.2	274.7	366.7	479.0	218.5	0.0	1,829.1
	Annual % Toward Planned Demand (Net)	15%	189%	64%	162%	190%	N/A	114%
	Avg. Demand per Participant (Gross)	8.0	17.3	14.5	25.8	9.6	6	15
	Avg. Demand per Participant (Net)	5.6	12.1	10.2	18.1	6.7	4	10
Program Performance	Annual $Admin. per Participant (Gross)	$270	$278	$432	$327	$360	$290	$332
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.00	$0.01	$0.00	$0.01	$0.01	$0.00
	Annual $Admin. per kW (Gross)	$34	$16	$30	$12.68	$38	$52	$22
	Annual $EM&V per Total Costs ($)	6.4%	1.8%	2.6%	2.5%	0.9%	11.4%	2.7%
	Annual $Rebate per Participant (Gross)	$5,260	$7,742	$8,251	$4,310	$5,205	$4,286	3.9%

Table 5-5 shows the program's gross and net annualized energy savings (kWh/year) and demand reduction (kW/year) by measure, from program inception through close, in North Carolina.

Table 5-5. North Carolina Non-residential Lighting Systems & Controls (DSM Phase III) Measure-Level Performance Indicators (2015-2020)

Program	kWh/year		kW	
Non-residential Lighting Systems & Controls – North Carolina (DSM III)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	70%	100%	70%
Measure	Gross	Net	Gross	Net
	Gross	Net	Gross	Net
LED Lamps	141,58,256	9,910,779	2,925.7	2,047.9
Occupancy Sensor	92,894	65,026	11.9	8.4
T8/T5 Lamps	188,761	132,133	43.7	30.6
Total	14,439,912	10,107,938	2,981.3	2,086.9

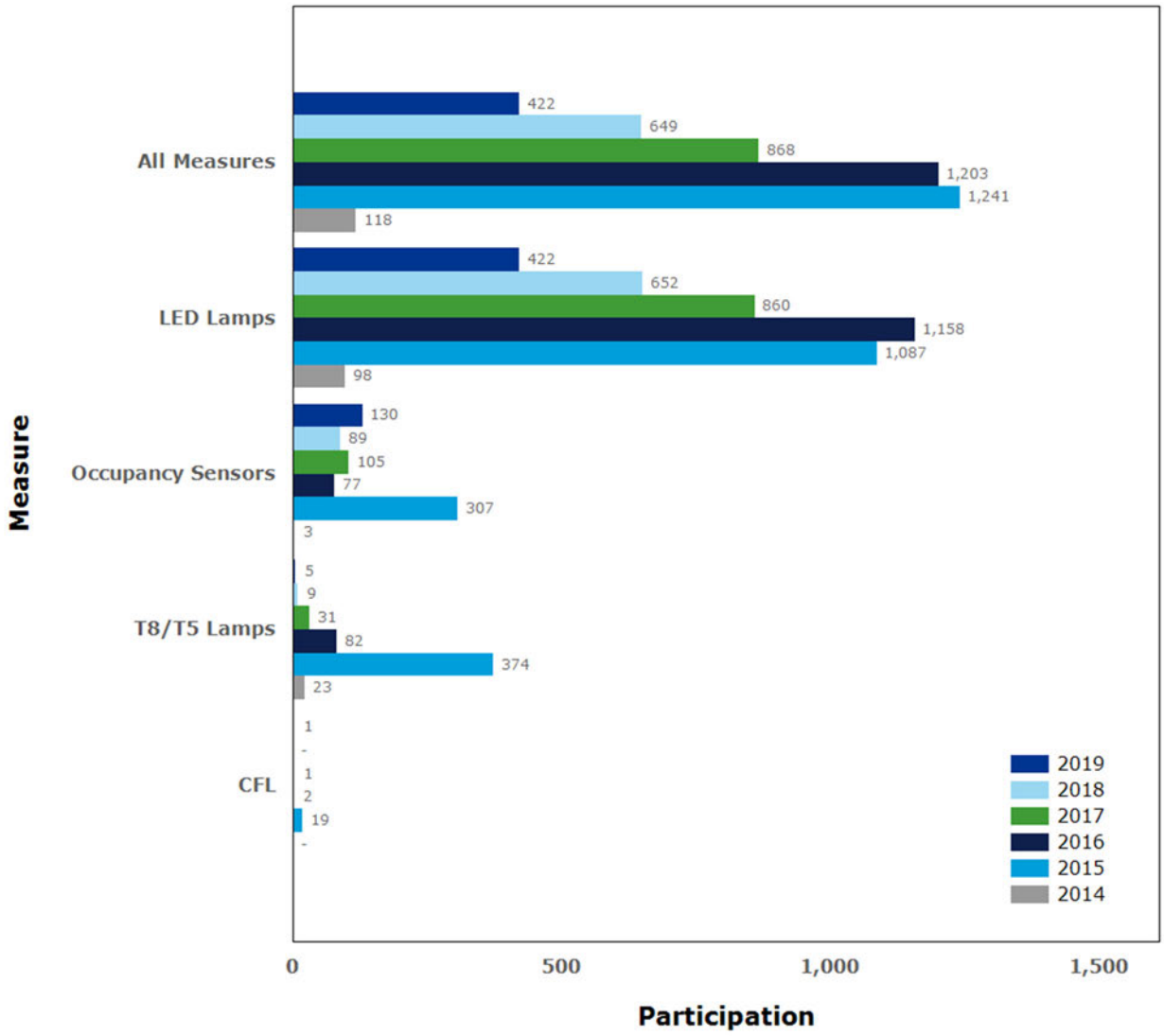
5.1.3.3 Additional Virginia Program Data

Figure 5-3 through Figure 5-5 show the program's participation, gross annualized energy savings, and average annualized energy savings per participant (for participants who installed the measure in the respective year) by measure type and program year. Note that since there were no program participants in Virginia in 2020, these results are a reflection of program results from inception through 2019. They are the same was those presented in the May 15, 2020 EM&V report (Case No. PUR-2018-00168).

Note participation in these charts are the count of new unique customers in the "all measures" presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

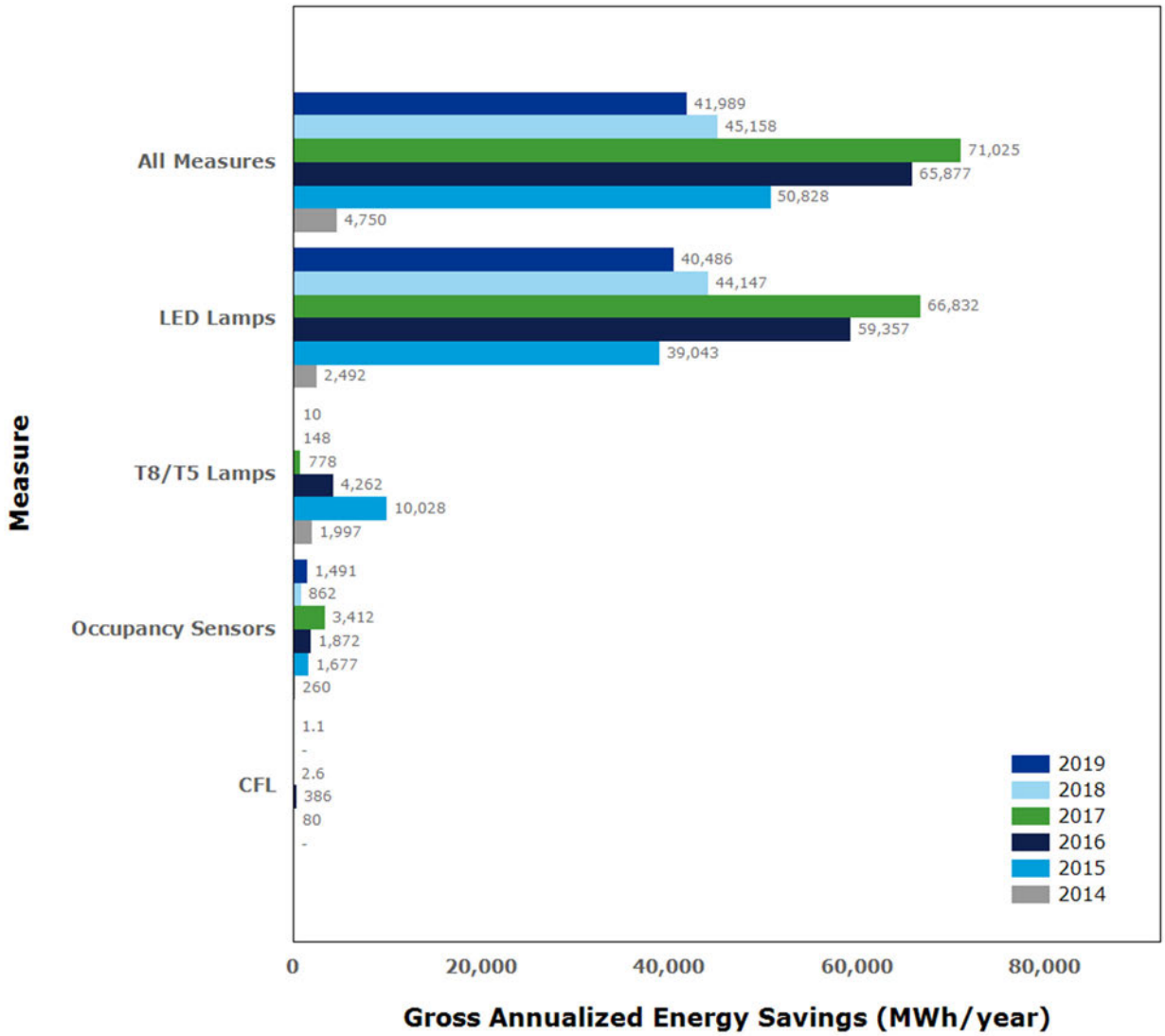
Each year from program inception through close, the most frequently-adopted measure has been the installation of LED lamps, as shown in Figure 5-3. This is likely because they are the latest technology available in the market and the price has decreased significantly over the past few years. Note that T8s in the T8/T5 category refer to T8s with electronic ballasts and high performance T8s. T8s became the baseline lighting option in 2014, as required by the Energy Independence and Security Act (EISA) of 2007.

Figure 5-3. Virginia Non-residential Lighting Systems & Controls Program Participation by Measure and Year



In addition to being the most frequently adopted measure, LEDs accounted for the most gross annualized energy savings each year of the program, as shown in Figure 5-4.

Figure 5-4. Virginia Non-residential Lighting Systems & Controls Program Gross Annualized Energy Savings by Measure and Year (MWh/year)



Cumulatively, from program inception through close, LED installations have produced the highest gross annualized savings per participant, as shown in Figure 5-5.

Figure 5-5. Virginia Non-residential Lighting Systems & Controls Program Average Gross Annualized Energy Savings per Participant (MWh/year per participant) by Measure and Year

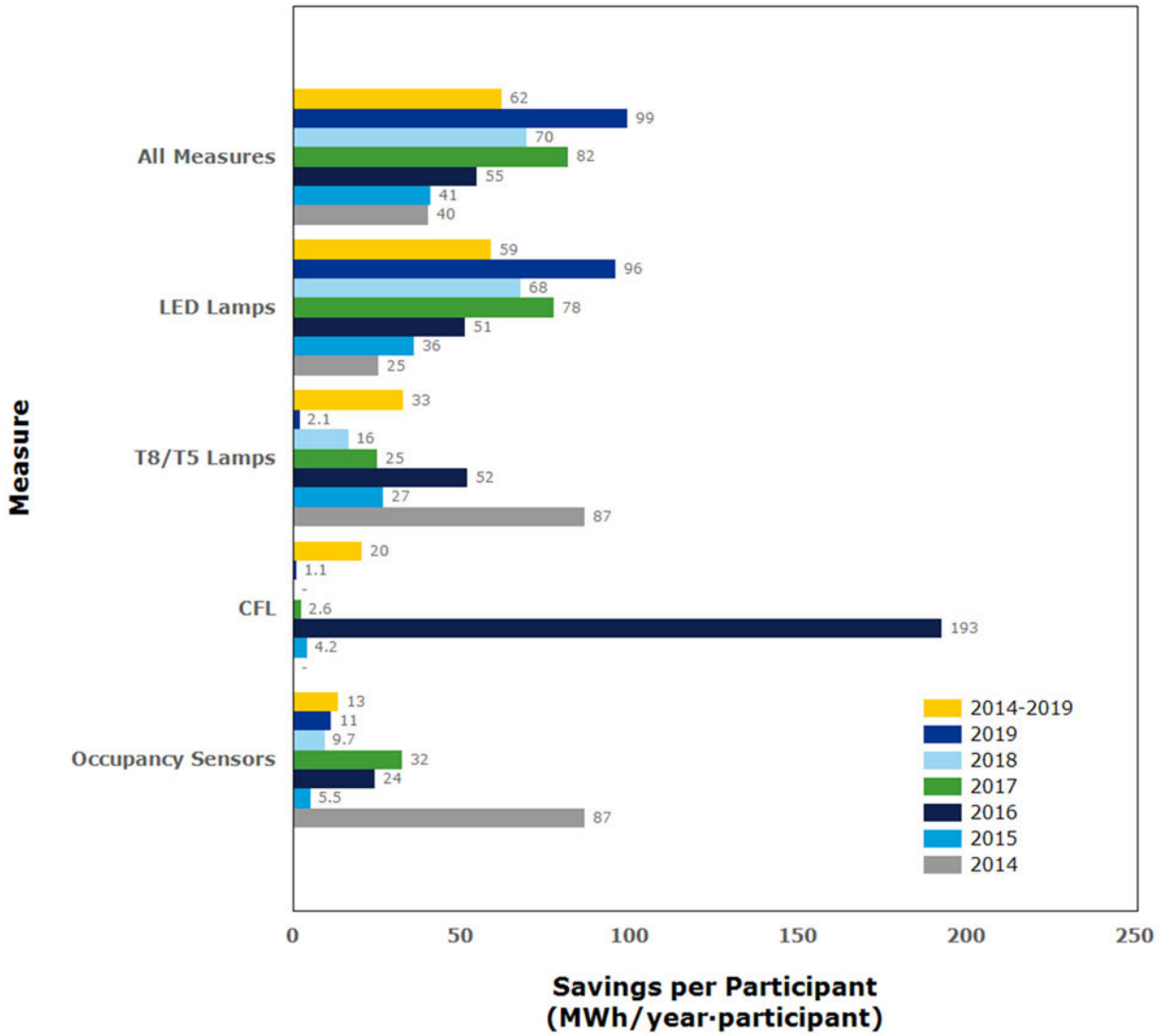


Figure 5-6 through Figure 5-8 show the program's participation, gross annualized energy savings, and average annualized energy savings per participant by building type and program year.

A participant is only counted once in these "by building" charts, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

In 2019, mercantile (retail, not mall) buildings had the most program participants (Figure 5-6), followed by "other" building types. Likewise, the gross annualized energy savings (Figure 5-7) were highest in mercantile (retail, not mall) buildings followed by "other" building types.

Figure 5-6. Virginia Non-residential Lighting Systems & Controls Program Participation by Building Type and Year

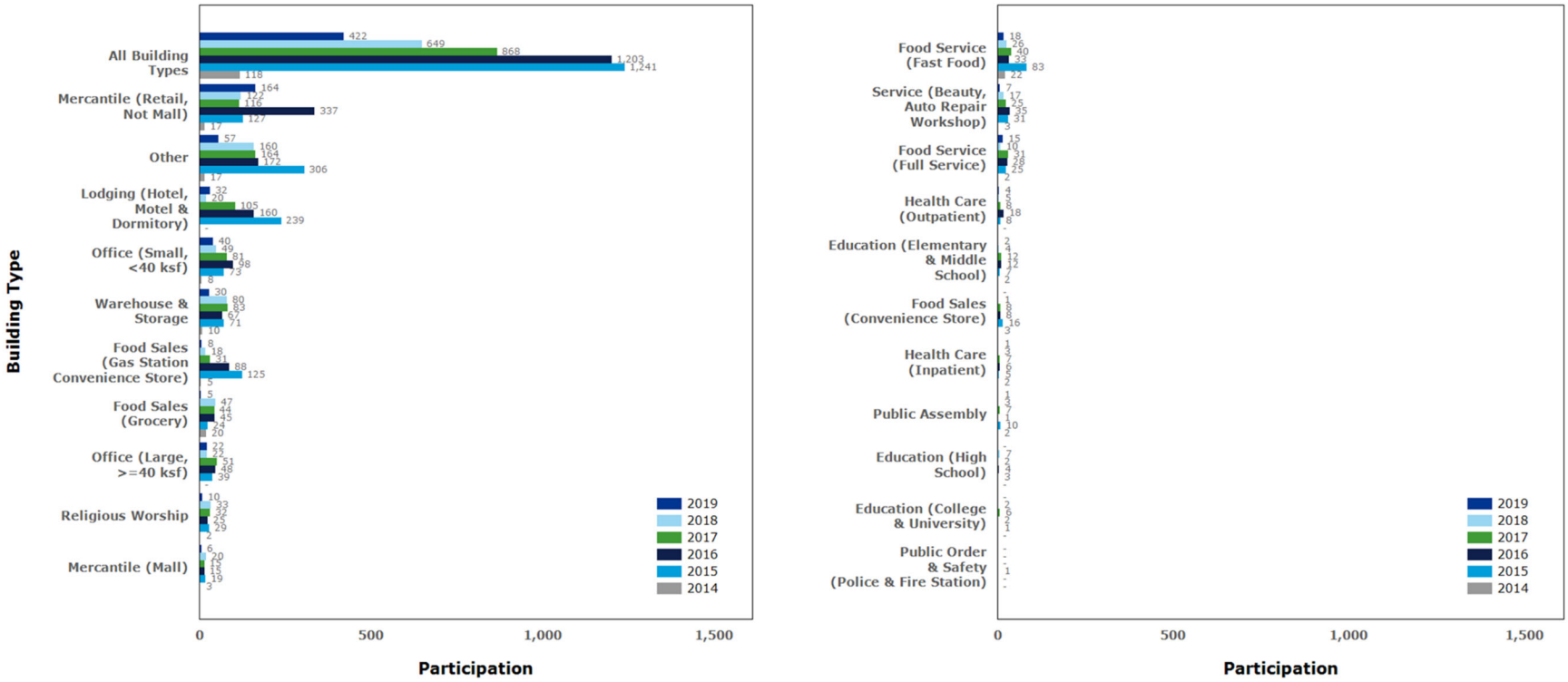
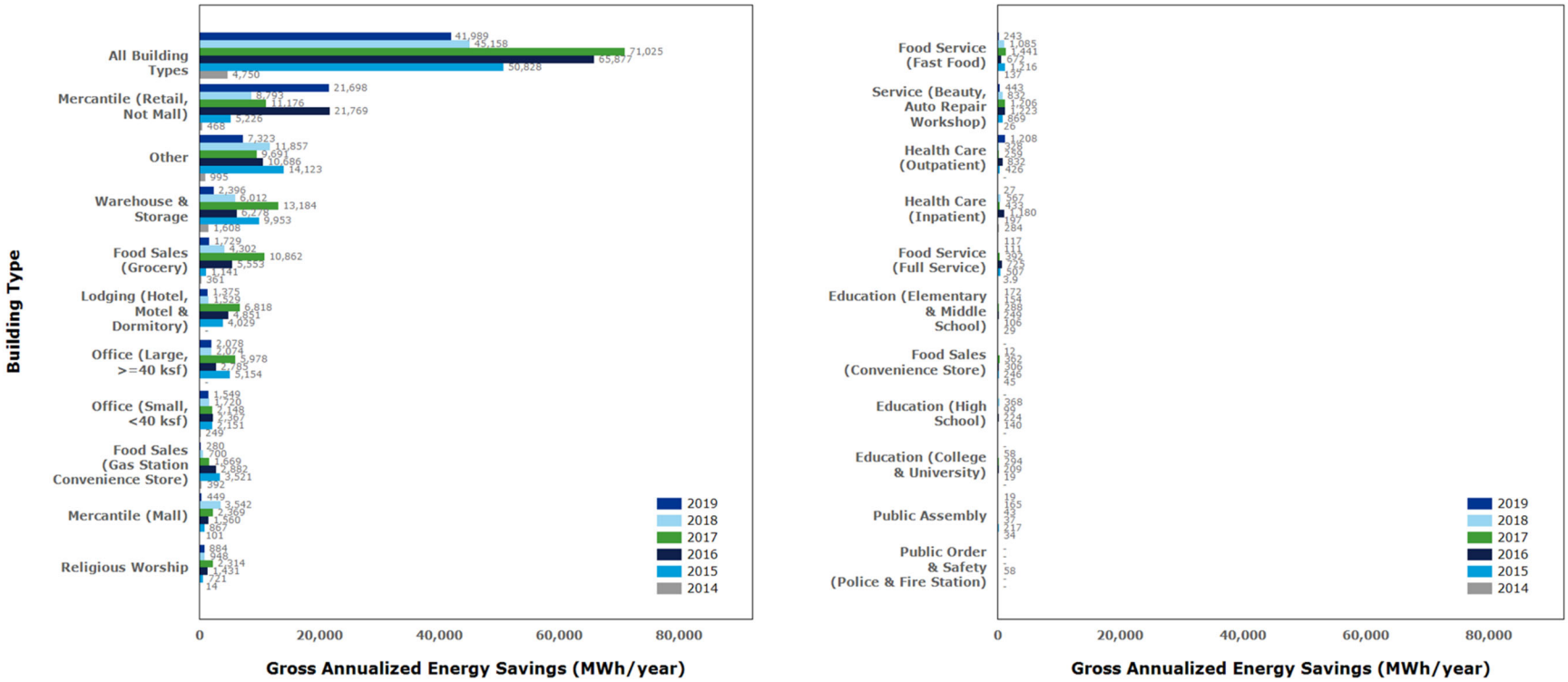
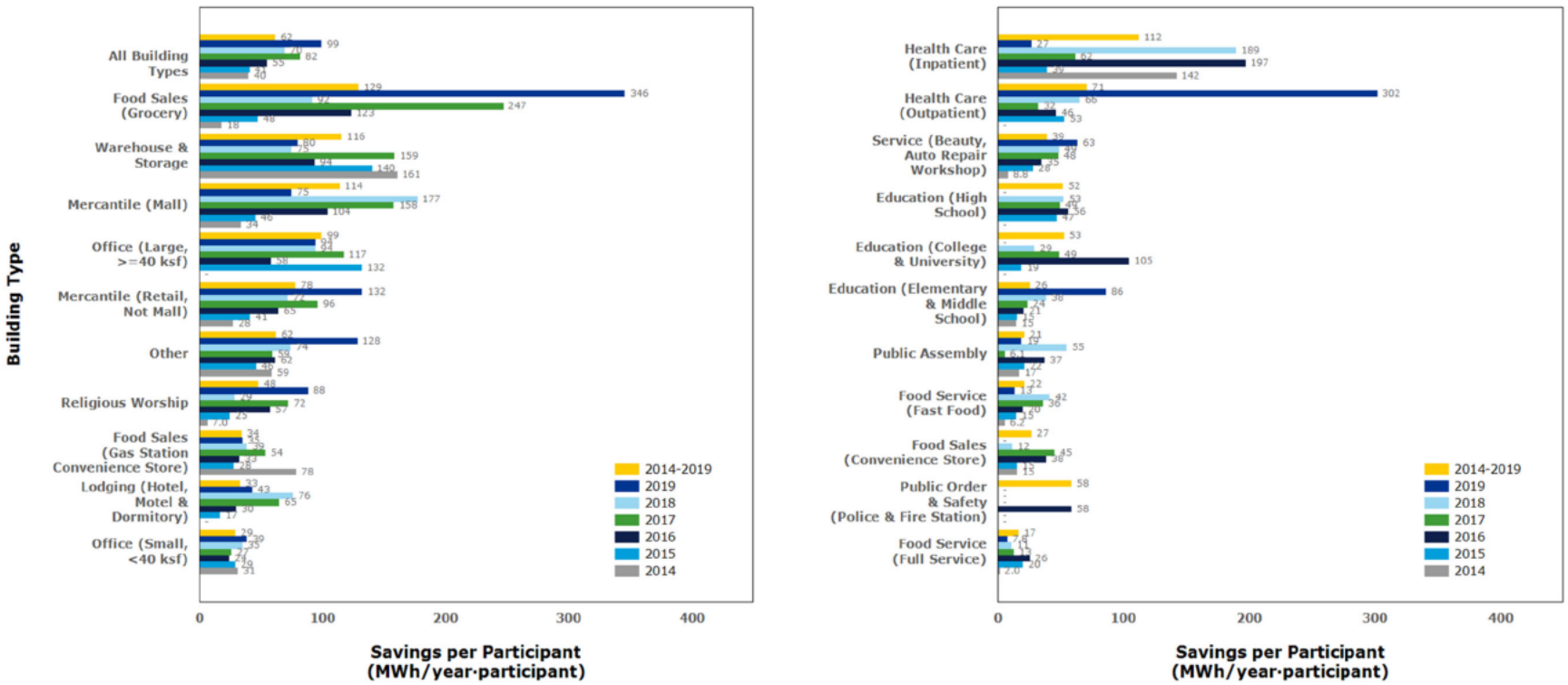


Figure 5-7. Virginia Non-residential Lighting Systems & Controls Program Gross Annualized Energy Savings by Building Type and Year (MWh/year)



In 2019, average gross energy savings per participant, by building type (Figure 5-8), was highest for participants in food sales (grocery) buildings.

Figure 5-8. Virginia Non-residential Lighting Systems and Controls Program Average Gross Annualized Energy Savings per Participant (MWh/year per participant) by Building Type and Year



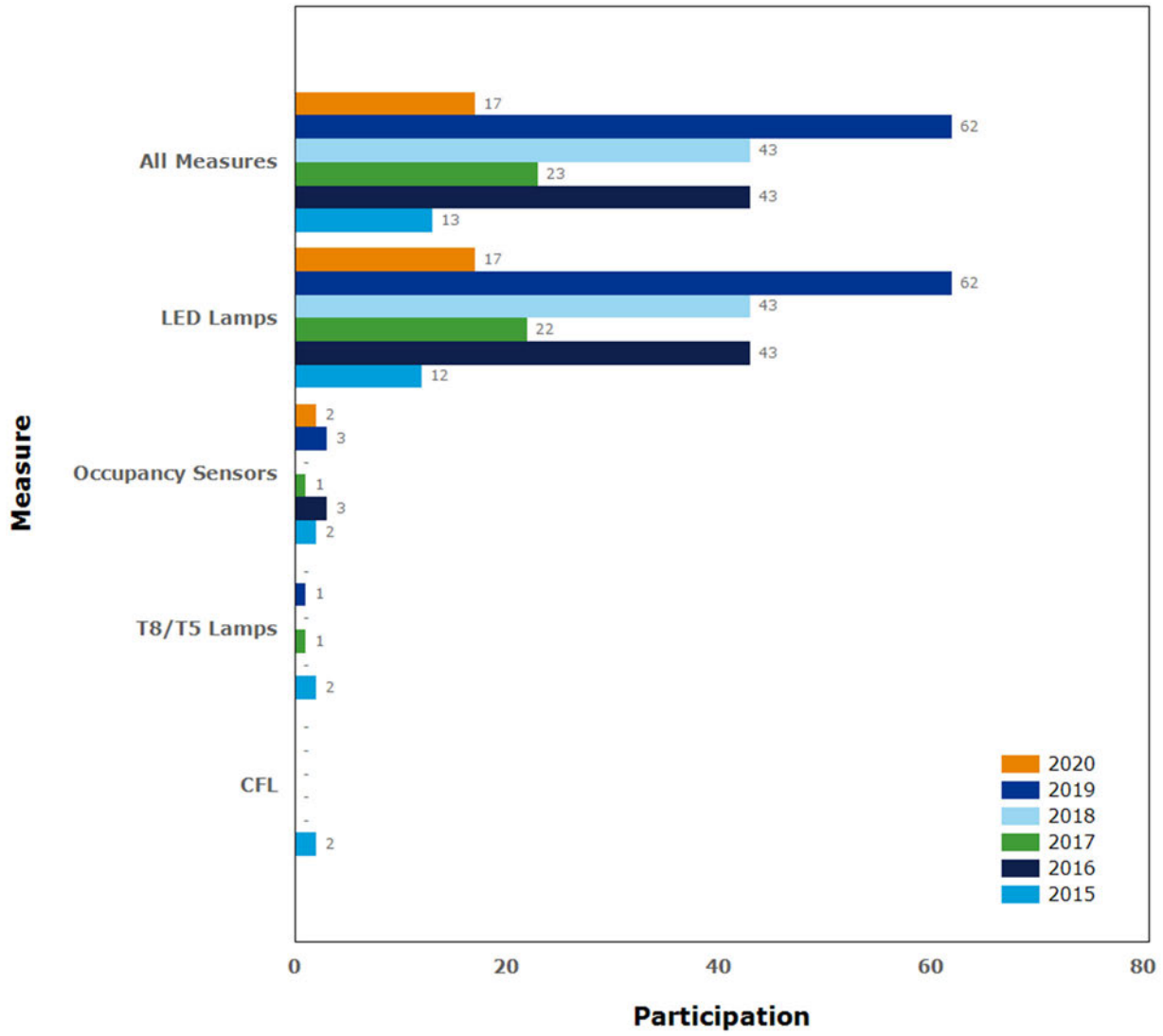
5.1.3.4 Additional North Carolina Program Data

Figure 5-9 through Figure 5-11 show participation, gross annualized energy savings, and average annualized energy savings per participant (for participants who installed the measure in the respective year) by measure type and program year.

Note participation in these charts are the count of new unique customers in the “all measures” presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

Each year from program inception through close, the most frequently adopted measure has been the installation of LED lamps, installed by all program participants in 2016, 2018, 2019, and 2020; 92% in 2015; and 96% in 2017, as shown in Figure 5-9.

Figure 5-9. North Carolina Non-residential Lighting Systems and Controls Program Participation by Measure and Year



In addition to being the most frequently adopted measure, LEDs accounted for the most gross annualized energy savings each year of the program, as shown in Figure 5-10.

Figure 5-10. North Carolina Non-residential Lighting Systems & Controls Program Gross Annualized Energy Savings (MWh/year) by Measure and Year

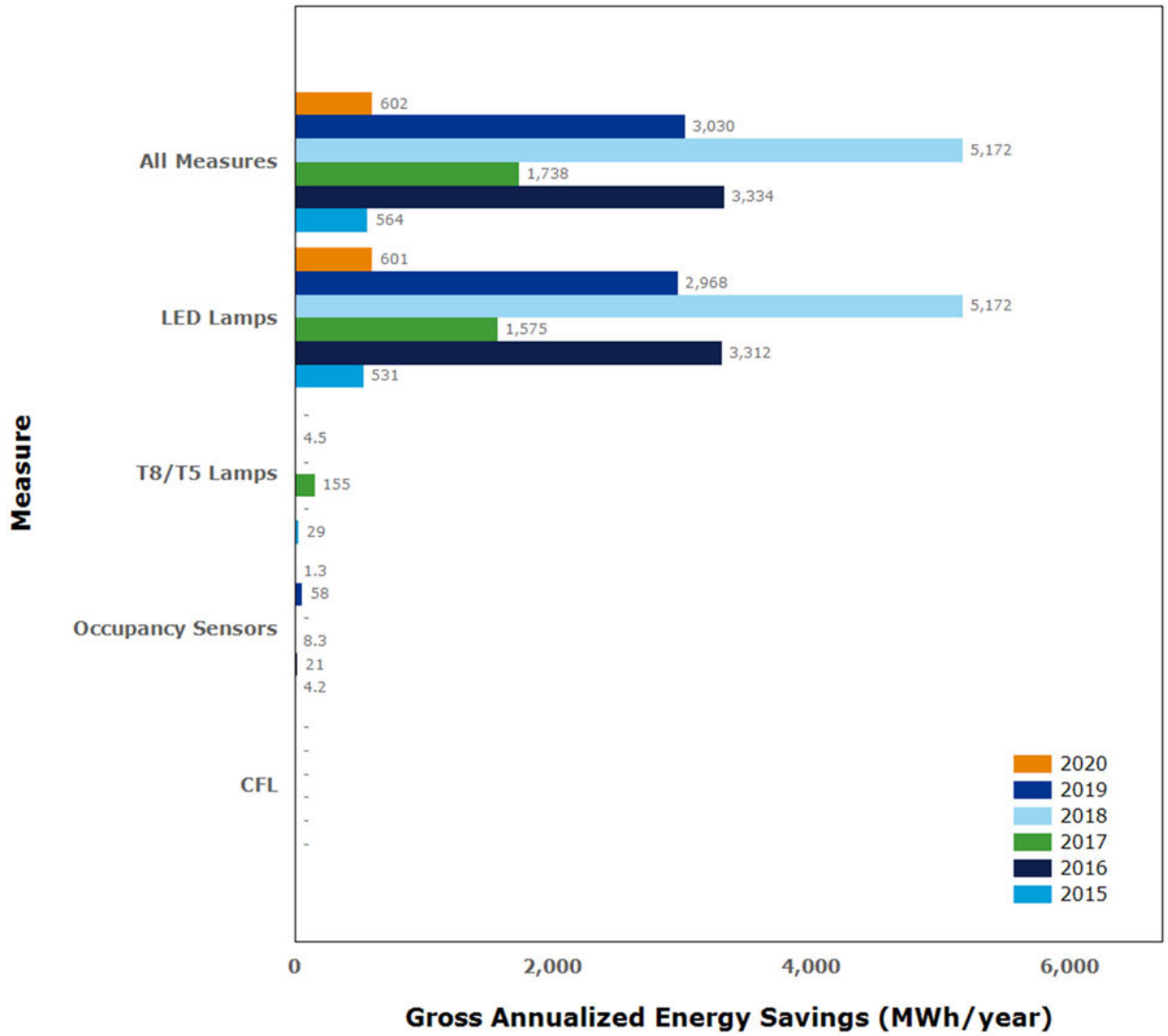


Figure 5-11 shows gross annualized energy savings per participant by measure type for each year the program has been active and cumulatively for all program years. In 2020, and cumulatively since program inception, LED lamps had the highest savings per participant. In 2017, the savings per participant were highest for T8/T5 lamps due to one participant who installed 518 high-performance T8 lamps.

Figure 5-11. North Carolina Non-residential Lighting Systems & Controls Program Average Gross Annualized Energy Savings per Participant (MWh/year per participant) by Measure and Year

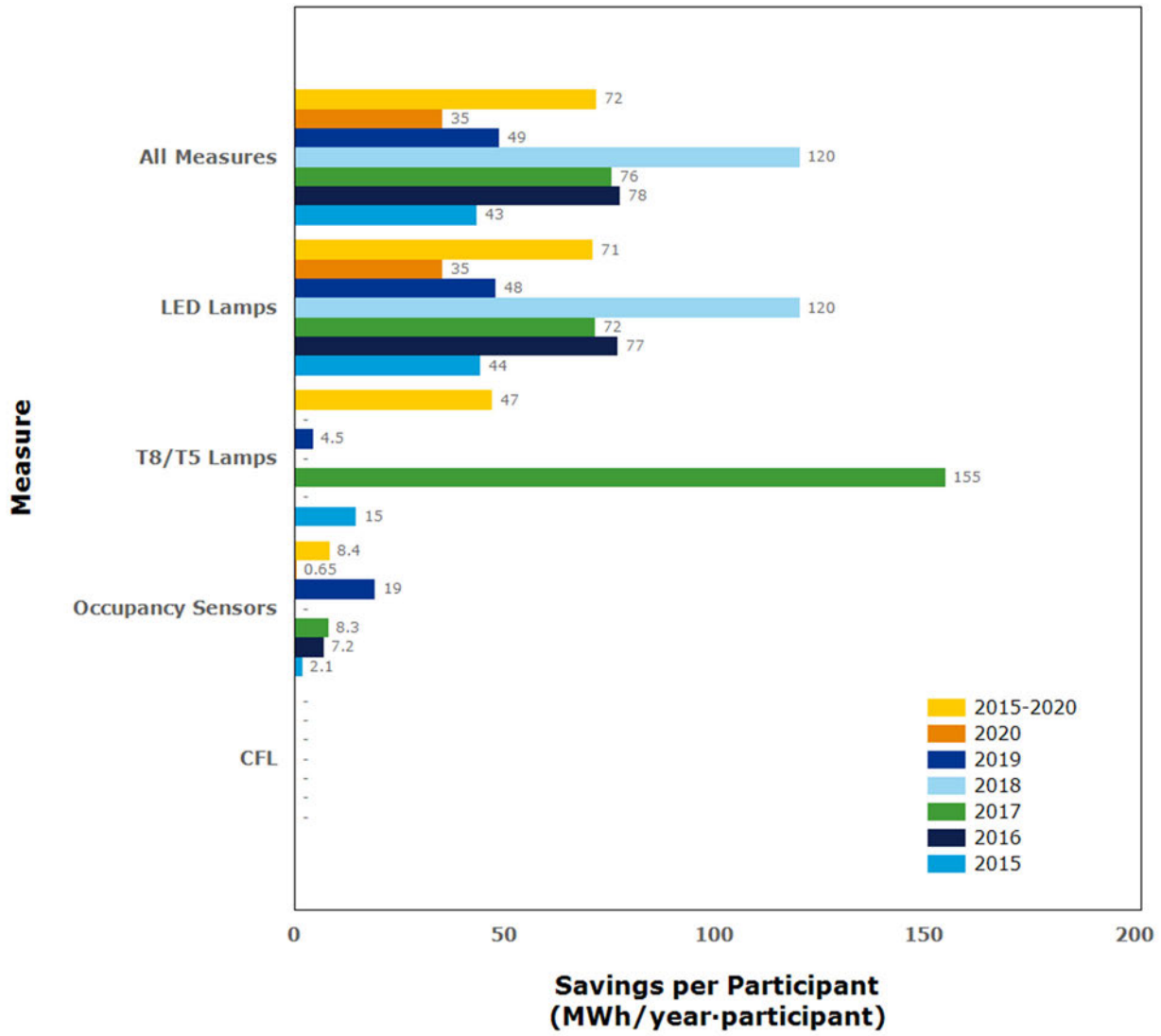
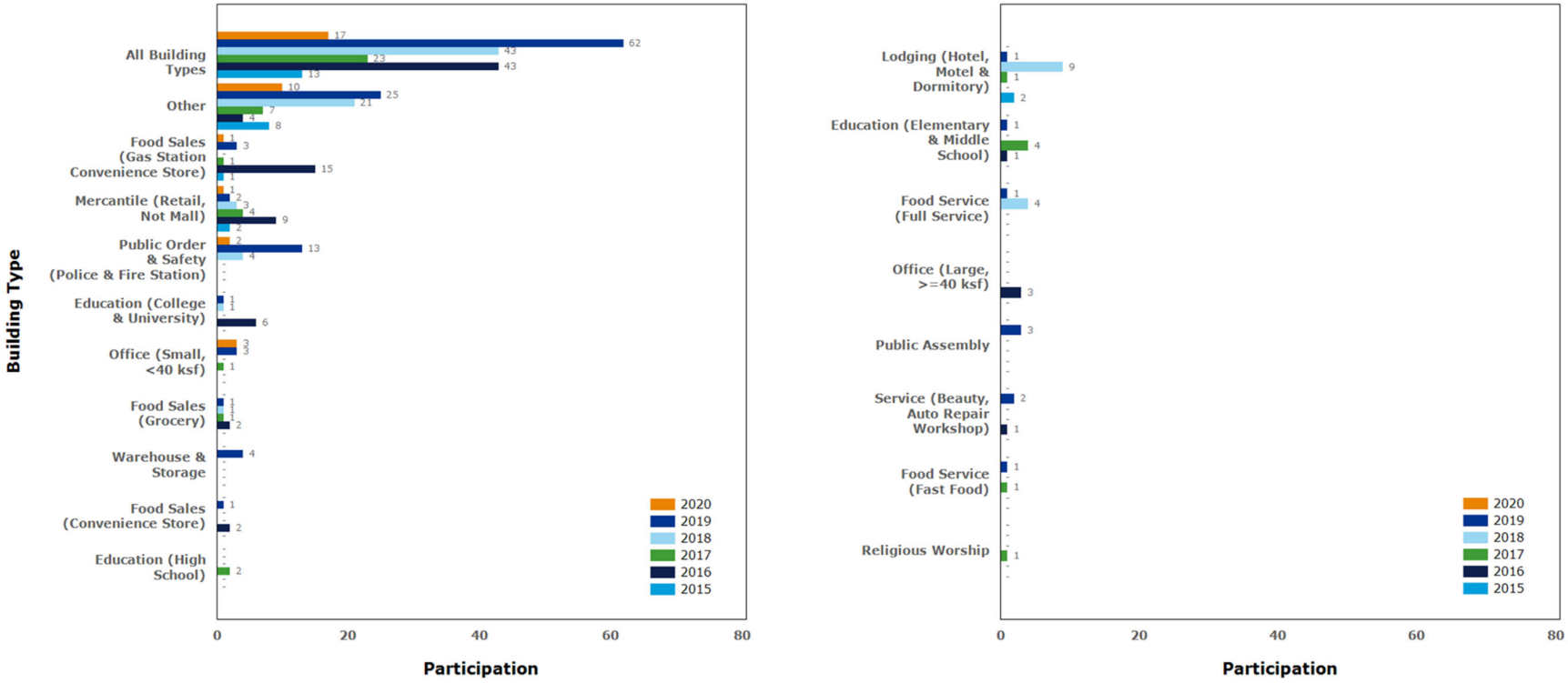


Figure 5-12 through Figure 5-14 shows the program's participation, gross annualized energy savings, and average annualized energy savings per participant by building type and program year.

A participant is only counted once in these "by building" charts, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

In 2020, the majority of participants (59%) were located in "other" building types (Figure 5-12).

Figure 5-12. North Carolina Non-residential Lighting Systems & Controls Program Participation by Building Type and Year



Gas station convenience stores contributed 28% of the energy savings achieved in 2020, the most of any building type in 2020 (Figure 5-13). Small offices (less than 40,000 sq. ft.) contributed the second most energy savings in 2020, followed by "other" building types, despite "other" building types making up a majority of the participants. This is because gas station convenience stores and small offices (less than 40,000 sq. ft.) had the highest and second highest per participant average savings, respectively, as shown in Figure 5-14.

Figure 5-13. North Carolina Non-residential Lighting Systems & Controls Program Gross Annualized Energy Savings by Building Type and Year (MWh/year)

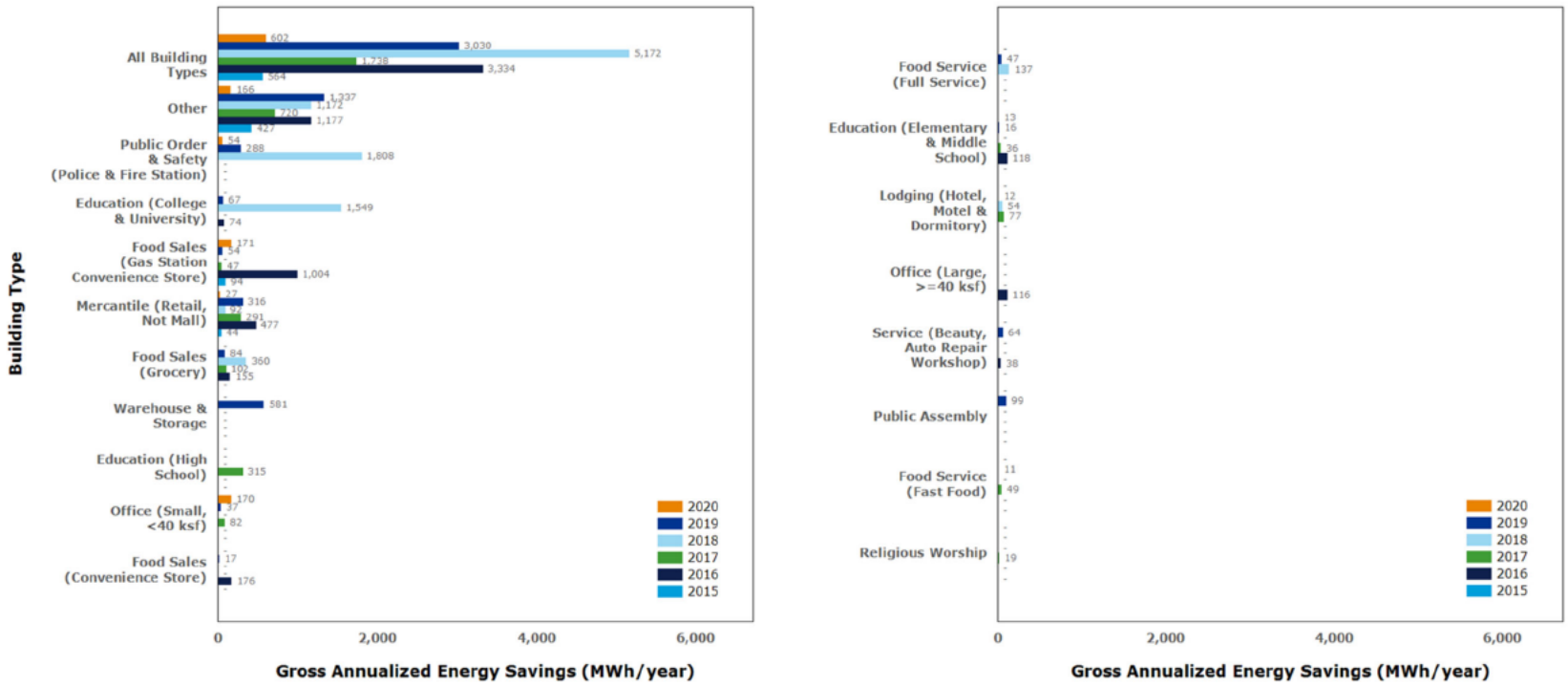
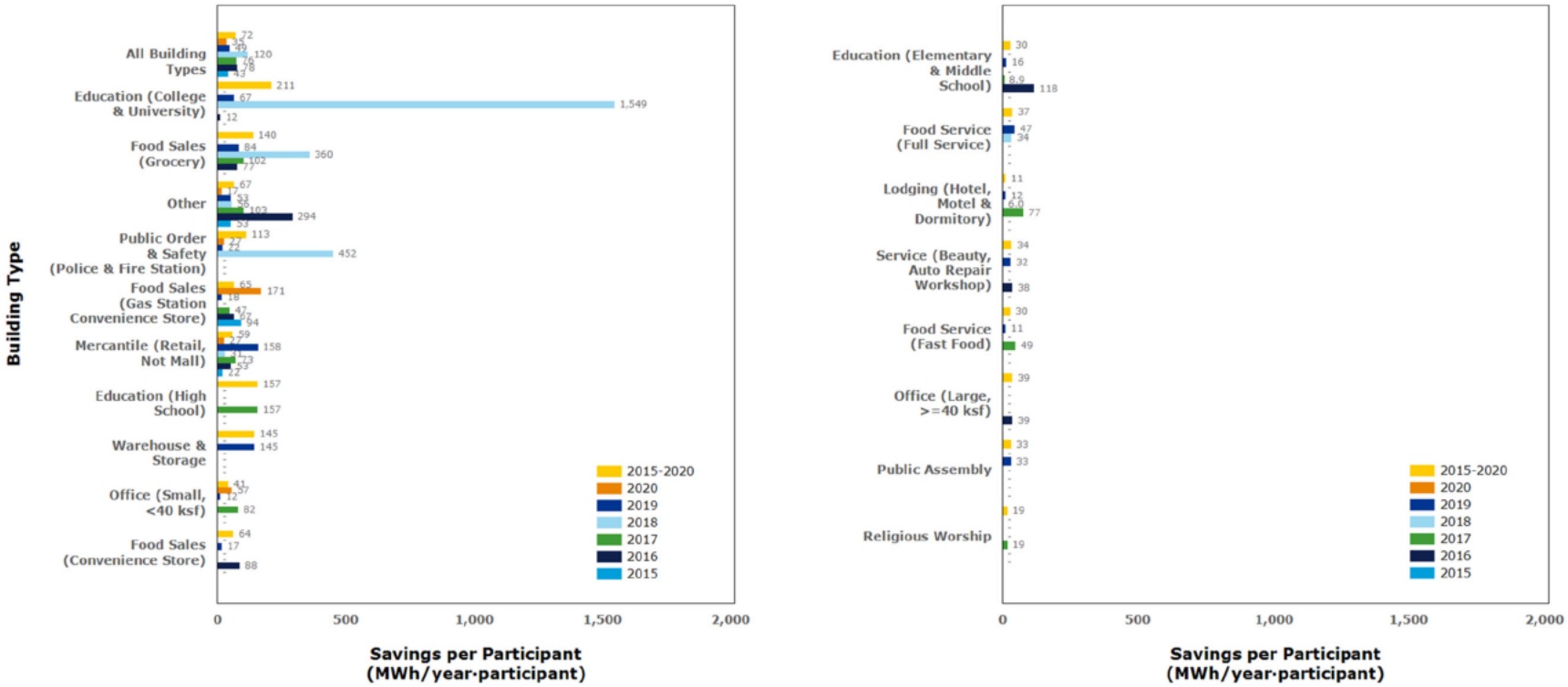


Figure 5-14. North Carolina Non-residential Lighting Systems & Controls Program Average Gross Annualized Energy Savings per Participant (MWh/year-participant) by Building Type and Year



5.2 Non-residential Lighting System & Controls (DSM Phase VII) – Virginia and North Carolina

Virginia

Case #: PUE-2018-00168

NON-RESIDENTIAL LIGHTING SYSTEM & CONTROLS

2019-PRESENT
50,326 kWh/yr Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- T8s with electronic ballast
- High-performance T8s
- T5s with electronic ballast
- LEDs
- Occupancy sensors

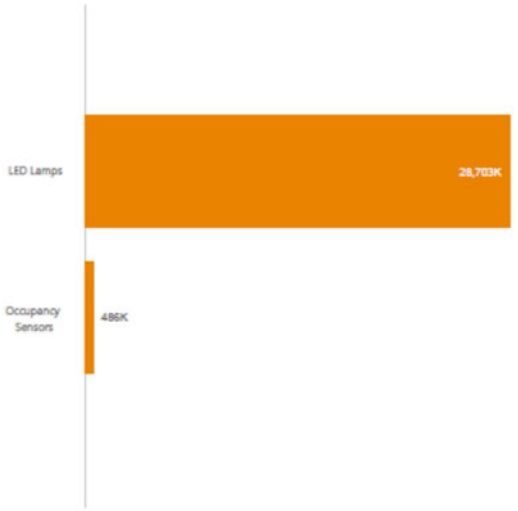
Enrolled **406** customers, **42%** of planned participation

Achieved net annual energy savings of **20,432 MWh/year**, **138%** of planned energy savings

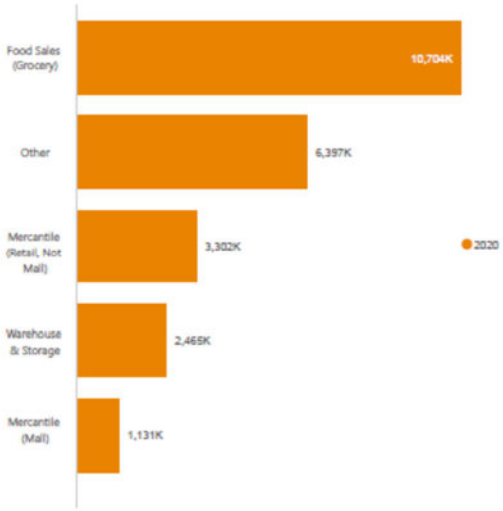
Spent **101%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)				592,373	3,989,872	4,582,245
Total Program Participants (#)				0	406	406
Total Gross Incremental Savings (kWh/yr)				0	29,189,250	
Total Net Incremental Savings (kWh/yr)				0	20,432,475	
Average Gross Incremental Demand Reduction (kW)				0	4,020	
Average Net Incremental Demand Reduction (kW)				0	2,814	
Total Net Lifetime Savings (kWh)				0	9,015,012	217,946,396
Average Lifetime Demand Reduction (kW)				0	2,814	2,814

TOTAL SAVING BY MEASURE TYPE
TOP 5 IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



North Carolina

Docket #: E-22 Sub 573

NON-RESIDENTIAL LIGHTING SYSTEM & CONTROLS

2019-PRESENT
8,697 kWh/yr Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- T8s with electronic ballast
- High-performance T8s
- T5s with electronic ballast
- LEDs
- Occupancy sensors

Enrolled **9** customers, **23%** of planned participation

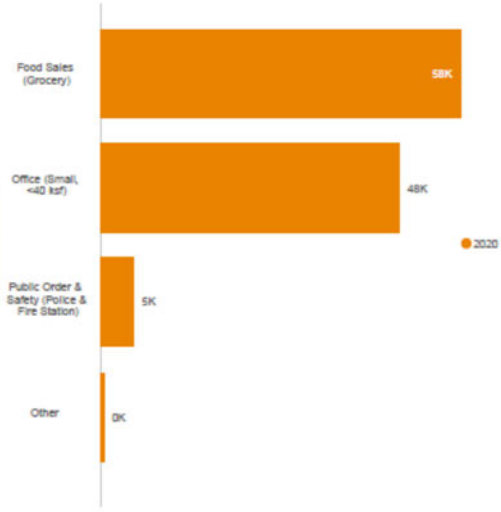
Achieved net annual energy savings of **78,269 kWh/year**, **9%** of planned energy savings

Spent **87%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)					160,883	160,883
Total Program Participants (#)					9	9
Total Gross Incremental Savings (kWh/yr)					111,813	
Total Net Incremental Savings (kWh/yr)					78,269	
Average Gross Incremental Demand Reduction (kW)					5	
Average Net Incremental Demand Reduction (kW)					4	
Total Net Lifetime Savings (kWh)					42,330	834,872
Average Lifetime Demand Reduction (kW)					4	4

TOTAL SAVING BY MEASURE TYPE
ALL IN KWH

TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



5.2.1 Program Description

The Non-residential Lighting Systems & Controls Program is the next iteration of the DSM Phase III Non-residential Lighting Systems & Controls Program. It offers non-residential customers rebate incentives to retrofit their existing lighting system with a more energy-efficient and cost-effective lighting system. The program provides rebates for the following types of measures:

- T8 with electronic ballast
- High-performance T8
- T5 with electronic ballast
- LEDs
- Occupancy sensors

This program is implemented through a contractor network. However, customers may also self-install equipment if they submit an initial assessment to Dominion and receive approval prior to installation.

Other reasons that require customers to submit an initial assessment to Dominion Energy include:

- Previous participation in the program
- Projects with LED measures
- Projects with an estimated rebate amount of $10,000 or more[92]

Upon approval, those customers have 120 days to complete their projects. All Dominion Energy non-residential customers are eligible to participate except those who are exempt by statute, special contract, or have opted-out. Customers are not considered participants until a completed rebate application form is processed and a rebate is issued. This process can take several months, as customers have 45 days to submit their rebate application and Dominion Energy has 90 days to process it.

The Virginia SCC approved this program, as part of the DSM Phase VII programs, on May 2, 2019 (Case No. PUR-2018-00168) for a five-year period of July 1, 2019, through June 30, 2024. The North Carolina Utilities Commission approved this program on November 13, 2019 (Docket No. E-22, SUB 573). Upon approval, the Company worked to finalize data systems, build contractor networks, and finalize implementation details. The program officially launched on October 1, 2019.[93]

The COVID-19 pandemic made 2020 an extraordinary year by all accounts. In response to the pandemic, this program was suspended in March for health and safety reasons and resumed on May 15, 2020. Upon reopening, the implementation vendors set up new health and safety protocols such as requiring contractors to wear personal protective equipment (PPE) against COVID-19, conducting temperature checks, implementing contact tracing (if there is a suspected COVID-19 exposure), social distancing when at the customer site or offer to visit the customer site after hours. Anecdotally, customers were pleased with the implementation contractor's processes.

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[92] Per Non-residential Lighting Systems and Controls Program Rebate Application form, https://www.dominionenergy.com/library/domcom/media/large-business/energy-conservation-programs/non-res-lighting-systems-and-controls/virginia/dev_nr_lsc_rebate_v1019_writeable.pdf?modified=20191024205255&la=en. Accessed February 20, 2020.

[93] Ibid.

Also, in response to the pandemic, the company suspended marketing during the March through May period, marking efforts to include bill inserts and online marketing. They resumed in June. Additionally, the implementation vendors increased marketing to customers more directly through one-on-one phone calls to building managers and other customers, and to trade organizations.

Table 5-6 maps the applicable sections in this report to reporting requirements listed in the EM&V Rule section 50, "Standard Requirements for Evaluation, Measurement, and Verification Reporting." [94]

Table 5-6. Non-residential Lighting Systems & Controls Program (DSM Phase VII) Compliance with EM&V Rule Section 50

Subsection within 20 VAC 5-318-50	Location and Description
A. EM&V Plan	APPENDIX U, EM&V Plan
B. Utilizing utility-specific data or other data	**Per 20 VAC 5-318-40 A and B** 1. See APPENDIX F. STEP Manual v2020 for a description of all data or estimates used as inputs for this program and the measures within it. 2. See the Methodologies section (section 3) of this report for a description of the overarching EM&V methodologies used to produce results in this report. **Per 20 VAC 5-318-40 C** 3. See subsections of this report section, and Table 5-10. For measure-level estimates of kilowatt and kilowatt-hour, before and after adjustments for free-ridership, as appropriate.
C. Changes to measure-level inputs and assumptions, and inputs to cost/benefit estimates	1. See Table 5-7 for program planning assumptions 2. See documents filed with the Virginia State Corporation Commission Docket PUR-2018-00168 for approved measure-level inputs and assumptions, and the impact of such changes on original cost/benefit estimates for DSM programs or measures.
D. Measure-level data collection methodology	See response to A. and B. above.
E. Explanation of eligibility requirements for each rate schedule that program is offered	See program description above.
F. Comparison of measured annual measure or program savings estimates to the annual usage of the average rate schedule usage, and eligible customer in each rate schedule	Please see Section 5.2.3.5 Comparison of Savings with Usage
G. Explanation of controls undertaken by utility	See APPENDIX KK

5.2.2 Methods for the Current Reporting Period

DNV developed an EM&V Plan for this program, which is included in APPENDIX U. For the current period, the approach included reviewing the tracking data.

Table 5-7 outlines Dominion Energy's initial program planning assumptions that were used to design the program. DNV uses the planned NTG factor in its net savings calculations until it can be verified through EM&V.

[94] 20 VAC 5-318-50

Table 5-7. Non-residential Lighting Systems and Controls Program (Phase VII) Planning Assumptions System-wide

Assumption	Description
Target Market	Non-residential customers
NTG Factor	70%
Measure Life (years)	10.6
Gross Average Annual Energy Savings per Participant (kWh/year)	28,778.24
Gross Average Coincident Peak Demand Reduction (kW) per Participant	3.90
Net Average Annual Energy Savings per Participant (kWh/year)	20,144.77
Net Average Coincident Peak Demand Reduction (kW) per Participant	2.73
Average Rebate (US$) per Participant	$2,586 per Participant

5.2.3 Assessment of Program Progress towards Plan

The next section describes the program's progress towards planned participants, energy savings, and demand reduction.

5.2.3.1 Key Virginia Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for Virginia appear below. Following this summary, Table 5-8 provides performance indicator data annually and from program inception through 2020. Shaded cells are considered extraordinarily sensitive information. Detailed incremental program indicators by year and month are provided in Appendix A.14, cumulative gross savings are in Appendix C.6 and cumulative net savings are in Appendix D.6.

- In 2020, 406 customers participated in the program, approximately 65% of planned participation.
- From program inception through 2020, 406 customers participated in the program, approximately 42% of planned participation.

- In 2020, the program achieved net energy savings of 20,432,475 kWh/year, approximately 153% of planned savings.
- In 2020, the average net energy savings per participant was 50,326 kWh, approximately 250% of planned savings per participant from Table 5-5.
- From program inception through 2020, the program achieved net energy savings of 20,432,475 kWh/year, approximately 138% of planned savings.
- In 2020, the program achieved net demand reduction of 2,813.8 kW, approximately 102% of planned reduction.
- In 2020, the average net energy demand reduction per participant was 6.9 kW, approximately 253% of planned demand reduction per participant from Table 5-5.
- From program inception through 2020, the program achieved net demand reduction of 2,813.8 kW, approximately 102% of planned reduction.

- In 2020, program costs were 137% of planned costs.
- From program inception through 2020, program costs were 101% of planned costs.

Table 5-8. Virginia Non-residential Lighting Systems and Controls Program Performance Indicators (2019-2020)

Category	Item	2019	2020	Program Total (2019-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]		
	Direct Implementation			
	Direct EM&V			
	Indirect Other (Administrative)	$20,021	$203,084	$223,105
Total Costs ($)	Total[95]	$592,373	$3,989,872	$4,582,245
	Planned	$1,633,867	$2,905,369	$4,539,237
	Variance	-$1,041,495	$1,084,503	$43,008
	Annual % of Planned	36%	137%	101%
Participants	Total (Gross)	0	406	406
	Planned (Gross)	333	625	958
	Variance	-333	-219	-552

[95] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Category	Item	2019	2020	Program Total (2019-2020)
	Annual % of Planned (Gross)	0%	65%	42%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	0	29,189,250	29,189,250
	Realization Rate Adjustment (100%)	0	0	0
	Adjusted Gross Savings	0	29,189,250	29,189,250
	Net-to-Gross Adjustment (70%)[96]	0	-8,756,775	-8,756,775
	Net Adjusted Savings	0	20,432,475	20,432,475
	Planned Savings (Net)	1,445,890	13,361,527	14,807,417
	Annual % Toward Planned Savings (Net)	0%	153%	138%
	Avg. Savings per Participant (Gross)	N/A	71,895	71,895
	Avg. Savings per Participant (Net)	N/A	50,326	50,326
Installed Demand Reduction (kW)	Total Gross Deemed Demand	0.0	4,019.8	4,019.8
	Realization Rate Adjustment (100%)	0.0	0.0	0.0
	Adjusted Gross Demand	0.0	4,019.8	4,019.8
	Net-to-Gross Adjustment (70%)[97]	0.0	-1,205.9	-1,205.9
	Net Adjusted Demand	0.0	2,813.8	2,813.8
	Planned Demand (Net)	0.0	2,769.7	2,769.7
	Annual % Toward Planned Demand (Net)	N/A	102%	102%
	Avg. Peak Demand per Participant (Gross)	N/A	9.9	9.9
	Avg. Demand per Participant (Net)	N/A	6.9	6.9
Program Performance	Annual $Admin. per Participant (Gross)	N/A	$500	$550
	Annual $Admin. per kWh/year (Gross)	N/A	$0.01	$0.01
	Annual $Admin. per kW (Gross)	N/A	$51	$56
	Annual $EM&V per Total Costs ($)	8%	2.5%	3.2%
	Annual $Rebate per Participant (Gross)	N/A	$6,717	$6,717

Table 5-9 shows the program's gross and net annualized energy savings (kWh/year) and demand reduction (kW/year) by measure, from program inception through 2020, in Virginia.

[96] On the rebate application form the program implementation vendor included the question, "Did the rebate incentive offered by Dominion Energy have any influence in your decision to have the work performed?" Of the participants who responded (from program inception to the end of this reporting period), the implementation vendor has calculated that 98% answered yes at the time they filled out the rebate application. This is not a substitute for a net-to-gross analysis conducted by an independent evaluator. See section 3.1.3 Net Savings Estimation for a description of net-to-gross estimation approaches.

[97] Ibid.

Table 5-9. Virginia Non-residential Lighting Systems & Controls (DSM Phase VII) Measure-Level Performance Indicators (2019-2020)

Program	kWh/year		kW	
Non-residential Lighting Systems & Controls– Virginia (DSM VII)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	70%	100%	70%
Measure	**Gross**	**Net**	**Gross**	**Net**
	Gross	Net	Gross	Net
LED Lamps	28,703,462	20,092,423	3,962	273.4
Occupancy Sensors	485,788	340,051	57.8	40.4
Total	29,189,250	20,432,475	4,019.8	2,813.8

5.2.3.2 Key North Carolina Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for North Carolina appear below. Following this summary, Table 5-10 provides performance indicator data for the year. Shaded cells are considered extraordinarily sensitive information. Detailed incremental program indicators by year and month are provided in Appendix B.6, cumulative gross savings are in Appendix C.6 and cumulative net savings are in Appendix D.6.

- In 2020, 9 customers participated in the program, approximately 23% of planned participation.

- In 2020, the program achieved net energy savings of 78,269 kWh/year, approximately 9% of planned savings.
- In 2020, the average net energy savings per participant was 8,697 kWh, approximately 43% of planned savings per participant from Table 5-5.
- In 2020, the program achieved net demand reduction of 3.7 kW, approximately 2% of planned reduction.
- In 2020, the average net energy demand reduction per participant was 0.4 kW, approximately 14% of planned demand reduction per participant from Table 5-5.

- Annual program costs in 2020 were 87% of planned costs.

Table 5-10. North Carolina Non-residential Lighting Systems and Controls Program Performance Indicators (2020)

Category	Item	2020
Operations and Management Costs ($)	Direct Rebate	[redacted]
	Direct Implementation	
	Direct EM&V	

Category	Item	2020
	Indirect Other (Administrative)	$7,657
Total Costs ($)	Total[98]	$160,883
	Planned	$184,522
	Variance	-$23,639
	Annual % of Planned	87%
Participants	Total (Gross)	9
	Planned (Gross)	40
	Variance	-31
	Annual % of Planned (Gross)	23%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	111,813
	Realization Rate Adjustment (100%)	0
	Adjusted Gross Savings	111,813
	Net-to-Gross Adjustment (70%)	-33,544
	Net Adjusted Savings	78,269
	Planned Savings (Net)	855,138
	Annual % Toward Planned Savings (Net)	9%
	Avg. Savings per Participant (Gross)	12,424
	Avg. Savings per Participant (Net)	8,697
Installed Demand Reduction (kW)	Total Gross Deemed Demand	5.3
	Realization Rate Adjustment (100%)	0.0
	Adjusted Gross Demand	5.3
	Net-to-Gross Adjustment (70%)	-1.6
	Net Adjusted Demand	3.7
	Planned Demand (Net)	177.3
	Annual % Toward Planned Demand (Net)	2%
	Avg. Peak Demand per Participant (Gross)	0.6
	Avg. Demand per Participant (Net)	0.4
Program Performance	Annual $Admin. per Participant (Gross)	$851
	Annual $Admin. per kWh/year (Gross)	$0.07
	Annual $Admin. per kW (Gross)	$1,434
	Annual $EM&V per Total Costs ($)	3.3%
	Annual $Rebate per Participant (Gross)	$10,189

[98] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Table 5-11 shows the program's gross and net annualized energy savings (kWh/year) and demand reduction (kW/year) by measure, in 2020, in North Carolina.

Table 5-11. Virginia Non-residential Lighting Systems & Controls (DSM Phase VII) Measure-Level Performance Indicators (2020)

Program	kWh/year		kW	
Non-residential Lighting Systems & Controls– Virginia (DSM VII)	Realization Rate	Net-to-Gross	Realization Rate	kW
	100%	70%	100%	70%
Measure	**Gross**	**Net**	**Gross**	**Net**
	Gross	Net	Gross	Net
LED Lamps	111,813	78,269	5.3	3.7

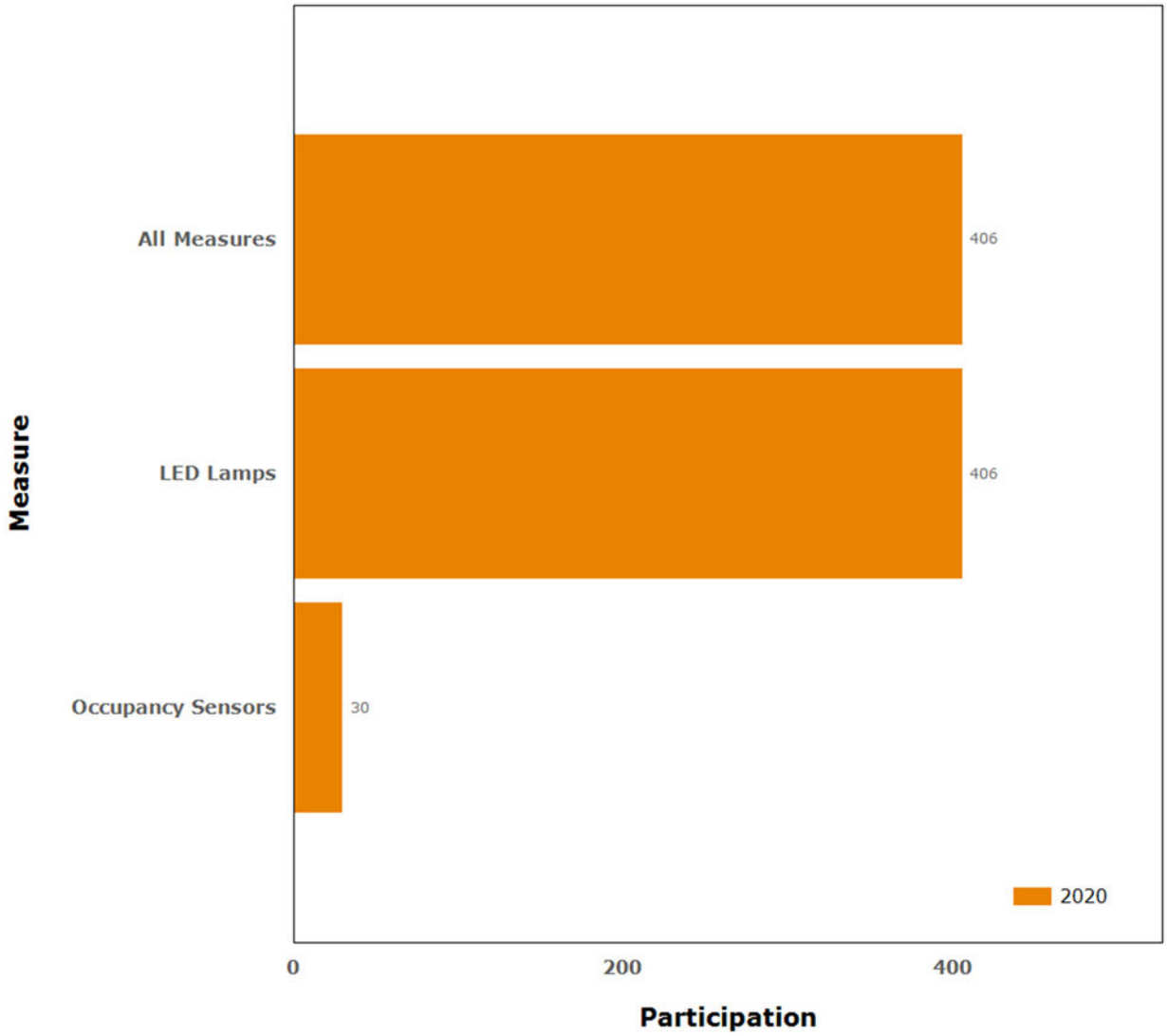
5.2.3.3 Additional Virginia Program Data

Figure 5-15 through Figure 5-17 show the program's participation, gross annualized energy savings, and average annualized energy savings per participant (for participants who installed the measure in the respective year) by measure type.

Note participation in these charts are the count of new unique customers in the "all measures" presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

In 2020, the most frequently adopted measure was LED lamps, adopted by all program participants, as shown in Figure 5-15. Occupancy sensors were installed by 7% of program participants.

Figure 5-15. Virginia Non-residential Lighting Systems & Controls Program Participation by Measure and Year



As expected due to the frequency of LED installations, LEDs accounted for the most gross annualized energy savings (98%) in 2020 (Figure 5-16), and the highest gross annualized energy savings per participant (Figure 5-17).

Figure 5-16. Virginia Non-residential Lighting Systems & Controls Program Gross Annualized Energy Savings by Measure and Year (MWh/year)

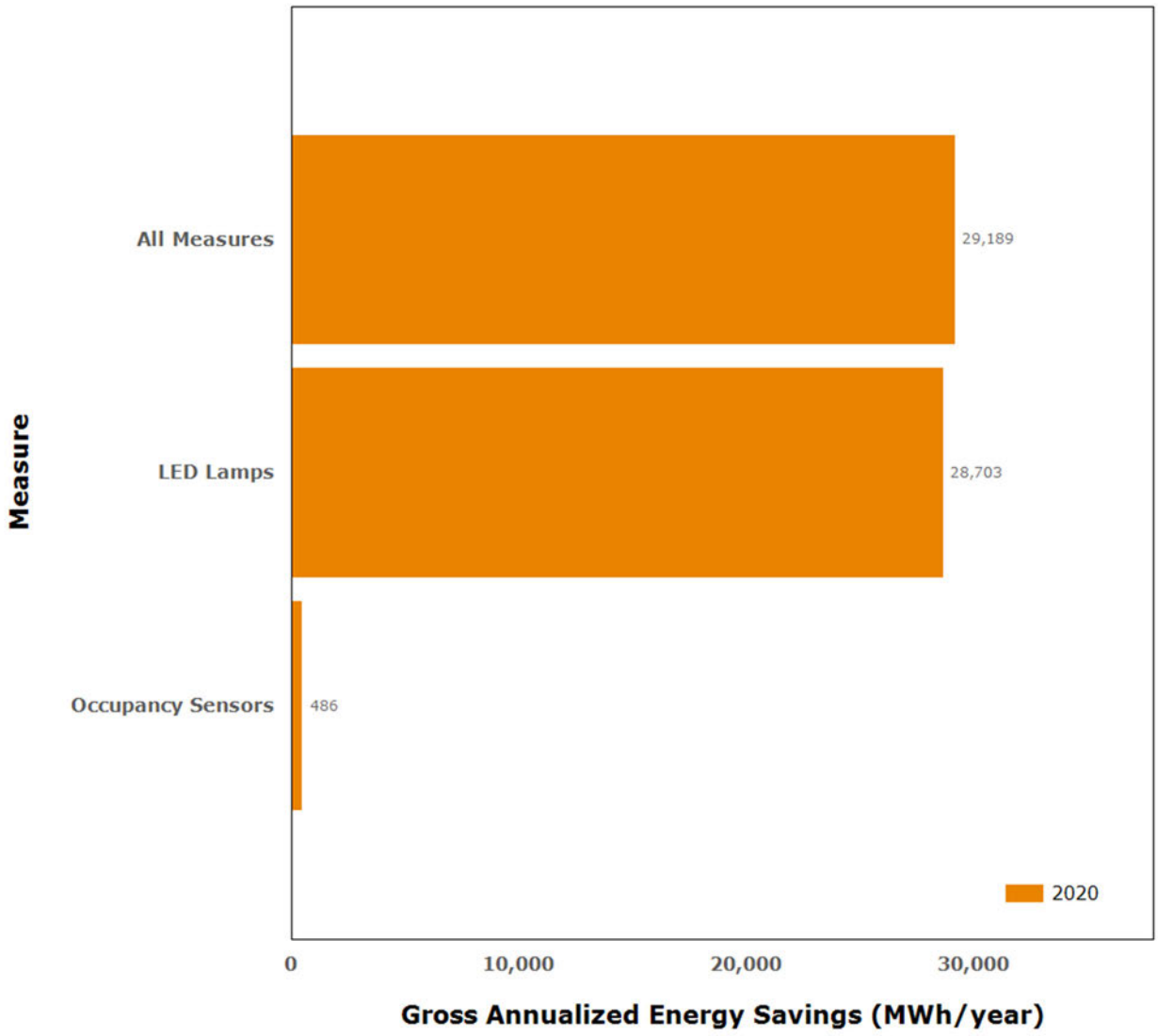


Figure 5-17. Virginia Non-residential Lighting Systems & Controls Program Average Gross Annualized Energy Savings per Participant (MWh/year per participant) by Measure and Year

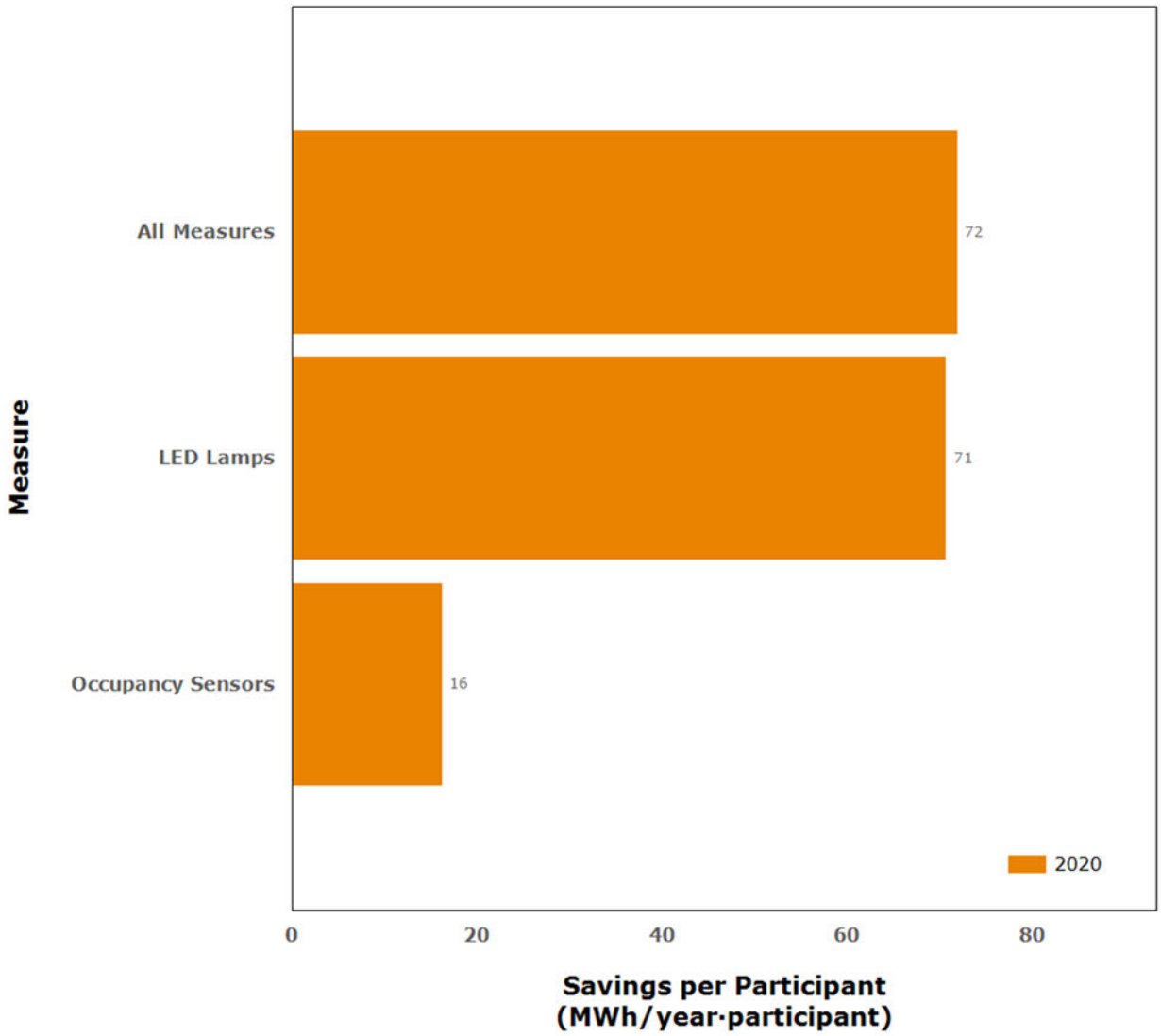
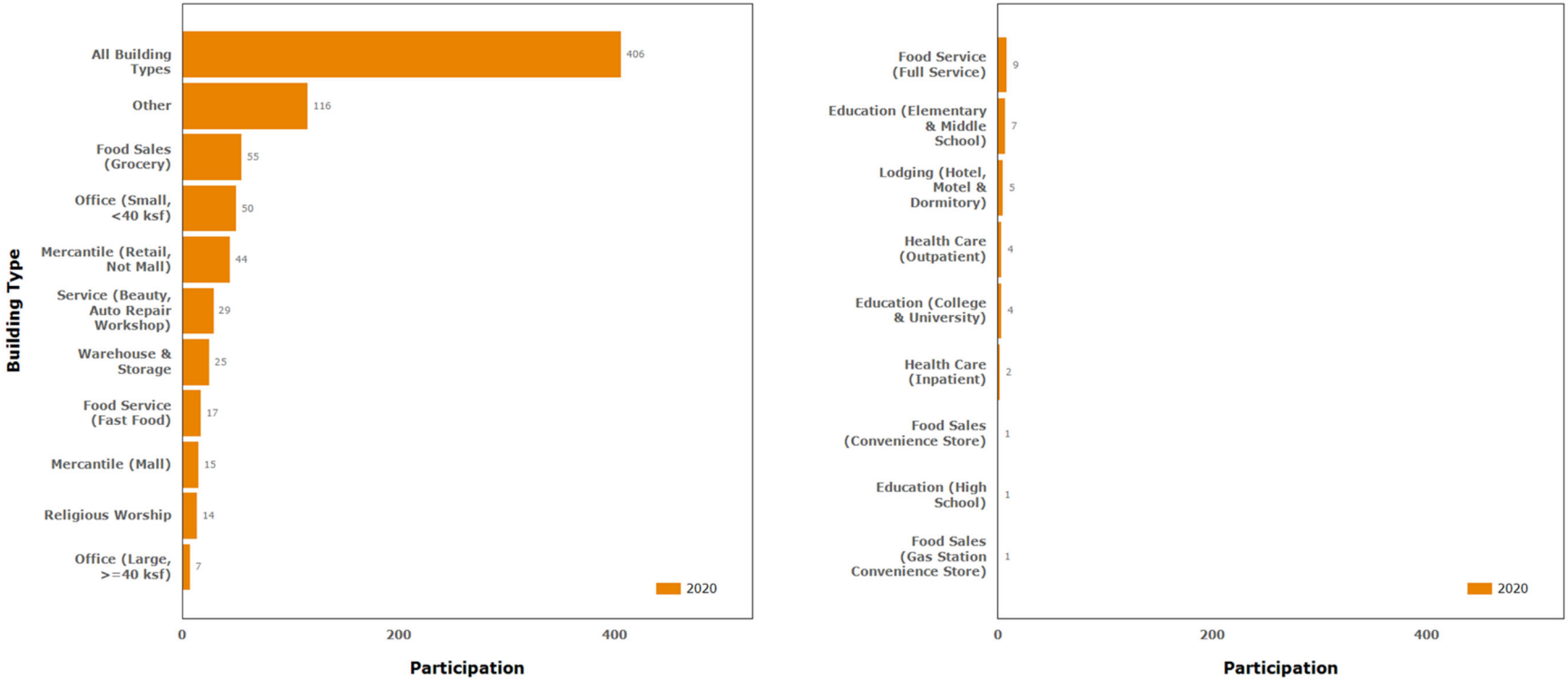


Figure 5-18 through Figure 5-20 show participation, gross annualized energy savings, and average annualized energy savings per participant by building type.

In 2020, “other” building types had the most program participants (Figure 5-18), followed by food sales (grocery).

Figure 5-18. Virginia Non-residential Lighting Systems & Controls Program Participation by Building Type and Year



Despite enrolling the second most participants in the program, food sales (grocery) accounted for the most gross annualized energy savings (Figure 5-19), indicating high energy savings per participant (Figure 5-20).

Figure 5-19. Virginia Non-residential Lighting Systems & Controls Program Gross Annualized Energy Savings by Building Type and Year (MWh/year)

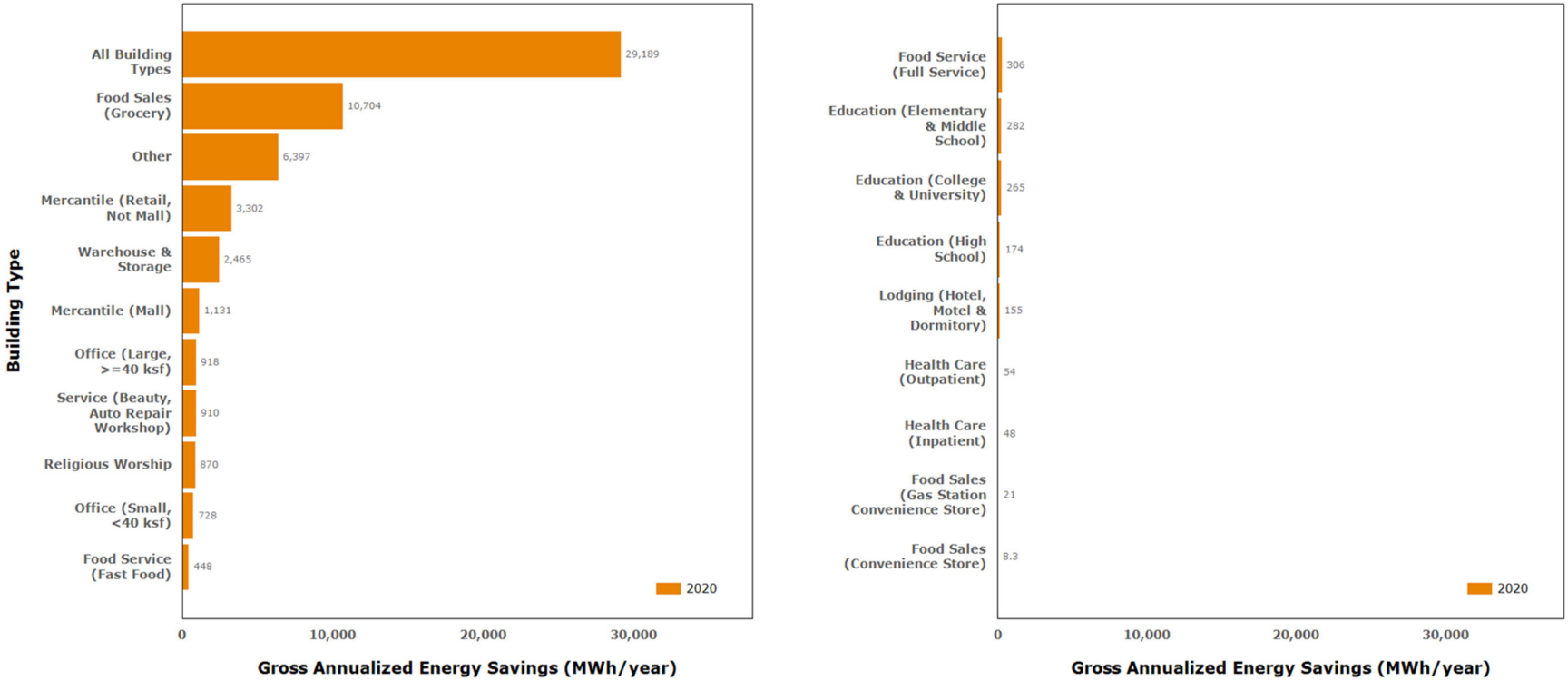
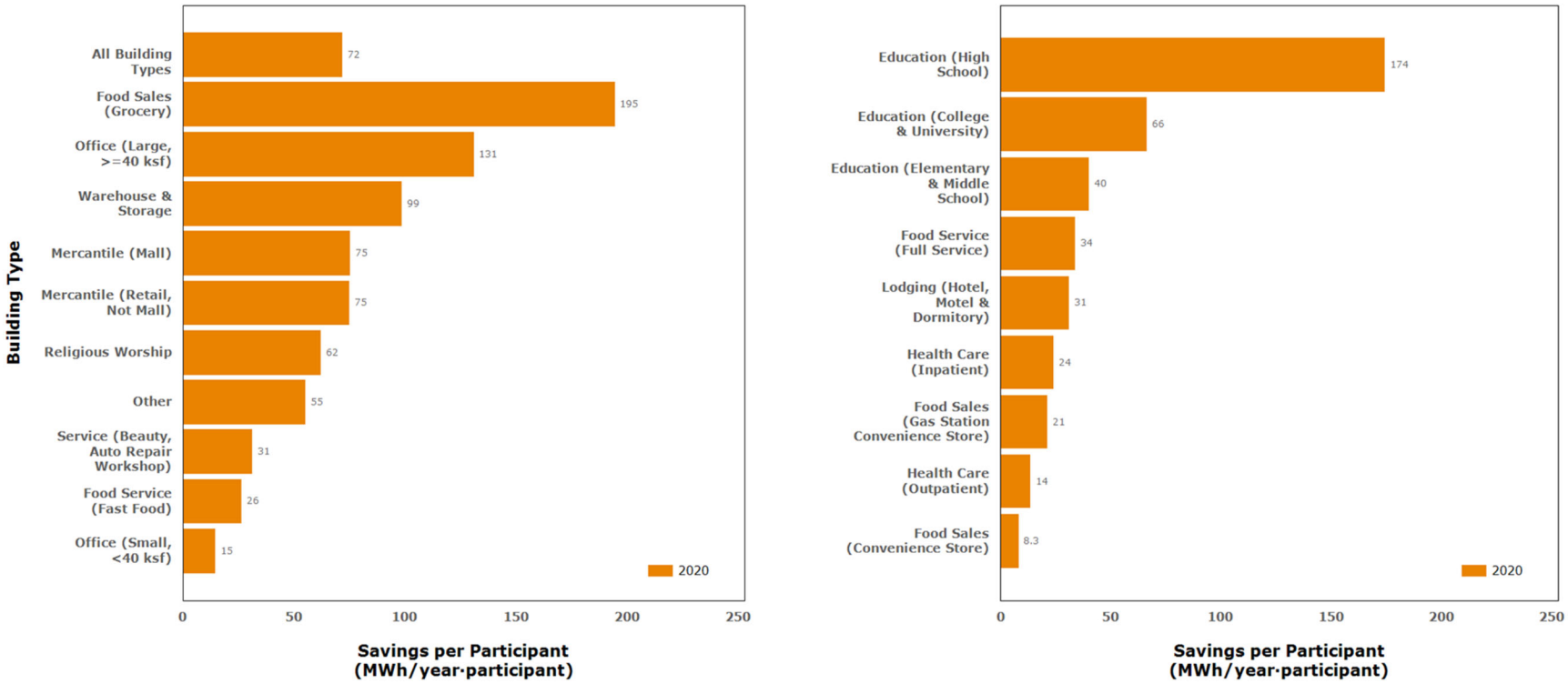


Figure 5-20. Virginia Non-residential Lighting Systems and Controls Program Average Gross Annualized Energy Savings per Participant (MWh/year per participant) by Building Type and Year



5.2.3.4 Additional North Carolina Program Data

Figure 5-21 through Figure 5-23 show the program's participation, gross annualized energy savings, and average annualized energy savings per participant (for participants who installed the measure in the respective year) by measure type.

Note participation in these charts are the count of new unique customers in the "all measures" presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

In 2020, LED lamps were installed by all participants, as shown in Figure 5-21. One participant also installed T8/T5 lamps, however due to a data entry error DNV was unable to assign savings, therefore all program savings were achieved by the installation of LED lamps (Figure 5-22).

Figure 5-21. North Carolina Non-residential Lighting Systems and Controls Program Participation by Measure and Year

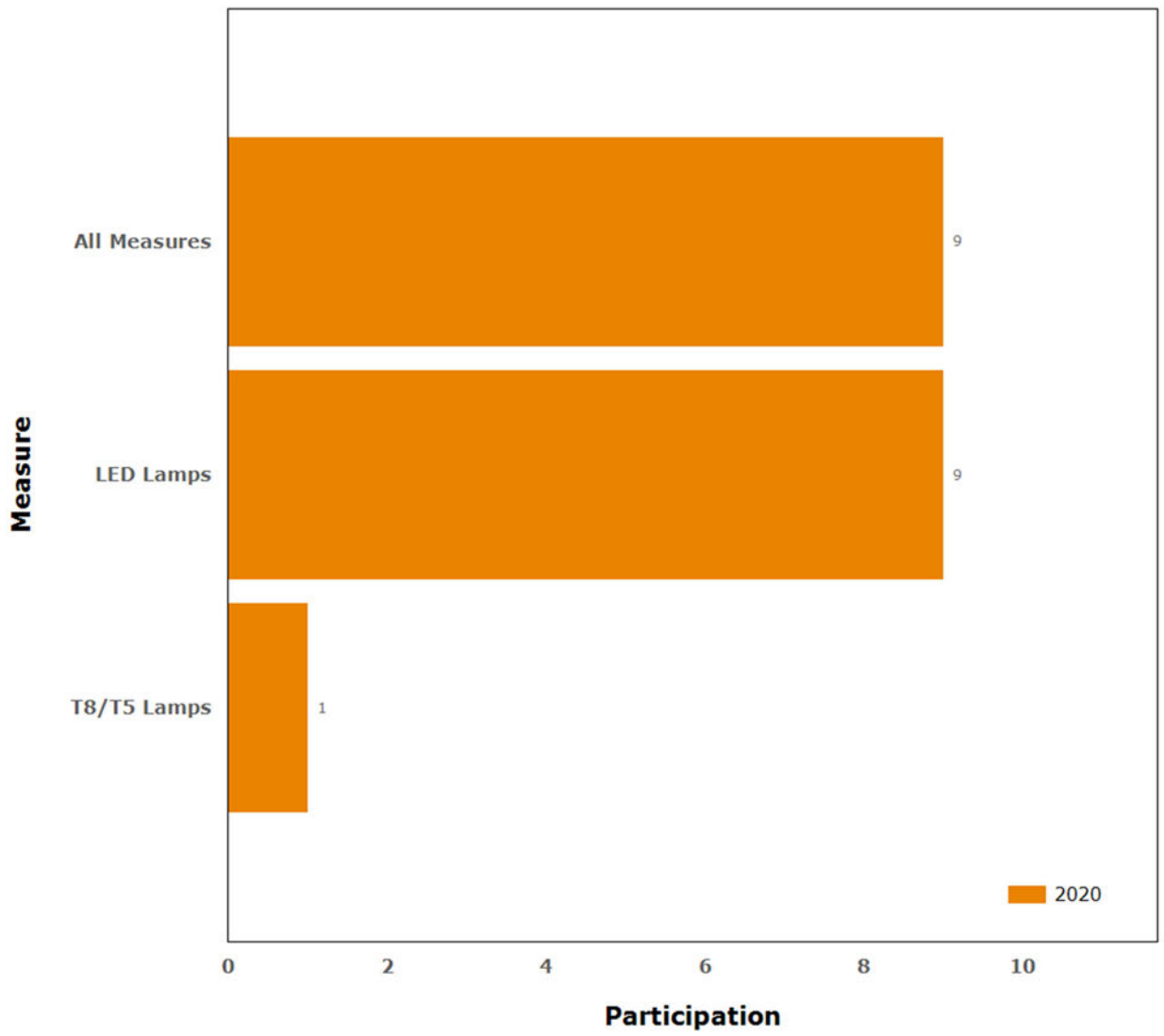


Figure 5-22. North Carolina Non-residential Lighting Systems & Controls Program Gross Annualized Energy Savings (MWh/year) by Measure and Year

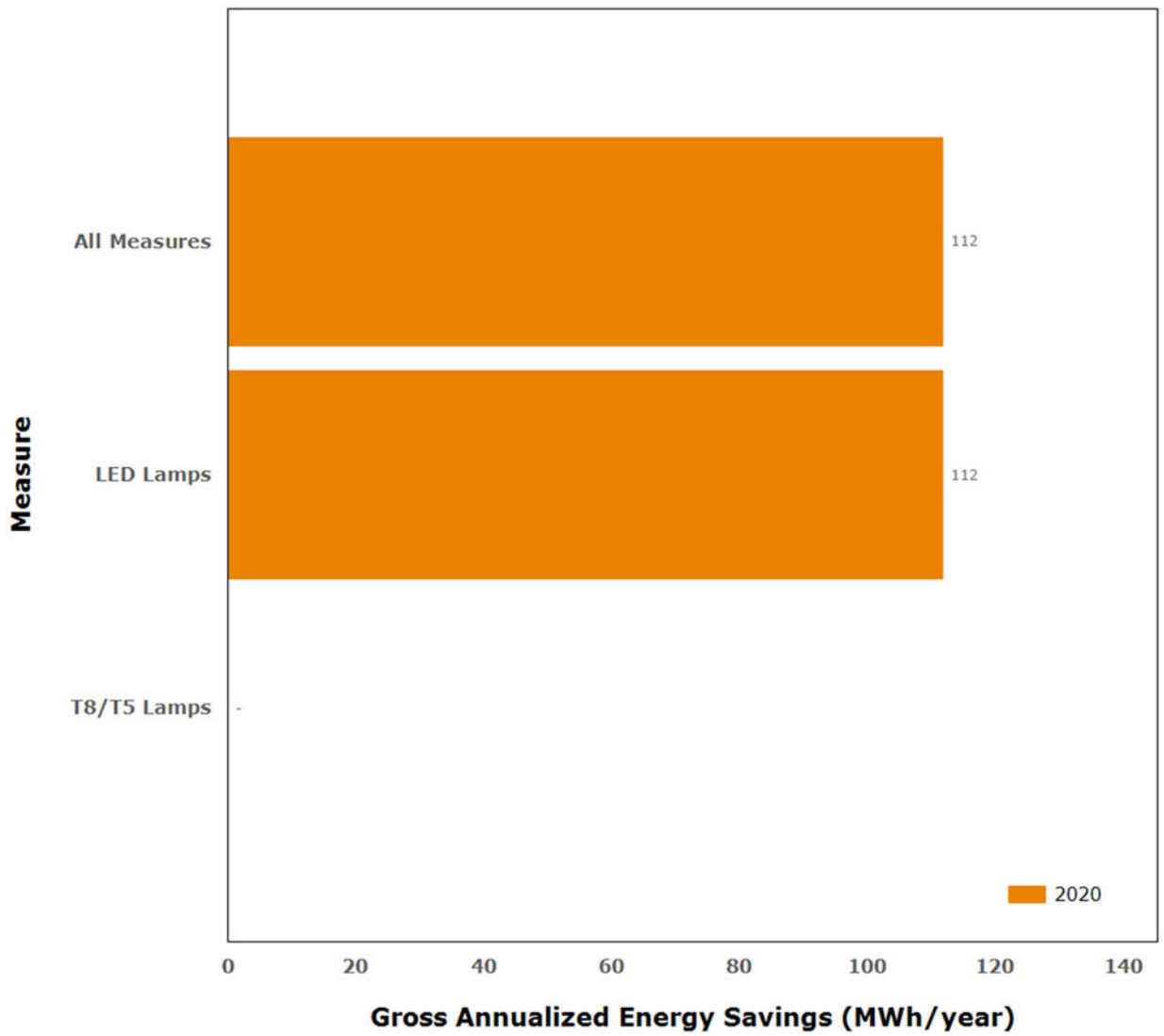


Figure 5-23. North Carolina Non-residential Lighting Systems & Controls Program Average Gross Annualized Energy Savings per Participant (MWh/year per participant) by Measure and Year

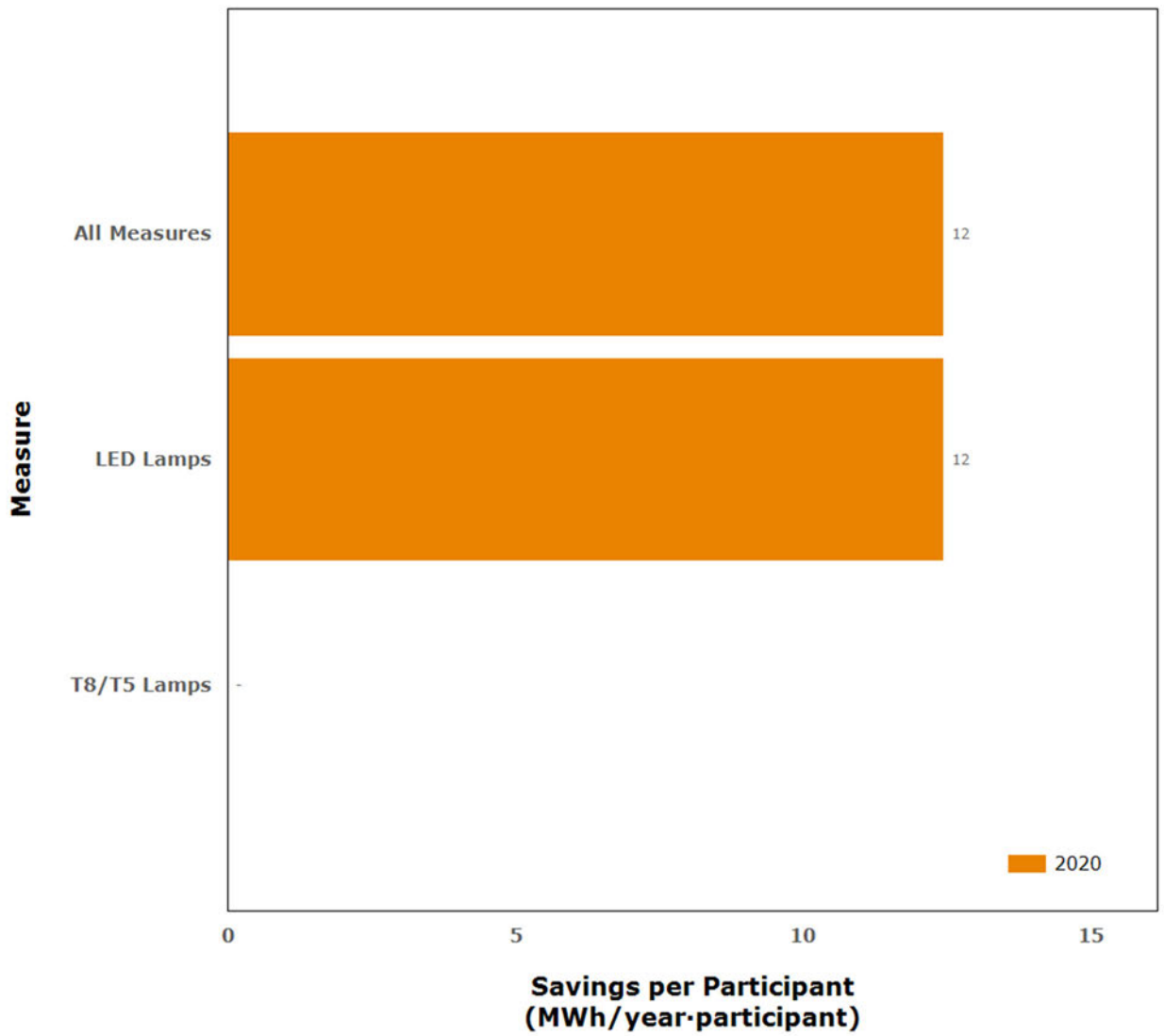


Figure 5-24 through Figure 5-26 shows the program's participation, gross annualized energy savings, and average annualized energy savings per participant by building type.

Figure 5-24 shows that in 2020, the plurality of participants (44%) were located small offices (less than 40,000 square feet).

Figure 5-24. North Carolina Non-residential Lighting Systems & Controls Program Participation by Building Type and Year

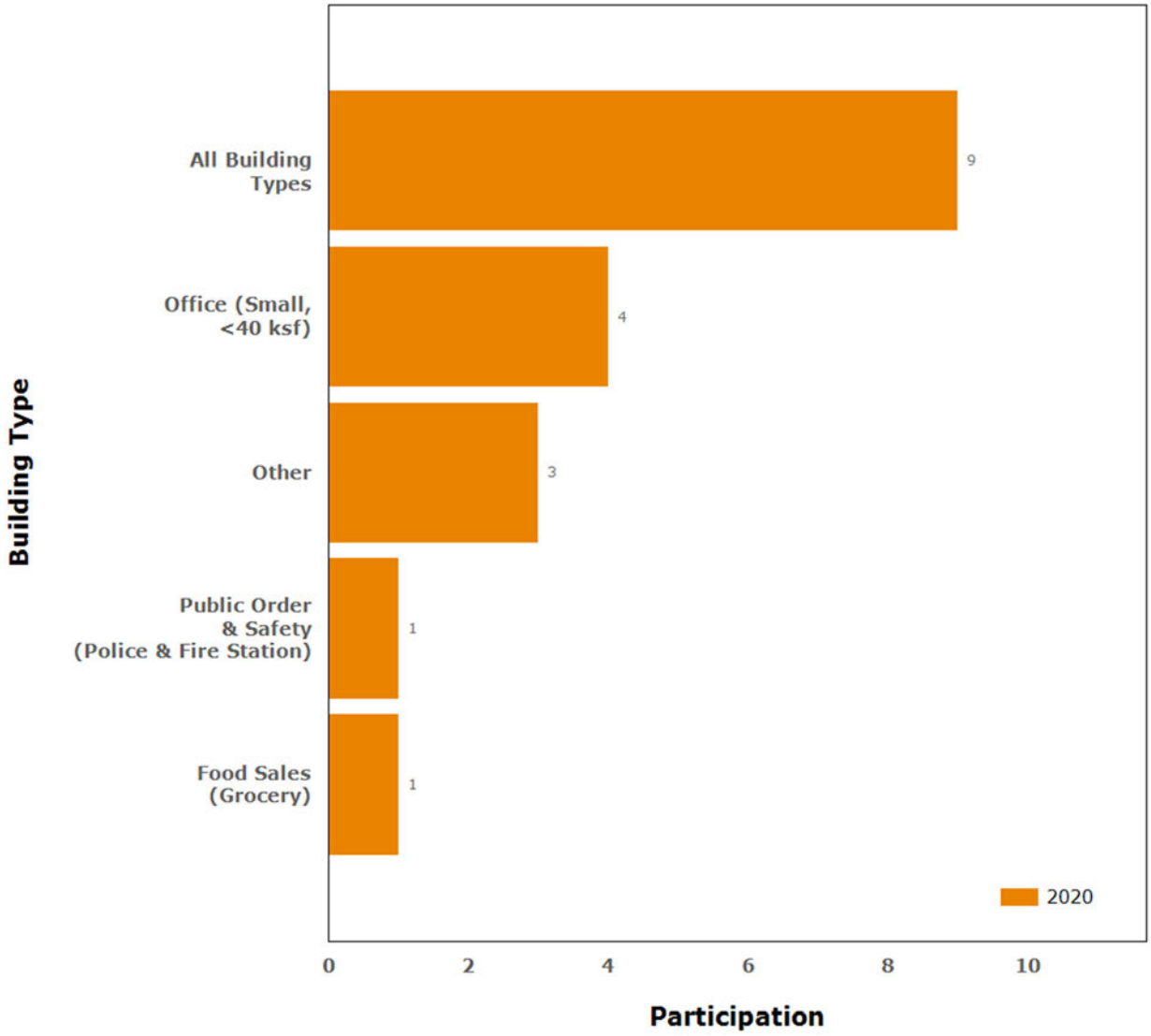


Figure 5-25 shows that food sales (grocery) building types contributed the majority (52%) of energy savings achieved in 2020, followed by small offices (less than 40,000 square feet). This is because food sales (grocery) had the highest average savings per participant, as shown in Figure 5-14.

Figure 5-25. North Carolina Non-residential Lighting Systems & Controls Program Gross Annualized Energy Savings by Building Type and Year (MWh/year)

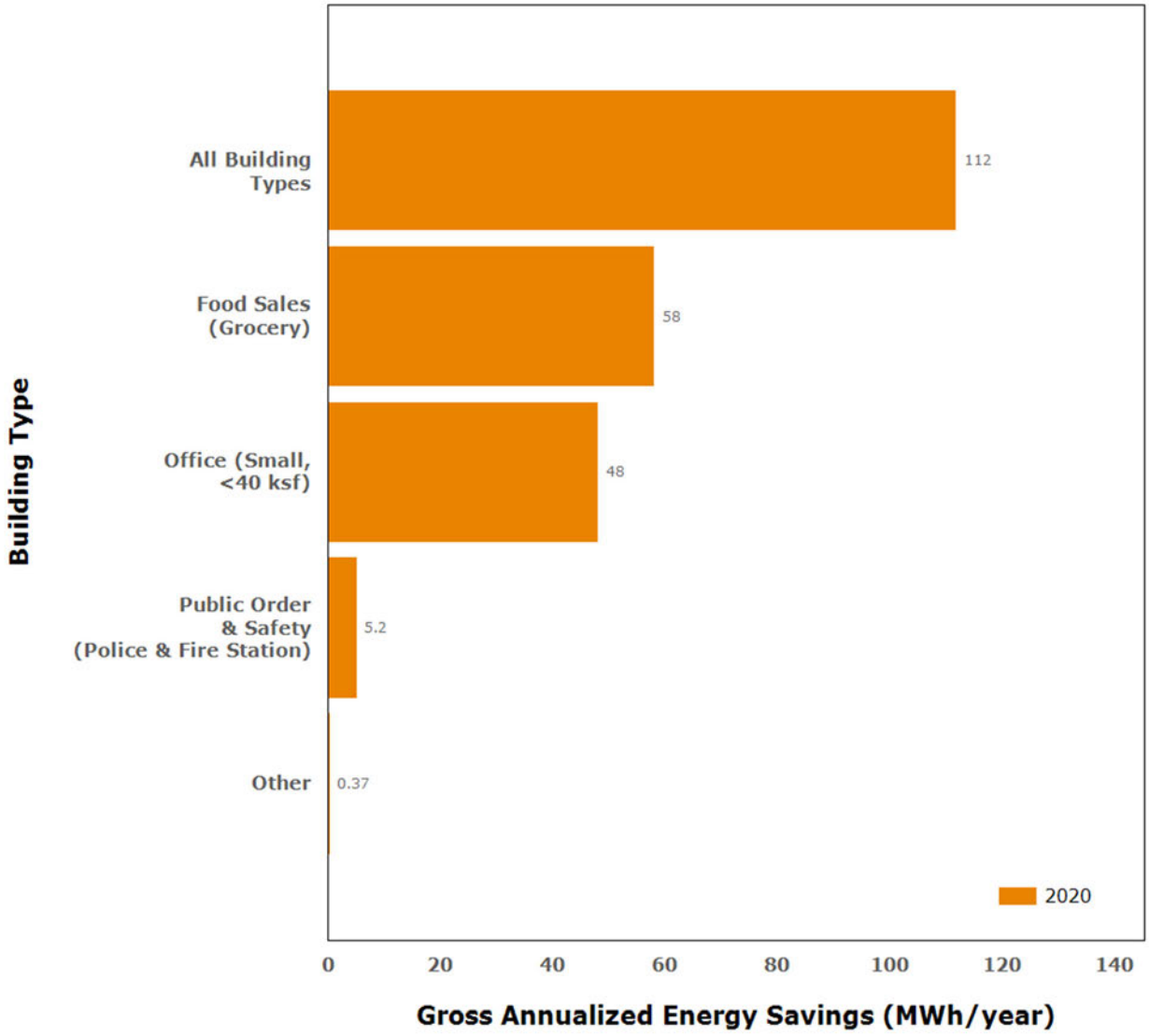
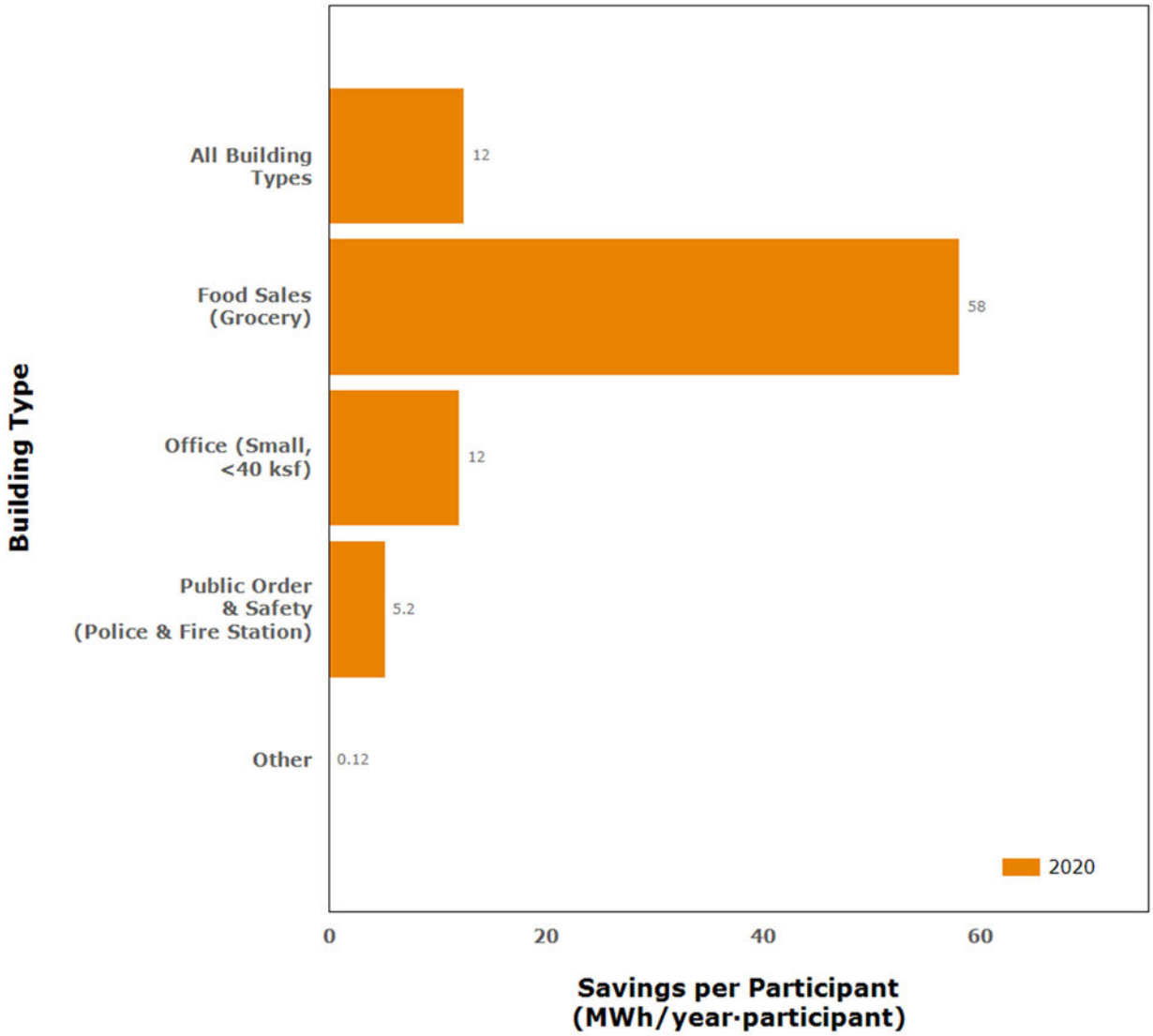


Figure 5-26. North Carolina Non-residential Lighting Systems & Controls Program Average Gross Annualized Energy Savings per Participant (MWh/year-participant) by Building Type and Year



5.2.3.5 Comparison of Savings with Usage

See Table 5-12 for a comparison of the 2020 program net adjusted savings in Virginia with the system-wide planned savings for the program, the annual usage for an average rate schedule, and the annual usage for eligible customers in each rate schedule that participated in the program.

Table 5-12. Virginia 2020 Non-residential Lighting Systems & Controls (DSM Phase VII) Program Comparison of Savings with Usage by Rate Schedule

Comparisons	Item	Value
Schedule 5		
Comparison of Savings	Net Systemwide Planned Savings	20,145 kWh/year per participant
	Net Adjusted Savings	57,844 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	287%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[99]	60,690 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	95%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule 5C		
Comparison of Savings	Net Systemwide Planned Savings	20,145 kWh/year per participant
	Net Adjusted Savings	30,442 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	151%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[100]	65,115 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	46.8%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule 5P		
Comparison of Savings	Net Systemwide Planned Savings	20,145 kWh/year per participant
	Net Adjusted Savings	55,966 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	278%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[101]	259,919 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	21.5%
Comparison to Annual Usage of	Average Annual Usage	See "Comparison to Average Annual

[99] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 23, Column E (kWh of Sales Per Customer).

[100] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 25, Column E (kWh of Sales Per Customer).

[101] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 26, Column E (kWh of Sales Per Customer).

Comparisons	Item	Value
Eligible Customers in Rate Schedule	Net Adjusted Savings as Percent of Average Annual Usage	Usage for Rate Schedule"
Schedule GS-1		
Comparison of Savings	Net Systemwide Planned Savings	20,145 kWh/year per participant
	Net Adjusted Savings	18,165 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	90%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[102]	19,498 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	93.2%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule GS-2		
Comparison of Savings	Net Systemwide Planned Savings	20,145 kWh/year per participant
	Net Adjusted Savings	62,412 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	310%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[103]	289,108 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	21.6%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule GS-2T		
Comparison of Savings	Net Systemwide Planned Savings	20,145 kWh/year per participant
	Net Adjusted Savings	101,421 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	503%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[104]	483,421 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	21%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	

[102] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 27, Column E (kWh of Sales Per Customer).

[103] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304.1, Line 9, Column E (kWh of Sales Per Customer).

[104] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 28, Column E (kWh of Sales Per Customer).

Comparisons	Item	Value
Schedule GS-3		
Comparison of Savings	Net Systemwide Planned Savings	20,145 kWh/year per participant
	Net Adjusted Savings	40,301 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	200%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[105]	5,077,618 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	0.8%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	

[105] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 28, Column E (kWh of Sales Per Customer).

5.3 Non-residential Heating and Cooling Efficiency – Virginia and North Carolina

Virginia

Case #: PUE-2018-00168

NON-RESIDENTIAL HEATING & COOLING EFFICIENCY

2019-PRESENT
54,895 kWh/yr Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Unitary and split AC units
- Economizers
- Air-source and ground-source heat pumps
- Packaged terminal AC and heat pumps
- Variable refrigerant flow units
- Water-and air-cooled chillers
- Variable frequency drives for HVAC applications

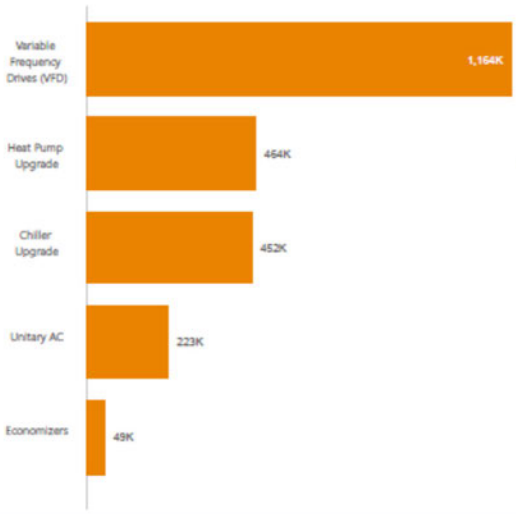
Enrolled **30** customers, **3%** of planned participation

Achieved net annual energy savings of **1,647 MWh/year, 17%** of planned energy savings

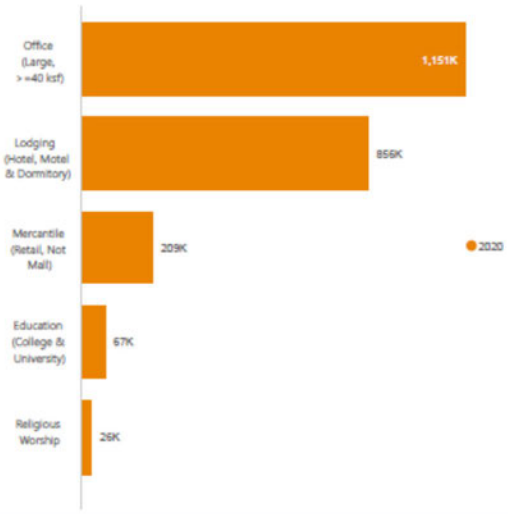
Spent **35%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)				342,194	723,971	1,066,165
Total Program Participants (#)				0	30	30
Total Gross Incremental Savings (kWh/yr)				0	2,352,639	
Total Net Incremental Savings (kWh/yr)				0	1,646,848	
Average Gross Incremental Demand Reduction (kW)				0	408	
Average Net Incremental Demand Reduction (kW)				0	286	
Total Net Lifetime Savings (kWh)				0	715,534	24,702,713
Average Lifetime Demand Reduction (kW)				0	286	286

TOTAL SAVING BY MEASURE TYPE
TOP 5 IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



DNV

North Carolina

Docket #: E-22 Sub 574

NON-RESIDENTIAL HEATING & COOLING EFFICIENCY

2019-PRESENT
- **kWh/yr** Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Unitary and split AC units
- Economizers
- Air-source and ground-source heat pumps
- Packaged terminal AC and heat pumps
- Variable refrigerant flow units
- Water-and air-cooled chillers
- Variable frequency drives for HVAC applications

Enrolled **0** customers, **0%** of planned participation

Achieved net annual energy savings of **0 kWh/year**, **0%** of planned energy savings

Spent **25%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)					30,873	30,873
Total Program Participants (#)					0	
Total Gross Incremental Savings (kWh/yr)					0	
Total Net Incremental Savings (kWh/yr)					0	
Average Gross Incremental Demand Reduction (kW)					0	
Average Net Incremental Demand Reduction (kW)					0	
Total Net Lifetime Savings (kWh)					0	
Average Lifetime Demand Reduction (kW)					0	

5.3.1 Program Description

The Non-residential Heating and Cooling Efficiency Program (DSM Phase VII) provides incentives to qualifying non-residential customers to either upgrade existing heating or cooling equipment or install new energy efficient equipment. All non-residential customers are eligible for this program except those who are exempt by statute or contract or have opted-out. Measures eligible to receive a rebate include:

- Unitary and split AC units
- Air-source/ground-source heat pump units
- Packaged terminal AC and heat pump
- Variable refrigerant flow
- Water- and air-cooled chillers
- Variable frequency drives for HVAC applications
- Economizers

This program is implemented through a contractor network, so customers must use a participating contractor to be eligible for the rebate. Customers are not considered participants until a completed application form has been processed and a rebate has been issued. This process can take several months since customers have 45 days after measure installation to submit their rebate application, and the Company has 90 days after receipt of the application to process it.

The Virginia SCC approved this program, as part of the DSM Phase VII programs, on May 2, 2019 (Case No. PUR-2018-00168) for a five-year period of July 1, 2019, through June 30, 2024. The North Carolina Utilities Commission approved this program on November 13, 2019 (Docket No. E-22, SUB 574). Upon approval, the Company worked to finalize data systems, build contractor networks, and finalize implementation details.

Table 5-13 maps the applicable sections in this report to reporting requirements listed in the EM&V Rule section 50, "Standard Requirements for Evaluation, Measurement, and Verification Reporting."[106]

2020 was an extraordinary year by all accounts, because of the COVID-19 pandemic. In response to the pandemic, this program was suspended in March for health and safety reasons and resumed on May 15, 2020. Upon it reopening, the implementation vendors set up new health and safety protocols such as requiring contractors to wear personal protective equipment ("PPE") against COVID-19, conducting temperature checks, implementing contact tracing (if there is a suspected COVID-19 exposure), social distancing when at the customer site or offer to visit the customer site after hours. Anecdotally, customers were pleased with the implementation contractor's processes.

Also, in response to the pandemic, the company suspended conventional program marketing approaches during the March through May period. Such marketing efforts to include bill inserts and online marketing. Conventional marketing approaches resumed in August. Alternatively, the implementation vendors also increased marketing to customers more directly through

[106] 20 VAC 5-318-50

one-on-one phone calls to building managers and other customers and to trade organizations. An HVAC contractor started their own online marketing plan, with approval from Honeywell and Dominion.

Table 5-13. Non-residential Heating and Cooling Efficiency Program (DSM Phase VII) Compliance with EM&V Rule Section 50

Subsection within 20 VAC 5-318-50	Location and Description
A. EM&V Plan	APPENDIX Y, EM&V Plan
B. Utilizing utility-specific data or other data	**Per 20 VAC 5-318-40 A and B** 1. See APPENDIX F. STEP Manual v2020 for a description of all data or estimates used as inputs for this program and the measures within it. 2. See the Methodologies section (section 3) of this report for a description of the overarching EM&V methodologies used to report results in this report. **Per 20 VAC 5-318-40 C** 3. See subsections of this report section, and Table 5-16. For measure-level estimates of kilowatt and kilowatt-hour, before and after adjustments for free-ridership, as appropriate.
C. Changes to measure-level inputs and assumptions, and inputs to cost/benefit estimates	1. See Table 5-14 for program planning assumptions 2. See documents filed with the Virginia State Corporation Commission Docket PUR-2018-00168 for approved measure-level inputs and assumptions, and the impact of such changes on original cost/benefit estimates for DSM programs or measures.
D. Measure-level data collection methodology	See response to A. and B. above.
E. Explanation of eligibility requirements for each rate schedule that program is offered	See program description above.
F. Comparison of measured annual measure or program savings estimates to the annual usage of the average rate schedule usage, and eligible customer in each rate schedule	Please Section 5.3.3.5,Comparison of Savings with Usage
G. Explanation of controls undertaken by utility	See APPENDIX KK

5.3.2 Methods for the Current Reporting Period

DNV developed an EM&V Plan for this program that is included in APPENDIX M. For the upcoming period, the approach will include reviewing the tracking data and then estimating gross energy savings and demand reduction using STEP Manual calculations.

Table 5-14 outlines Dominion Energy's initial program planning assumptions used to design the program. DNV uses the planned NTG factor in its net savings calculations until it can be verified through EM&V.

Table 5-14. Non-residential Heating and Cooling Efficiency Program (Phase VII) Planning Assumptions System-wide

Assumption	Value
Target Market	Non-residential customers
NTG Factor	70%
Measure Life (years)	15
Gross Average Annual Energy Savings per Participant (kWh/year)	17,760
Gross Average Coincident Peak Demand Reduction (kW) per Participant	3.2
Net Average Annual Energy Savings per Participant (kWh/year)	12,432
Net Average Coincident Peak Demand Reduction (kW) per Participant	2.2
Average Rebate (US$) per Participant	$1,901

5.3.3 Assessment of Program Progress towards Plan

The next subsection provides the tables summarizing the key indicators of the Non-residential Heating and Cooling Efficiency program progress in Virginia.

5.3.3.1 Key Virginia Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for Virginia appear below. Following this summary, Table 5-15 provides performance indicator data annually and from program inception through 2020. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.18, cumulative gross savings are in Appendix C.9 and cumulative net savings are in Appendix D.9.

Table 5-15 provides performance indicator data from January 1, 2019 through December 31, 2020 and shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.8.

- There were 30 participants in 2020, approximately 5% of the planned value of 658.
- There were no participants in 2019 so cumulatively there have been 30 participants since program inception, approximately 3% of the planned value of 1,008.

- Annual net energy savings were 1,646,848 kWh, approximately 19% of planned net savings 8,549,281 kWh.
- Since program inception cumulative net energy savings were 1,646,848 kWh, approximately 17% of the planned value, 9,563,896 kWh.
- Annual net energy savings per participant were 54,895 kWh, equivalent to 442% of the planned value 12,432 kWh.
- Annual net demand savings were 286 kW, approximately 15% of the planned value 1,917 kW.
- Total net demand savings since program inception were 286 kW, approximately 15% of the planned value 1,917 kW.
- Annual net demand savings per participant were 9.5 kW, equivalent to 432% of the planned value, 2.2 kW.

- Annual program costs in 2020 were $723,971 approximately 38% of planned costs.
- Total program costs since program inception were $1,066,165 or 35% of the planned value.
- All costs were related to rebates, program implementation, EM&V, and other administrative activities to operate the program.

Table 5-15. Virginia Non-residential Heating and Cooling Efficiency Program Performance Indicators (2019-2020)

Category	Item	2019	2020	Program Total (2019-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]		
	Direct Implementation			
	Direct EM&V			
	Indirect Other (Administrative)	$11,566	$38,539	$50,105

Category	Item	2019	2020	Program Total (2019-2020)
Total Costs ($)	Total[107]	$342,194	$723,971	$1,066,165
	Planned	$1,130,793	$1,921,705	$3,052,499
	Variance	-$788,599	-$1,197,735	-$1,986,334
	Annual % of Planned	30%	38%	35%
Participants	Total (Gross)	0	30	30
	Planned (Gross)	350	658	1,008
	Variance	-350	-628	-978
	Annual % of Planned (Gross)	0%	5%	3%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	0	2,352,639	2,352,639
	Realization Rate Adjustment (100%)	0	0	0
	Adjusted Gross Savings	0	2,352,639	2,352,639
	Net-to-Gross Adjustment (70%)[108]	0	-705,792	-705,792
	Net Adjusted Savings	0	1,646,848	1,646,848
	Planned Savings (Net)	1,014,615	8,549,281	9,563,896
	Annual % Toward Planned Savings (Net)	0.00%	19%	17%
	Avg. Savings per Participant (Gross)	N/A	78,421	78,421
	Avg. Savings per Participant (Net)	N/A	54,895	54,895
Installed Demand Reduction (kW)	Total Gross Deemed Demand	0.0	407.9	407.9
	Realization Rate Adjustment (100%)	0.0	0.0	0.0
	Adjusted Gross Demand	0.0	407.9	407.9
	Net-to-Gross Adjustment (70%)[109]	0.0	-122.4	-122.4
	Net Adjusted Demand	0.0	285.5	285.5
	Planned Demand (Net)	0.0	1,917.3	1,917.3
	Annual % Toward Planned Demand (Net)	N/A	14.9%	14.9%
	Avg. Peak Demand per Participant (Gross)	N/A	13.6	13.6
	Avg. Demand per Participant (Net)	N/A	9.5	9.5
Program Performance	Annual $Admin. per Participant (Gross)	N/A	$1,285	$1,670

[107] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

[108] On the rebate application form the program implementation vendor included the question, "Did the rebate incentive offered by Dominion Energy have any influence in your decision to have the work performed?" Of the participants who responded (from program inception to the end of this reporting period), the implementation vendor has calculated that 93% answered yes at the time they filled out the rebate application. This is not a substitute for a net-to-gross analysis conducted by an independent evaluator. See section 3.1.3 Net Savings Estimation for a description of net-to-gross estimation approaches.

[109] Ibid.

Category	Item	2019	2020	Program Total (2019-2020)
	Annual $Admin. per kWh/year (Gross)	N/A	$0.02	$0.02
	Annual $Admin. per kW (Gross)	N/A	$94	$123
	Annual $EM&V per Total Costs ($)	11%	12.7%	12.2%
	Annual $Rebate per Participant (Gross)	N/A	$6,662	$6,662

Table 5-16. Virginia Non-residential Heating and Cooling Efficiency (DSM Phase VII) Measure-Level Performance Indicators (2020)

Program	kWh/year		kW	
Non-residential Heating and Cooling Efficiency – Virginia (DSM VII)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	70%	100%	70%
Measure	Gross	Net	Gross	Net
	Gross	Net	Gross	Net
Chiller Upgrade	452,363	316,654	275.2	192.6
Economizers	49,060	34,342	0	0
Heat Pump Upgrade	463,739	324,618	57.2	40
Unitary AC	222,993	156,095	58.6	41
Variable Frequency Drives (VFD)	1,164,484	815,138	16.9	11.8
Total	2,352,639	1,646,848	407.9	285.5

5.3.3.2 Key North Carolina Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for North Carolina appear below. Following this summary, Table 5-17 provides performance indicator data for the year. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix B.9, cumulative gross savings are in Appendix C.9 and cumulative net savings are in Appendix D.9.

Table 5-17 provides performance indicator data from January 1, 2019 through December 31, 2020 and shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.8.

- There were no participants in 2020.

- There were no annual kWh or kW savings because there were no participants in 2020.

- Annual program costs in 2020 were $30,873 approximately 25% of planned costs.
- All costs were related to program implementation, EM&V, and other administrative activities to operate the program.

Table 5-17. North Carolina Non-residential Heating and Cooling Efficiency Program Performance Indicators (2020)

Category	Item	2020
Operations and Management Costs ($)	Direct Rebate	[redacted]
	Direct Implementation	
	Direct EM&V	
	Indirect Other (Administrative)	$1,598
Total Costs ($)	Total[110]	$30,873
	Planned	$122,049
	Variance	-$91,176
	Annual % of Planned	25%
Participants	Total (Gross)	0

[110] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Category	Item	2020
	Planned (Gross)	42
	Variance	-42
	Annual % of Planned (Gross)	0%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	0
	Realization Rate Adjustment (100%)	0
	Adjusted Gross Savings	0
	Net-to-Gross Adjustment (70%)	0
	Net Adjusted Savings	0
	Planned Savings (Net)	545,699
	Annual % Toward Planned Savings (Net)	0%
	Avg. Savings per Participant (Gross)	N/A
	Avg. Savings per Participant (Net)	N/A
Installed Demand Reduction (kW)	Total Gross Deemed Demand	0.0
	Realization Rate Adjustment (100%)	0.0
	Adjusted Gross Demand	0.0
	Net-to-Gross Adjustment (70%)	0.0
	Net Adjusted Demand	0.0
	Planned Demand (Net)	129.7
	Annual % Toward Planned Demand (Net)	0.0%
	Avg. Peak Demand per Participant (Gross)	N/A
	Avg. Demand per Participant (Net)	N/A
Program Performance	Annual $Admin. per Participant (Gross)	N/A
	Annual $Admin. per kWh/year (Gross)	N/A
	Annual $Admin. per kW (Gross)	N/A

Category	Item	2020
	Annual $EM&V per Total Costs ($)	14.9%
	Annual $Rebate per Participant (Gross)	N/A

5.3.3.3 Additional Virginia Program Data

Figure 5-39 through Figure 5-44 show the program's participation, gross annualized energy savings, and average annualized energy savings per participant (for participants who installed the measure in the respective year) by measure type and program year.

Note participation in these charts are the count of new unique customers in the "all measures" presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

Economizers were the mostly commonly performed measure in 2020, installed by 63% of participants, as shown in Figure 5-27.

Figure 5-27. Virginia Non-residential Heating and Cooling Efficiency (DSM Phase VII) Participation by Measure and Year

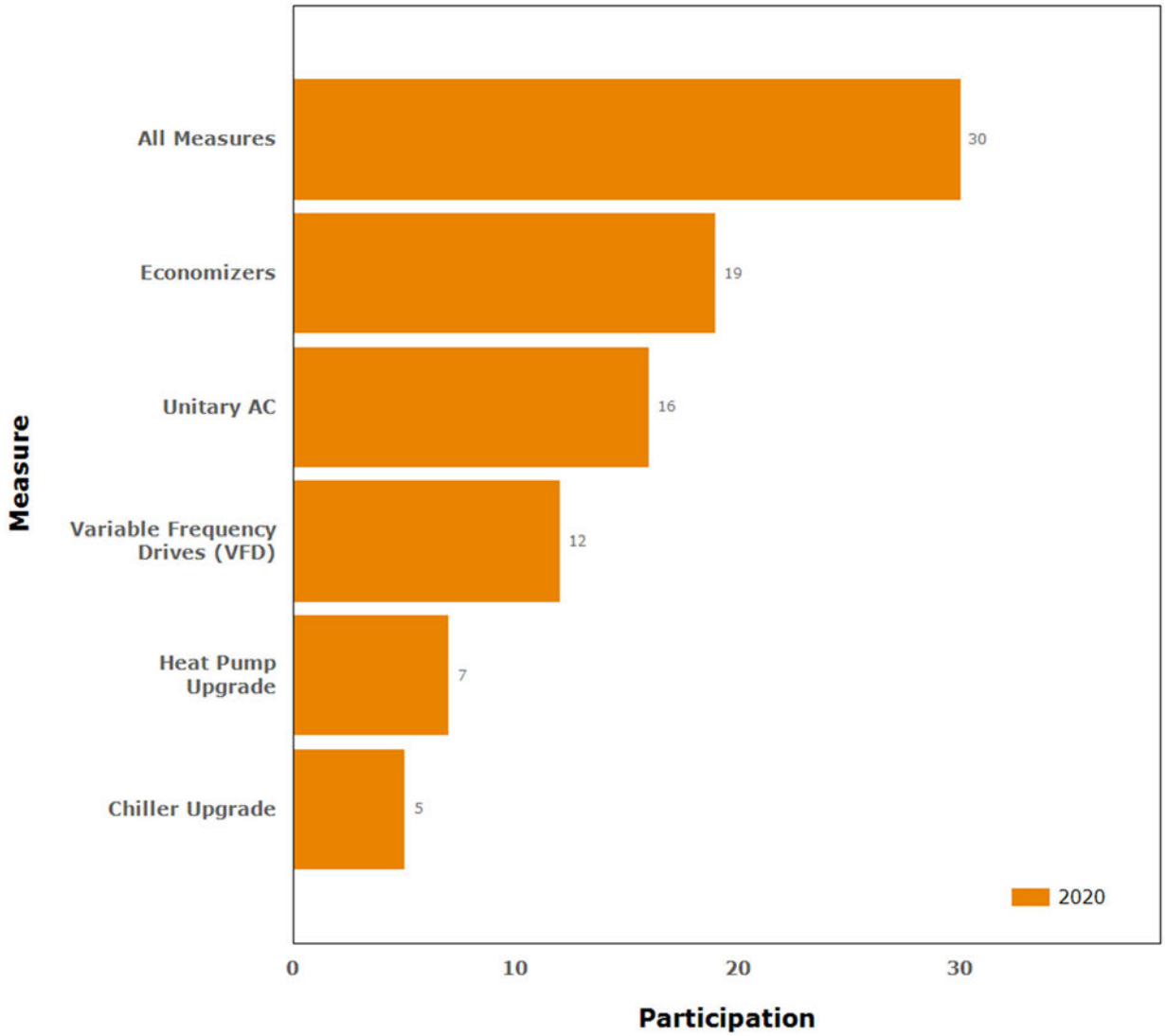
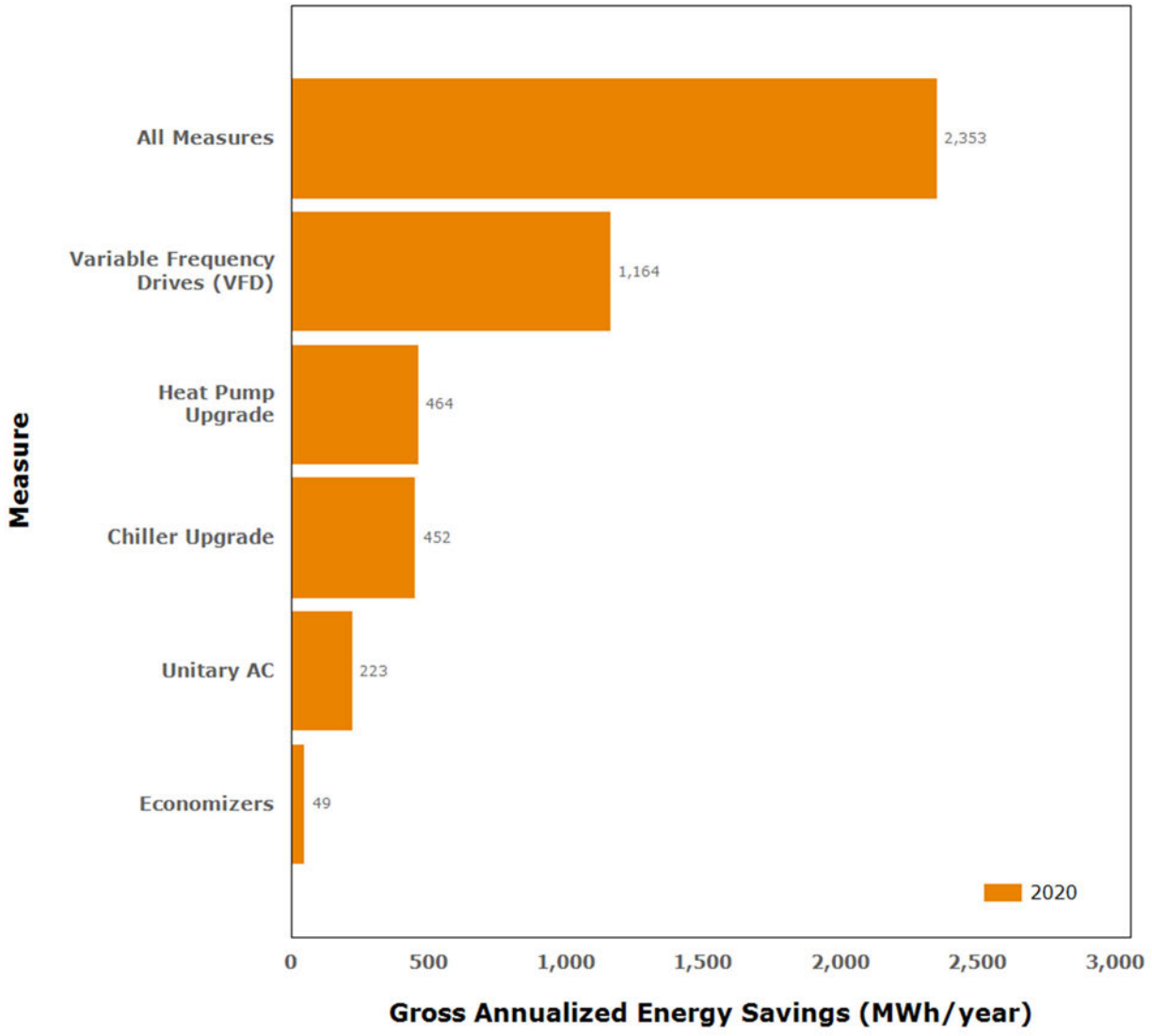


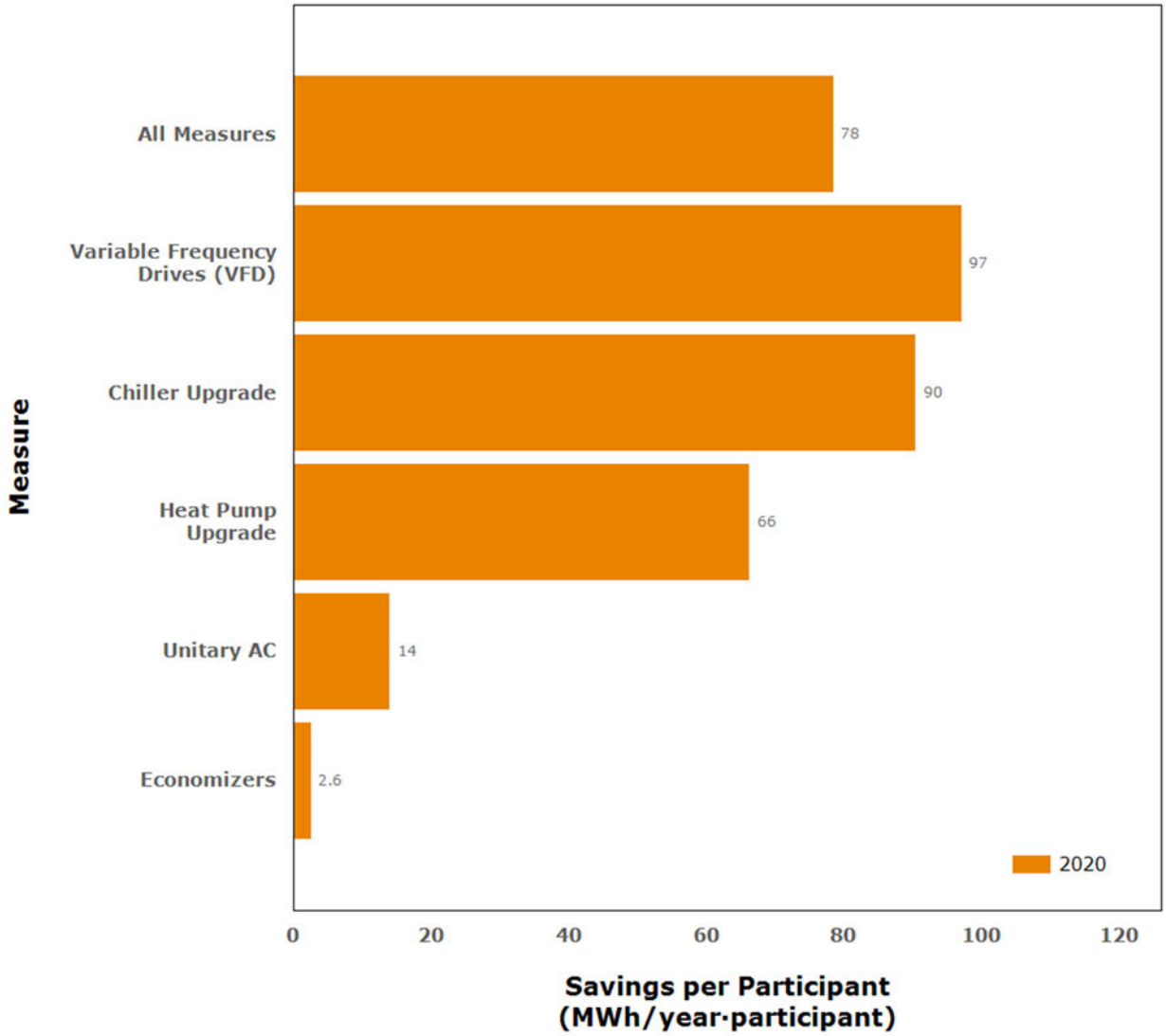
Figure 5-28 shows that Variable Frequency Drives (VFD) were the greatest proportion of gross annualized energy savings, accounting for nearly 50% of savings.

Figure 5-28. Virginia Non-residential Heating and Cooling Efficiency (DSM Phase VII) Gross Annualized Energy Savings (MWh/year) by Measure and Year



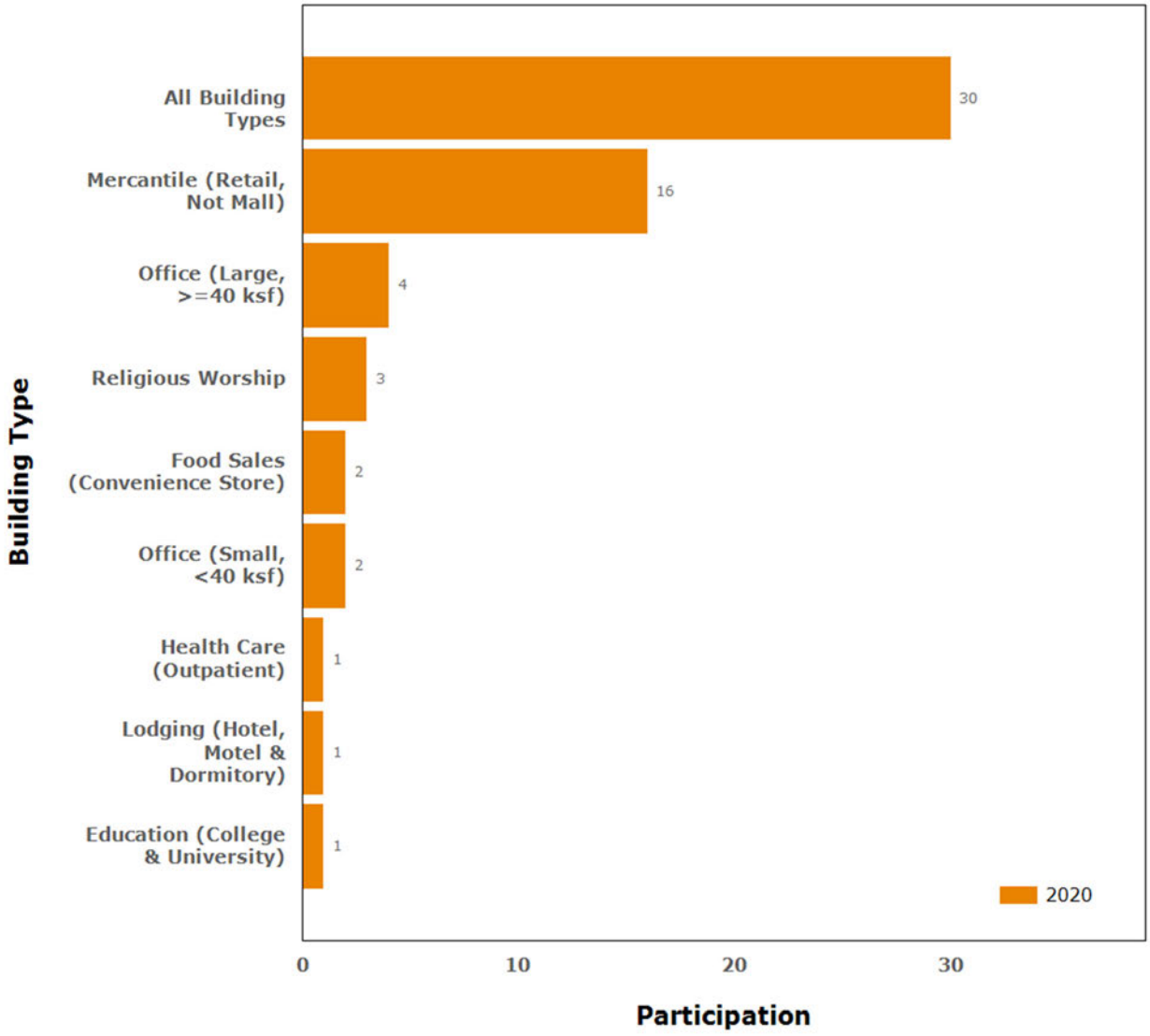
Variable frequency drives (VFDs) had the highest gross energy savings per participant, as shown in Figure 5-29.

Figure 5-29. Virginia Non-residential Heating and Cooling Efficiency (DSM Phase VII) Average Gross Annualized Energy Savings per Participant (MWh/year per participant) by Measure and Year



Mercantile (Retail, Not Mall) were the greatest proportion of participant (53%) in 2020, as shown in Figure 5-30.

Figure 5-30. Virginia Non-residential Heating and Cooling Efficiency (DSM Phase VII)



Office (Large, >= 40,000 square feet [ksf]) accounted for a plurality (49%) of gross annualized savings in 2020, as shown in Figure 5-31.

Figure 5-31. Virginia Non-residential Heating and Cooling Efficiency (DSM Phase VII) Gross Annualized Energy Savings per Participant (MWh/Year per Participant) by Building Type and Year

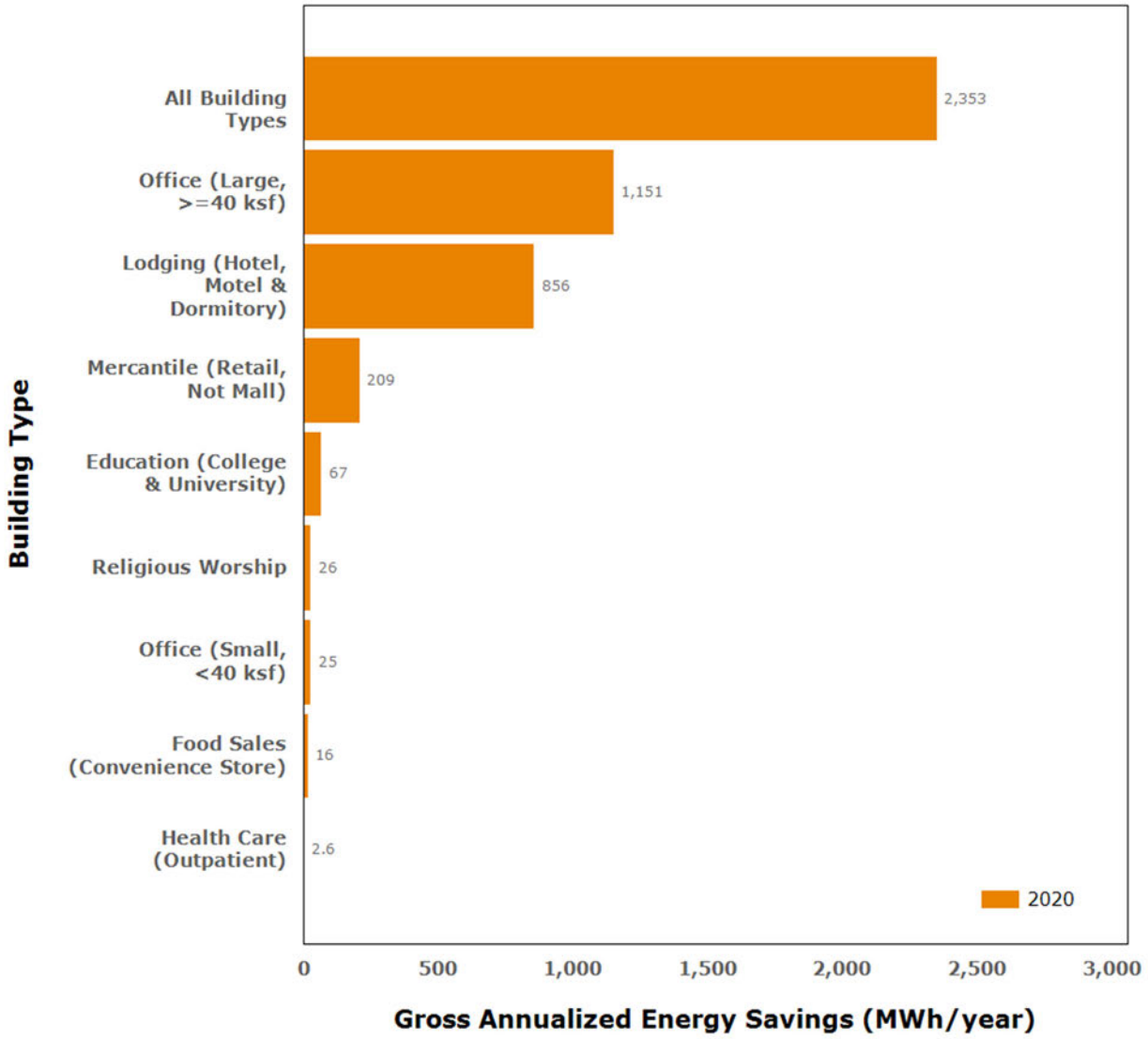
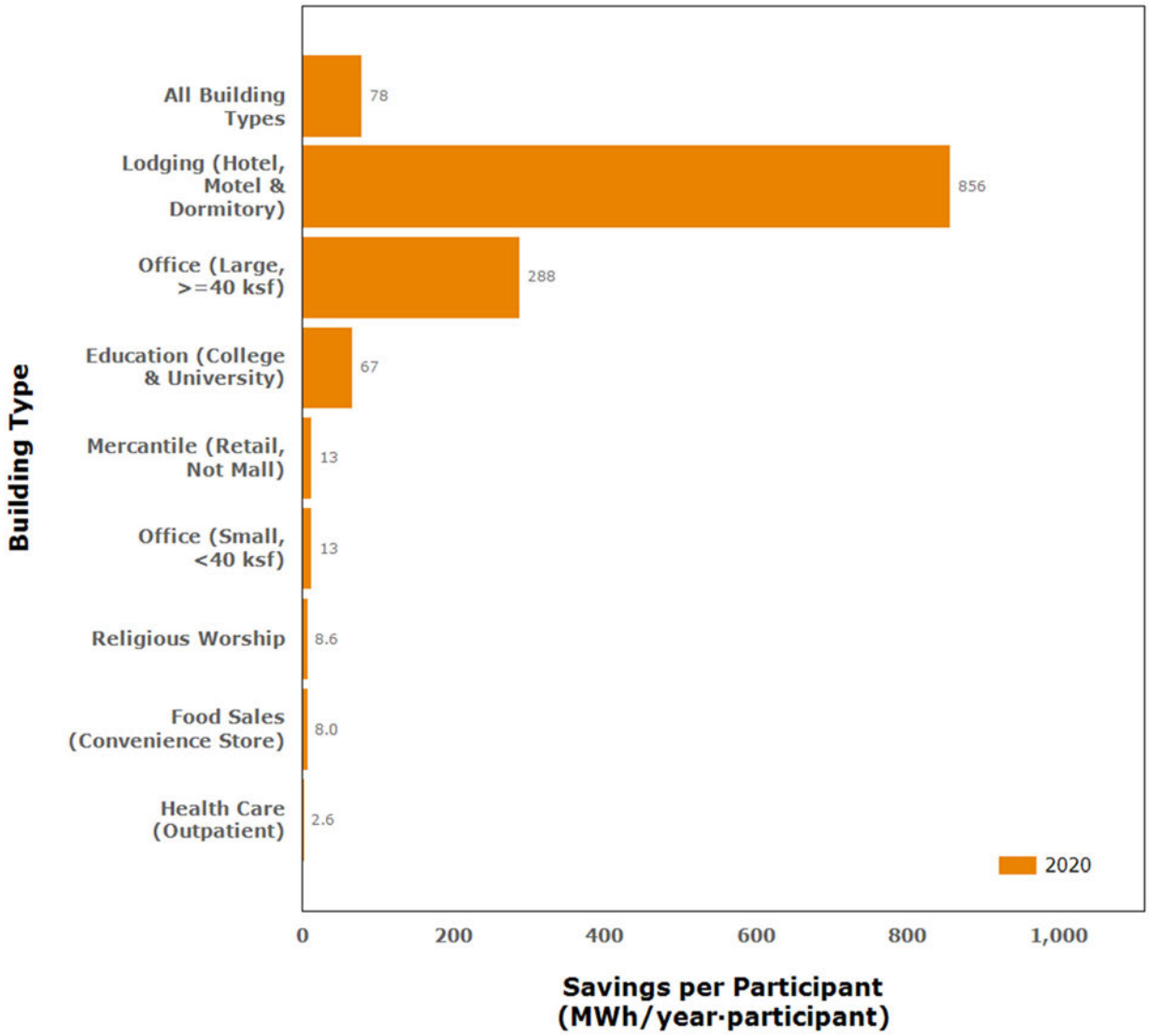


Figure 5-32 shows that Lodging (Hotel, Motel, & Dormitory) buildings saved the most energy per participant in 2020.

Figure 5-32. Virginia Non-residential Heating and Cooling Efficiency (DSM Phase VII) Gross Annualized Energy Savings per Participant (MWh/year-participant) by Building Type and Year



5.3.3.4 Additional North Carolina Program Data

No North Carolina customers have participated in the program through 2020.

5.3.3.5 Comparison of Savings with Usage

See Table 5-18 for a comparison of the 2020 program net adjusted savings in Virginia with the system-wide planned savings for the program, the annual usage for an average rate schedule, and the annual usage for eligible customers in the rate schedule.

Table 5-18. Virginia 2020 Non-residential Heating and Cooling Efficiency (DSM Phase VII) Program Comparison of Savings with Usage by Rate Schedule

Comparisons	Item	Value
Schedule 5C		
Comparison of Savings	Net Systemwide Planned Savings	12,432 kWh/year per participant
	Net Adjusted Savings	6,047 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	49%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[111]	65,115 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	9.3%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule GS-1		
Comparison of Savings	Net Systemwide Planned Savings	12,432 kWh/year per participant
	Net Adjusted Savings	41,188 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	331%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[112]	19,498 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	211.2%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule GS-2		
Comparison of Savings	Net Systemwide Planned Savings	12,432 kWh/year per participant
	Net Adjusted Savings	188,975 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	1520%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[113]	289,108 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	65.4%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule GS-2T		
Comparison of Savings	Net Systemwide Planned Savings	12,432 kWh/year per participant
	Net Adjusted Savings	12,845 kWh/year per participant

[111] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 25, Column E (kWh of Sales Per Customer).

[112] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 27, Column E (kWh of Sales Per Customer).

[113] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304.1, Line 9, Column E (kWh of Sales Per Customer).

Comparisons	Item	Value
	Net Adjusted Savings as Percent of Planned Savings	103%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[114]	483,421 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	2.7%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	

[114] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 28, Column E (kWh of Sales Per Customer).

5.4 Non-residential Window Film – Virginia and North Carolina

Virginia

Case #: PUE-2018-00168

NON-RESIDENTIAL WINDOW FILM

2019-PRESENT
9,105 kWh/yr Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Solar reduction window film

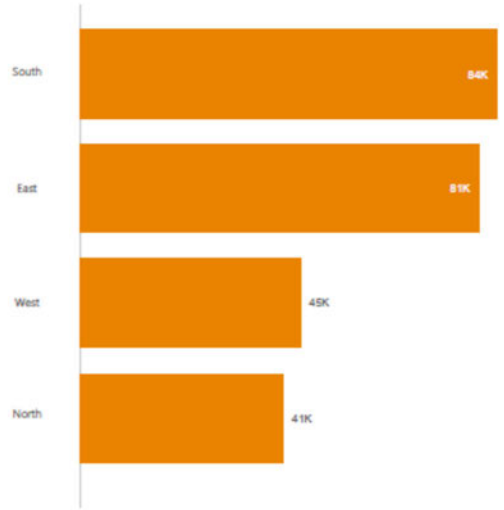
Enrolled **22** customers, **32%** of planned participation

Achieved net annual energy savings of **200,302 kWh/year, 10%** of planned energy savings

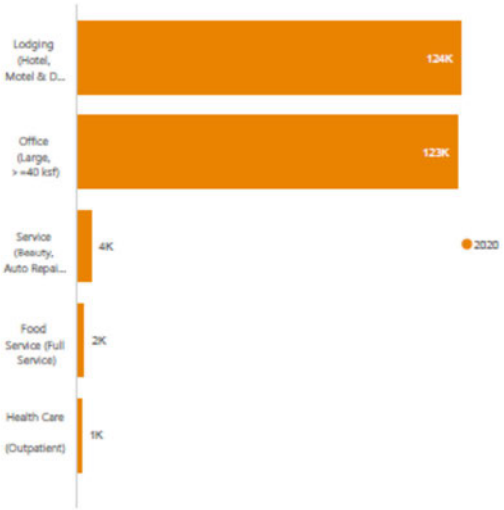
Spent **72%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)				192,146	356,882	549,029
Total Program Participants (#)				0	22	22
Total Gross Incremental Savings (kWh/yr)				0	250,377	
Total Net Incremental Savings (kWh/yr)				0	200,302	
Average Gross Incremental Demand Reduction (kW)				0	78	
Average Net Incremental Demand Reduction (kW)				0	62	
Total Net Lifetime Savings (kWh)				0	124,952	2,003,016
Average Lifetime Demand Reduction (kW)				0	62	62

TOTAL SAVING BY ORIENTATION
IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



DNV

North Carolina

Docket #: E-22 Sub 570

NON-RESIDENTIAL WINDOW FILM

2019-PRESENT
13,944 kWh/yr Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Solar reduction window film

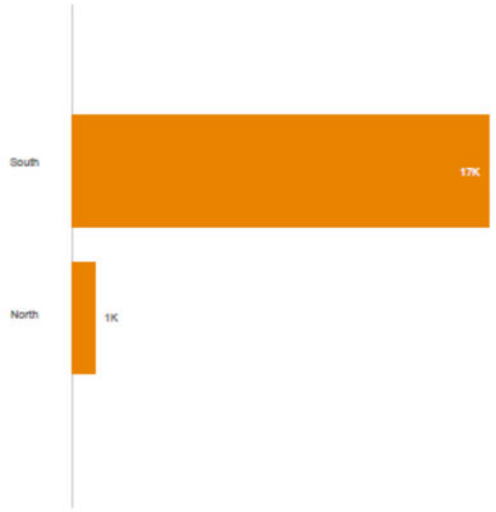
Enrolled **1** customer, **0%** of planned participation

Achieved net annual energy savings of **13,944 kWh/year**, **11%** of planned energy savings

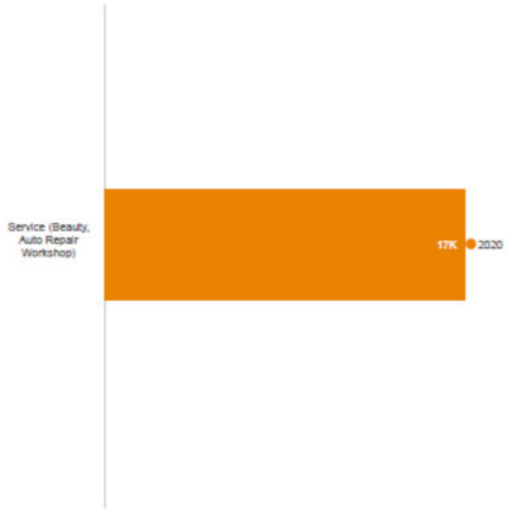
Spent **66%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)					18,804	18,804
Total Program Participants (#)					1	1
Total Gross Incremental Savings (kWh/yr)					17,430	
Total Net Incremental Savings (kWh/yr)					13,944	
Average Gross Incremental Demand Reduction (kW)					5	
Average Net Incremental Demand Reduction (kW)					4	
Total Net Lifetime Savings (kWh)					5,810	139,437
Average Lifetime Demand Reduction (kW)					4	4

TOTAL SAVING BY ORIENTATION
IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



5.4.1 Program Description

The Non-residential Window Film Program provides incentives to qualifying non-residential customers to install solar reduction window film to lower their cooling bills and improve occupant comfort.

This program is implemented through a contractor network, so customers must contact a participating contractor to be eligible for the rebate. All Dominion Energy non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out of participating in energy efficiency programs. Customers who have previously received a rebate for the Non-residential Window Film Program are not eligible to receive another rebate for installing the same measure on the same window.

An initial assessment must be completed and submitted for the following types of projects before the work can be initiated:

- Past participants who have previously received a rebate in the Non-residential Window Film Program
- All projects with an estimated rebate amount of $10,000 or more
- All self-install projects

The Virginia SCC approved this program, as part of the DSM Phase VII programs, on May 2, 2019, (Case No. PUR-2018-00168) for a five-year period of July 1, 2019, through June 30, 2024. The North Carolina Utilities Commission approved this program on November 13, 2019 (Docket No. E-22, SUB 570). Upon approval, the Company worked to finalize data systems, build contractor networks, and finalize implementation details.

2020 was an extraordinary year by all accounts, due to the COVID-19 pandemic. In response to the pandemic, this program was suspended in March for health and safety reasons and resumed on May 15, 2020. Upon it reopening, the implementation vendors set up new health and safety protocols such as requiring contractors to wear personal protective equipment (PPE) against COVID-19, conducting temperature checks, implementing contact tracing (if there is a suspected COVID-19 exposure), social distancing when at the customer site or offer to visit the customer site after hours. Anecdotally, customers were pleased with the implementation contractors' processes.

Also, in response to the pandemic, the Company suspended conventional program marketing approaches during the March through May period. Such marketing efforts include bill inserts and online marketing. Conventional marketing approaches resumed in August. Alternatively, the implementation vendors also increased marketing to customers more directly through one-on-one phone calls to building managers and other customers and to trade organizations.

Table 5- maps the applicable sections in this report to reporting requirements listed in the EM&V Rule section 50, "Standard Requirements for Evaluation, Measurement, and Verification Reporting."[115]

[115] 20 VAC 5-318-50

Table 5-19. Non-residential Window Film Program (DSM Phase VII) Compliance with EM&V Rule Section 50

Subsection within 20 VAC 5-318-50	Location and Description
A. EM&V Plan	APPENDIX BB, EM&V Plan
B. Utilizing utility-specific data or other data	**Per 20 VAC 5-318-40 A and B** 1. See APPENDIX F. STEP Manual v2020 for a description of all data or estimates used as inputs for this program and the measures within it. 2. See the Methodologies section (section 3) of this report for a description of the overarching EM&V methodologies used to report results in this report. **Per 20 VAC 5-318-40 C** 3. See subsections of this report section, and Table 5-21 for measure-level estimates of kilowatt and kilowatt-hour savings, before and after adjustments for free-ridership, as appropriate.
C. Changes to measure-level inputs and assumptions, and inputs to cost/benefit estimates	1. See Table 5-19 for program planning assumptions 2. See documents filed with the Virginia State Corporation Commission Docket PUR-2018-00168 for approved measure-level inputs and assumptions, and the impact of such changes on original cost/benefit estimates for DSM programs or measures.
D. Measure-level data collection methodology	See response to A. and B. above.
E. Explanation of eligibility requirements for each rate schedule that program is offered	See program description above.
F. Comparison of measured annual measure or program savings estimates to the annual usage of the average rate schedule usage, and eligible customer in each rate schedule	See Section 5.4.3.5, Comparison of Savings with Usage
G. Explanation of controls undertaken by utility	See APPENDIX KK

5.4.2 Methods for the Current Reporting Period

DNV developed an EM&V Plan for this program, which is included in APPENDIX BB. For the current period, the approach included reviewing the tracking data.

Table 5-19 outlines Dominion Energy's initial program planning assumptions that were used to design the program. DNV uses the planned NTG factor in its net savings calculations until it can be verified through EM&V.

Table 5-19. Non-residential Window Film Program (Phase VII) Planning Assumptions System-wide

Assumption	Value
Target Market	Non-residential customers
NTG Factor	80%
Measure Life (years)	10
Gross Average Annual Energy Savings per Participant (kWh/year)	16.50
Gross Average Coincident Peak Demand Reduction (kW) per Participant	0
Net Average Annual Energy Savings per Participant (kWh/year)	13
Net Average Coincident Peak Demand Reduction (kW) per Participant	0
Average Rebate per Participant	$1

5.4.3 Assessment of Program Progress towards Plan

The next section describes the program's progress towards planned participants, energy savings, and demand reduction.

5.4.3.1 Key Virginia Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for Virginia appear below. Following this summary, Table 5-20 provides performance indicator data annually and from program inception through 2020. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.21, cumulative gross savings are in Appendix C.11 and cumulative net savings are in Appendix D.11.

- The program officially launched to customer enrollment in 2020. Twenty-two participants enrolled, installing 62,925 square feet of window film. The enrollment was 50% of planned for the year (2020) and 32% of planned cumulatively, at the end of the year.

- The 2020 participants achieved 250,377 kWh/year of gross energy savings, and 200,301 kWh/year of net adjusted savings. The net adjusted savings was 10% of program planned assumptions for 2020.
- On a per square foot basis, the program achieved net adjusted savings of 3 kWh/year-sf, which is 23% of the 13 kWh/year-sf that were anticipated during program design, as shown in Table 5-19.
- The 2020 participants achieved 62.5 kW of gross demand reduction, which was 13% of planned.
- On a per square foot basis, the program achieved net adjusted demand reduction of 2.8 kW/sf, which is larger than the 0 kW/sf that was anticipated during program design, as shown in Table 5-19.

- The Program opened on July 1, 2019, and incurred costs for program launch activities in program year 2019.
- This year, in 2020, the program incurred $356,882, or 80% of planned spending for the year. The program as a whole as spent 72% of the planned budget from 2019 to 2020.
- The spending represents $0.08 per kWh/year gross.
- This program has a larger than typical percentage of EM&V costs at 16% of total program costs. It is likely due to the requirement for fixed costs to conduct EM&V tracking and reporting.

Table 5-20. Virginia Non-residential Window Film Program Performance Indicators (2019-2020)

Category	Item	2019	2020	Program Total (2019-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]		
	Direct Implementation			
	Direct EM&V			
	Indirect Other (Administrative)	$6,494	$19,045	$25,539

Category	Item	2019	2020	Program Total (2019-2020)
Total Costs ($)	Total[116]	$192,146	$356,882	$549,029
	Planned	$317,588	$445,263	$762,851
	Variance	-$125,441	-$88,381	-$213,822
	Annual % of Planned	61%	80%	72%
Participants	Total (Gross)	0	22	22
	Total Square Feet	0	62,925	62,925
	Planned Square Feet (Gross)	68,400	125,871	194,271
	Variance	-68,400	-62,946	-131,346
	Annual % of Planned (Gross)	0%	50%	32%
Square Feet	Total Square Feet	0	62,925	62,925
	North Facing	0	23,874	23,874
	East Facing	0	11,852	11,852
	West Facing	0	3,002	3,002
	South Facing	0	24,197	24,197
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	0	250,377	250,377
	Realization Rate Adjustment (100%)	0	0	0
	Adjusted Gross Savings	0	250,377	250,377
	Net-to-Gross Adjustment (80%)[117]	0	-50,075	-50,075
	Net Adjusted Savings	0	200,302	200,302
	Planned Savings (Net)	170,812	1,910,351	2,081,164
	Annual % Toward Planned Savings (Net)	0.00%	10%	10%
	Avg. Savings per Participant (Gross)	N/A	11,381	11,381
	Avg. Gross Savings Per Square Foot (kWh/year)	N/A	4	4
	Avg. Savings per Participant (Net)	N/A	9,105	9,105
	Avg. Net Savings Per Square Foot (kWh/year)	N/A	3	3
Installed Demand Reduction (kW)	Total Gross Deemed Demand	0.0	78.1	78.1
	Realization Rate Adjustment (100%)	0.0	0.0	0.0
	Adjusted Gross Demand	0.0	78.1	78.1
	Net-to-Gross Adjustment (80%)[118]	0.0	-15.6	-15.6

[116] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

[117] On the rebate application form the program implementation vendor included the question, "Did the rebate incentive offered by Dominion Energy have any influence in your decision to have the work performed?" Of the participants who responded (from program inception to the end of this reporting period), the implementation vendor has calculated that 100% answered yes at the time they filled out the rebate application. This is not a substitute for a net-to-gross analysis conducted by an independent evaluator. See section 3.1.3 Net Savings Estimation for a description of net-to-gross estimation approaches.

[118] Ibid.

Category	Item	2019	2020	Program Total (2019-2020)
	Net Adjusted Demand	0.0	62.5	62.5
	Planned Demand (Net)	0.0	465.7	465.7
	Annual % Toward Planned Demand (Net)	N/A	13.4%	13.4%
	Avg. Peak Demand per Participant (Gross)	N/A	3.5	3.5
	Avg. Gross Demand Reduction Per Square Foot (kW)	N/A	0.00	0.00
	Avg. Demand per Participant (Net)	N/A	2.8	2.8
	Avg. Net Demand Reduction Per Square Foot (kW)	N/A	0.00	0.00
Program Performance	Annual $Admin. per Participant (Gross)	N/A	$866	$1,161
	Annual $Admin. per kWh/year (Gross)	N/A	$0.08	$0.10
	Annual $Admin. per kW (Gross)	N/A	$244	$327
	Annual $EM&V per Total Costs ($)	15%	16.8%	16.3%
	Annual $Rebate per Participant (Gross)	N/A	$2,465	$2,465

Table 5-21 shows the program's gross and net annualized energy savings (kWh/year) and demand reduction (kW/year) by measure, from program inception through close, in Virginia. In this case, a measure is considered a window orientation.

Table 5-21. Virginia Non-residential Window Film (DSM Phase VII) Measure-Level Performance Indicators (2020)

Program	kWh/year		kW	
Non-residential Window Film – Virginia (DSM VII)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	80%	100%	80%
Measure	Gross	Net	Gross	Net
	Gross	Net	Gross	Net
North Face	80.582	64,466	22.2	17.8
East Face	41,054	32,843	13.9	11.2
West Face	84,173	67,339	23.1	18.5
South Face	44,568	35,654	18.7	15
Total	250,377	200,302	78.1	62.5

5.4.3.2 Key North Carolina Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for North Carolina appear below. Following this summary, Table 5-22 provides performance indicator data for the year. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix B.12, cumulative gross savings are in Appendix C.11 and cumulative net savings are in Appendix D.11.

- The program enrolled one participant in North Carolina, who installed 1,004 square feet of window film primarily on the south facing window (750 square feet), and the remainder on the north facing window (254 square feet). This was 0.01% of planned participation.

- The single 2020 participant produced 17,430 kWh/year of gross annualized savings or 13,944 kWh/year of net annualized savings, 11% of net planned savings. This single participant achieved 14 kWh/year-sf, which is 108% of what was initially assumed during program design (13 kWh/year-sf).

- In 2020, the program spent $18,804, or 66% of the program budget for 2020.
- The administrative costs per kWh/year saved was $0.06.
- Similar to the program performance metrics in Virginia, the EM&V spending was larger than typical at 15% of program budget for the year.

Table 5-22. North Carolina Non-residential Window Film Program Performance Indicators (2020)

Category	Item	2020
Operations and Management Costs ($)	Direct Rebate	[redacted]
	Direct Implementation	
	Direct EM&V	
	Indirect Other (Administrative)	$968
Total Costs ($)	Total[119]	$18,804
	Planned	$28,279
	Variance	-$9,475
	Annual % of Planned	66%
Participants	Total (Gross)	1
	Total Square Feet	1,004
	Planned Square Feet (Gross)	8,079
	Variance	-7,075
	Annual % of Planned (Gross)	12%
Square Feet	Total Square Feet	1,004
	North Facing	254
	East Facing	0
	West Facing	0

[119] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Category	Item	2020
	South Facing	750
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	17,430
	Realization Rate Adjustment (100%)	0
	Adjusted Gross Savings	17,430
	Net-to-Gross Adjustment (80%)[120]	-3,486
	Net Adjusted Savings	13,944
	Planned Savings (Net)	122,615
	Annual % Toward Planned Savings (Net)	11%
	Avg. Savings per Participant (Gross)	17,430
	Avg. Gross Savings Per Square Foot (kWh/year)	17
	Avg. Savings per Participant (Net)	13,944
	Avg. Net Savings Per Square Foot (kWh/year)	14
Installed Demand Reduction (kW)	Total Gross Deemed Demand	4.7
	Realization Rate Adjustment (100%)	0.0
	Adjusted Gross Demand	4.7
	Net-to-Gross Adjustment (80%)[121]	-0.9
	Net Adjusted Demand	3.7
	Planned Demand (Net)	29.9
	Annual % Toward Planned Demand (Net)	12.5%
	Avg. Peak Demand per Participant (Gross)	4.7
	Avg. Gross Demand Reduction Per Square Foot (kW)	0.0
	Avg. Demand per Participant (Net)	3.7
	Avg. Net Demand Reduction Per Square Foot (kW)	0.0
Program Performance	Annual $Admin. per Participant (Gross)	$968
	Annual $Admin. per kWh/year (Gross)	$0.06
	Annual $Admin. per kW (Gross)	$208
	Annual $EM&V per Total Costs ($)	15.3%
	Annual $Rebate per Participant (Gross)	$1,004

Table 5-23 shows the program's gross and net annualized energy savings (kWh/year) and demand reduction (kW/year) by measure, from program inception through close, in North Carolina. In this case, a measure is considered a window orientation.

[120] On the rebate application form the program implementation vendor included the question, "Did the rebate incentive offered by Dominion Energy have any influence in your decision to have the work performed?" Of the participants who responded (from program inception to the end of this reporting period), the implementation vendor has calculated that 100% answered yes at the time they filled out the rebate application. This is not a substitute for a net-to-gross analysis conducted by an independent evaluator. See section 3.1.3 Net Savings Estimation for a description of net-to-gross estimation approaches.

[121] Ibid.

Table 5-23. North Carolina Non-residential Window Film (DSM Phase VII) Measure-Level Performance Indicators (2020)

Program	kWh/year		kW	
Non-residential Window Film – North Carolina (DSM VII)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	80%	100%	80%
Measure	**Gross**	**Net**	**Gross**	**Net**
	Gross	Net	Gross	Net
North facing	910	128	0.6	0.5
South facing	16,250	13,216	4	3.2
Total	17,430	13,944	4.7	3.7

5.4.3.3 Additional Virginia Program Data

Figure 5-33 through Figure 5-35 show the program results by window orientation. Customers in 2020 installed window film on all four window orientations. There were more participants who installed window film on the south and east orientations than on north and west facing windows. These were also the two window orientations that produced the highest gross annualized savings overall and at a per square foot level.

Note participation in these charts are the count of new unique customers in the "all measures" presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

Figure 5-33. Virginia Non-residential Window Film Program Participation by Window Orientation and Year

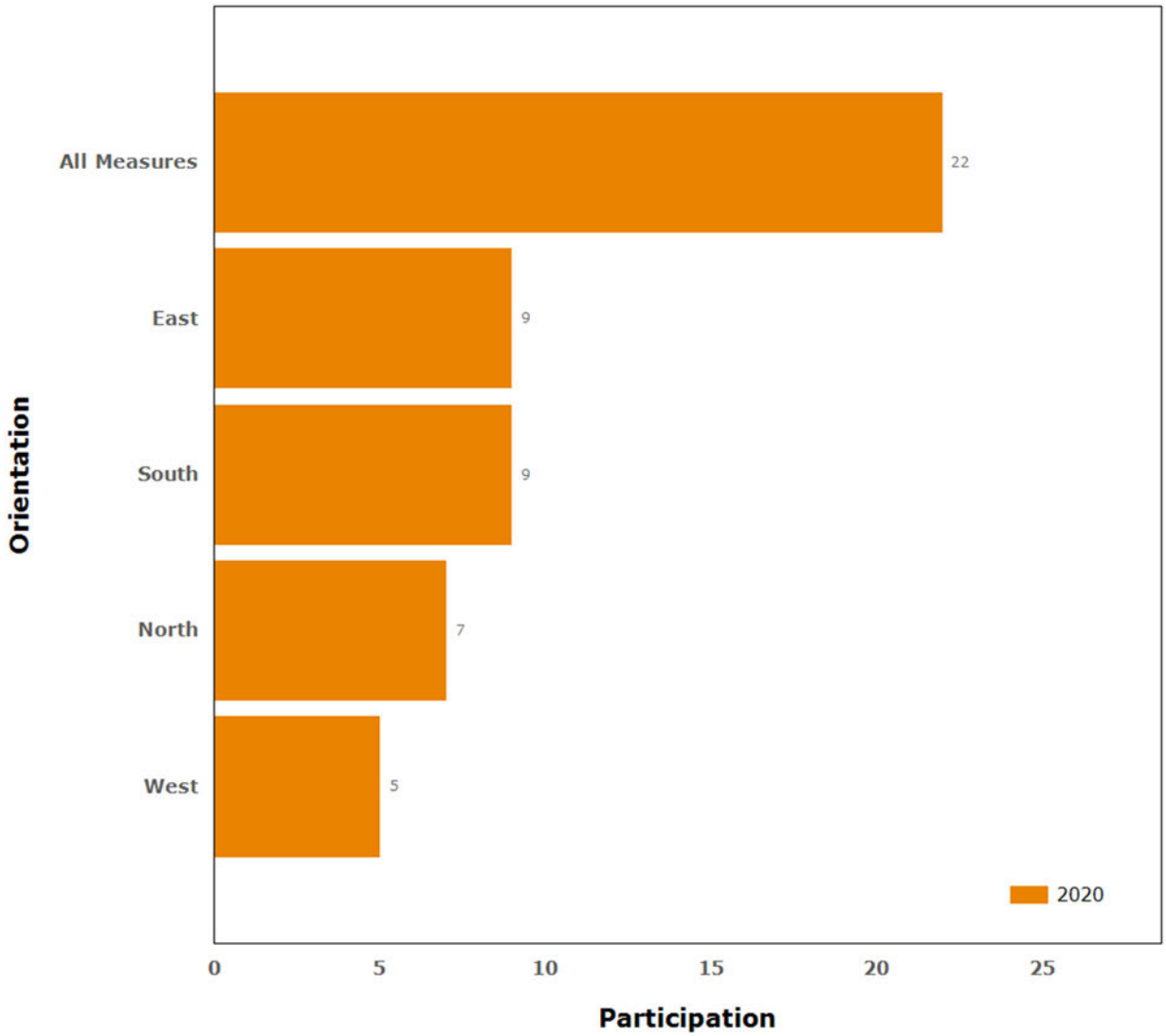


Figure 5-34. Virginia Non-residential Window Film Program Gross Annualized Energy Savings by Window Orientation and Year (MWh/year)

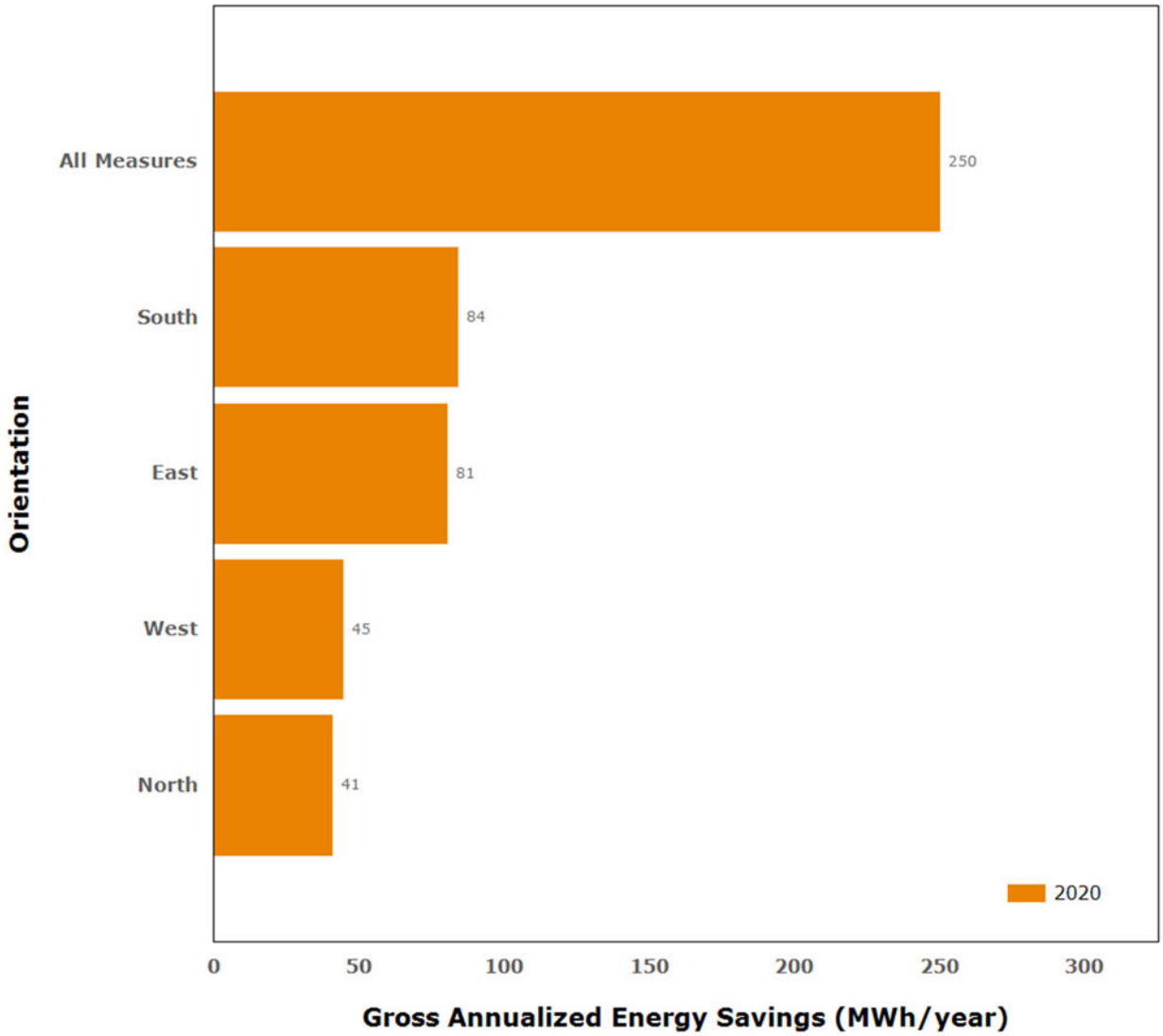


Figure 5-35. Virginia Non-residential Window Film Program Average Gross Annualized Energy Savings per Participant (MWh/year per participant) by Window Orientation and Year

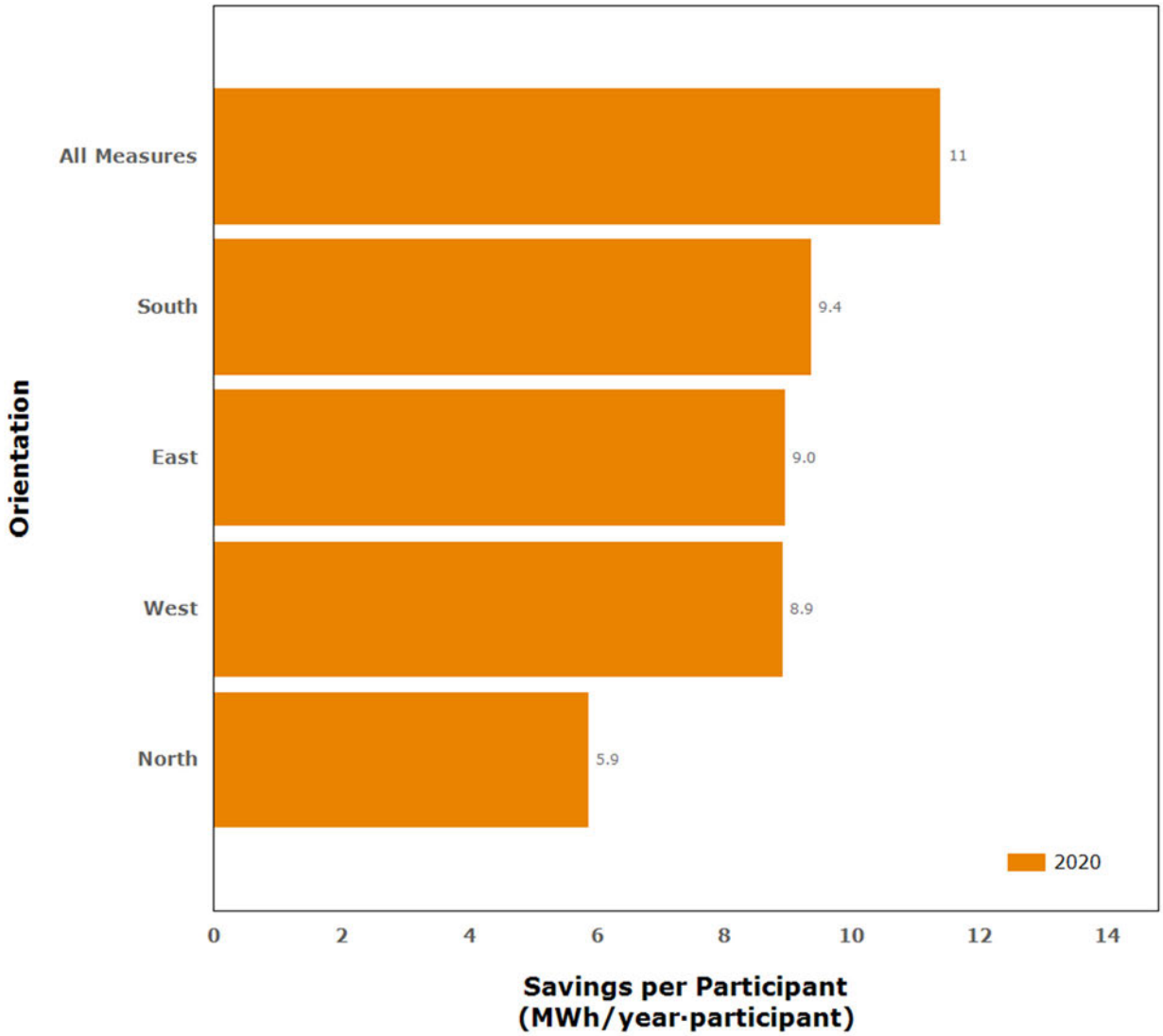


Figure 5-36 through Figure 5-38 show the program results by building type. Even though program participation is highest amongst healthcare (inpatient), service (beauty, auto report, workshop) and health care (outpatient) building types, respectively, they did not all produce the highest savings. The most savings and highest savings per participant were produced by lodging (hotel, motel & dormitory) and large offices (greater than 40,000 square feet).

Figure 5-36. Virginia Non-residential Window Film Program Participation by Building Type and Year

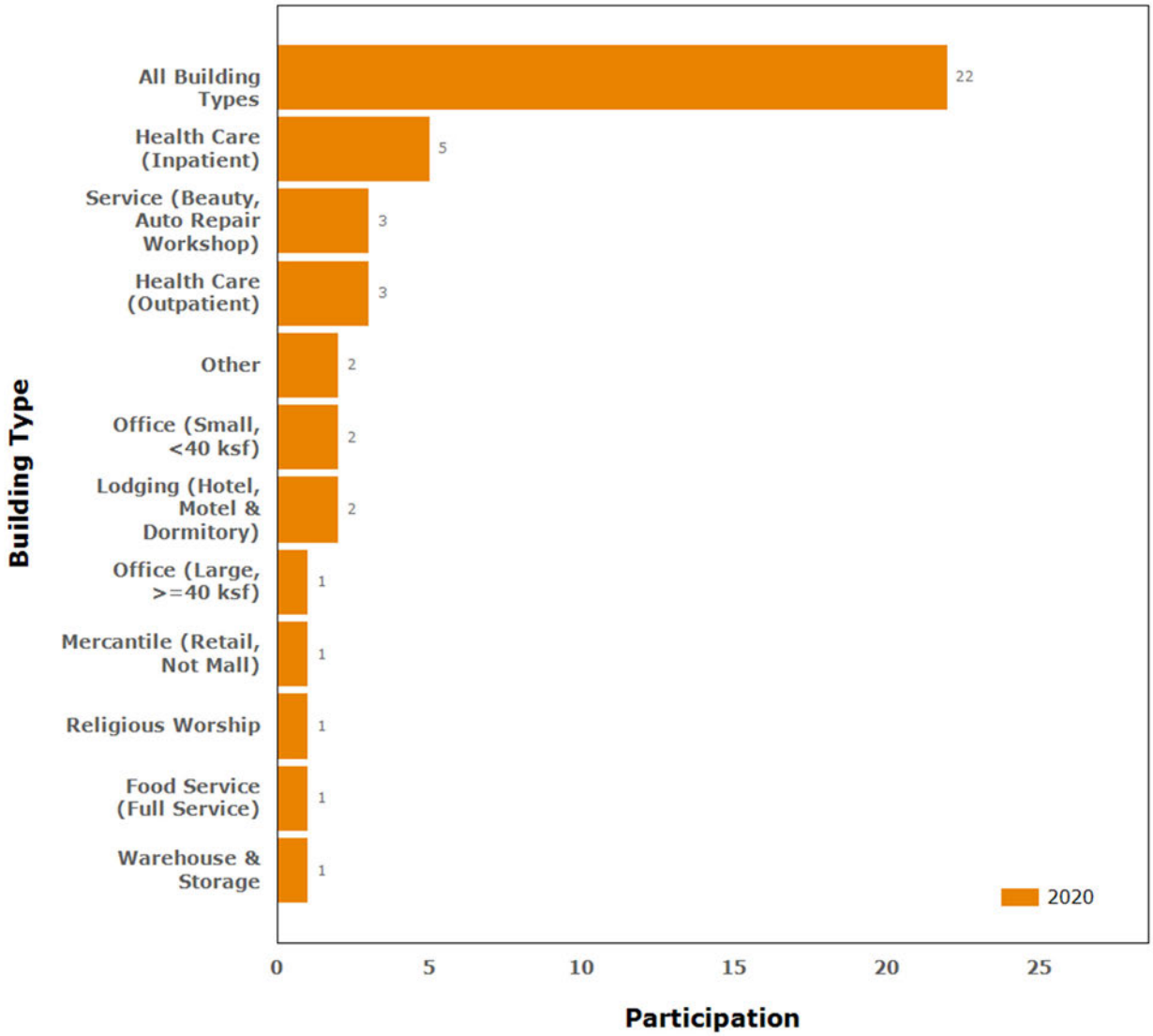


Figure 5-37. Virginia Non-residential Window Film Program Gross Annualized Energy Savings by Building Type and Year (MWh/year)

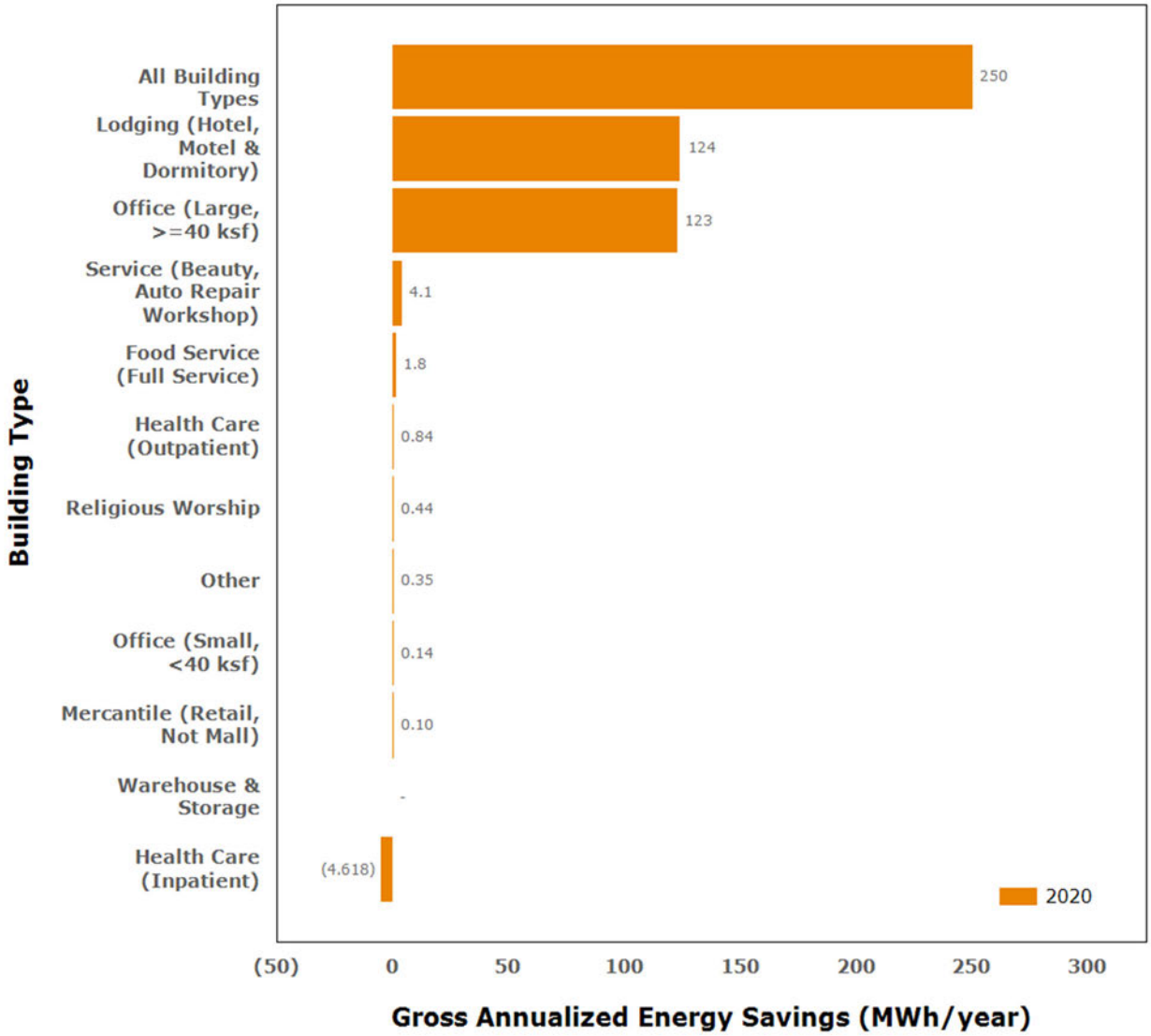
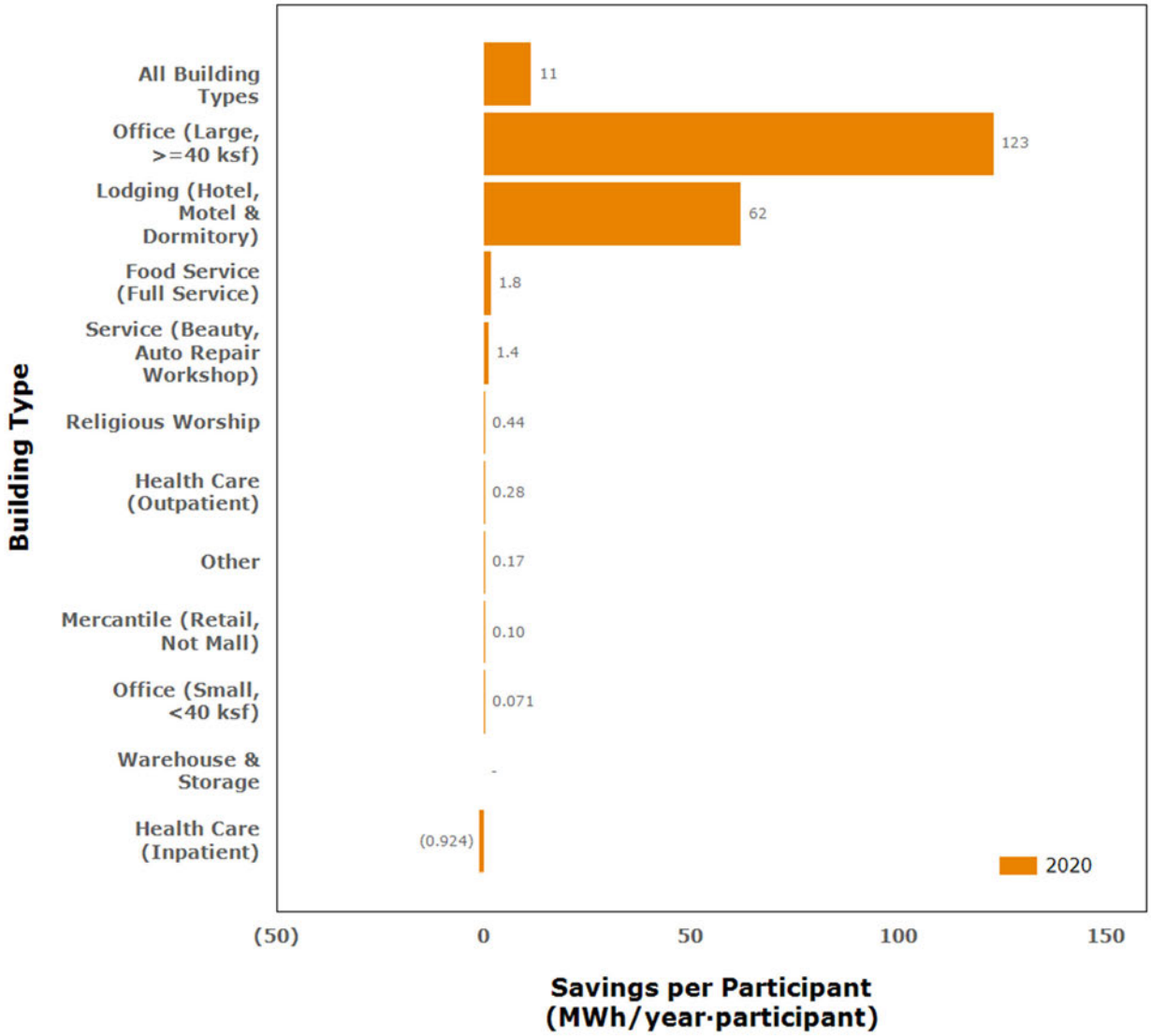


Figure 5-38. Virginia Non-residential Window Film Program Average Gross Annualized Energy Savings per Participant (MWh/year per participant) by Building Type and Year



5.4.3.4 Additional North Carolina Program Data

There was one customer who participated in this program in 2020 in the state of North Carolina. Their building type was service (beauty, auto repair, warehouse), and they installed window film on the south and north facing windows. The majority of the participants savings resulted from the window film applied on the south facing window (750 kWh/year) and a small proportion from the north facing window film (254 kWh/year).

Note participation in these charts are the count of new unique customers in the “all measures” presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they

receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

5.4.3.5 Comparison of Savings with Usage

See Table 5-24 for a comparison of the 2020 program net adjusted savings in Virginia with the system-wide planned savings for the program, the annual usage for an average rate schedule, and the annual usage for eligible customers in the rate schedule.

Table 5-24. Virginia 2020 Non-residential Window Film (DSM Phase VII) Program Comparison of Savings with Usage by Rate Schedule

Comparisons	Item	Value
Schedule GS-1		
Comparison of Savings	Net Systemwide Planned Savings	13 kWh/year per participant
	Net Adjusted Savings	41 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	316%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[122]	19,498 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	0.2%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule GS-2		
Comparison of Savings	Net Systemwide Planned Savings	13 kWh/year per participant
	Net Adjusted Savings	24,966 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	192,045%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[123]	289,108 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	8.6%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	

[122] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 27, Column E (kWh of Sales Per Customer).

[123] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304.1, Line 9, Column E (kWh of Sales Per Customer).

5.5 Non-residential Small Business Improvement – Virginia and North Carolina

Virginia

Case #: PUE-2015-00089

NON-RESIDENTIAL SMALL BUSINESS IMPROVEMENT

2016-PRESENT
20,275 kWh/yr Average Net Savings Per Participant

Eligibility

- All non-residential customers with privately-owned business in ≤ 5 locations that with monthly demand of ≤ 100 kW no more than 3 times in the past year, have not opted out of participation, are responsible for the electric bill and owners of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Direct install lighting
- Variable frequency drives
- Efficient heat pumps
- Efficient air conditioning units
- Prescriptive re-commissioning

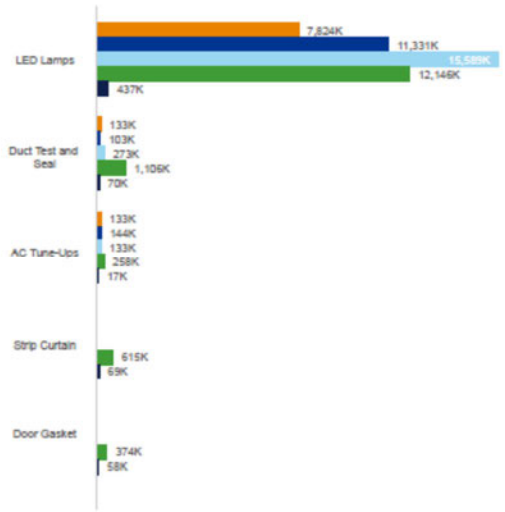
Enrolled **2,344** customers, **64%** of planned participation

Achieved net annual energy savings of **47,524 MWh/year**, **94%** of planned energy savings

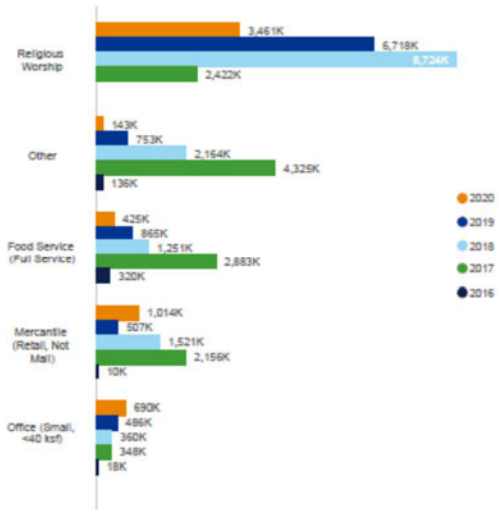
Spent **46%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)	705,139	3,827,332	3,375,566	3,446,135	2,789,194	14,143,366
Total Program Participants (#)	67	937	510	503	327	2,344
Total Gross Incremental Savings (kWh/yr)	656,801	14,699,005	15,996,914	11,648,664	8,097,820	
Total Net Incremental Savings (kWh/yr)	610,825	13,670,074	14,878,990	10,833,258	7,530,972	
Average Gross Incremental Demand Reduction (kW)	132	3,098	3,476	2,554	1,623	
Average Net Incremental Demand Reduction (kW)	122	2,881	3,232	2,375	1,510	
Total Net Lifetime Savings (kWh)	68,256	7,471,590	30,421,359	65,609,192	109,741,884	665,337,678
Average Lifetime Demand Reduction (kW)	122	3,004	6,236	8,611	10,120	10,120

TOTAL SAVING BY MEASURE TYPE
TOP 5 IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



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North Carolina

Docket #: E-22 Sub 538

NON-RESIDENTIAL SMALL BUSINESS IMPROVEMENT

2017-PRESENT
23,978 kWh/yr Average Net Savings Per Participant

Eligibility

- All non-residential customers with privately-owned business in ≤ 5 locations that with monthly demand of ≤ 100 kW no more than 3 times in the past year, have not opted out of participation, are responsible for the electric bill and owners of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Direct install lighting
- Variable frequency drives
- Efficient heat pumps
- Efficient air conditioning units
- Prescriptive re-commissioning

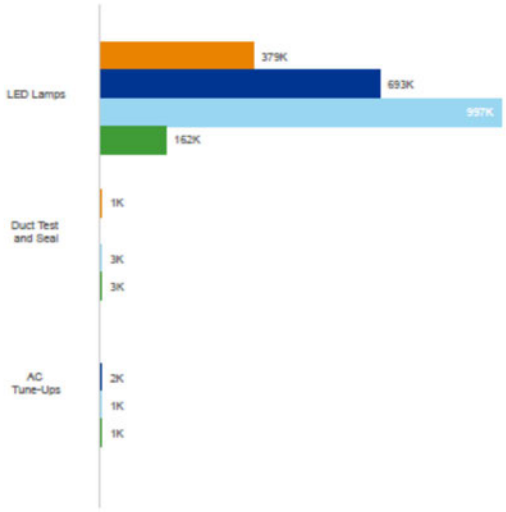
Enrolled **87** customers, **38%** of planned participation

Achieved net annual energy savings of **2,086 MWh/year**, 63% of planned energy savings

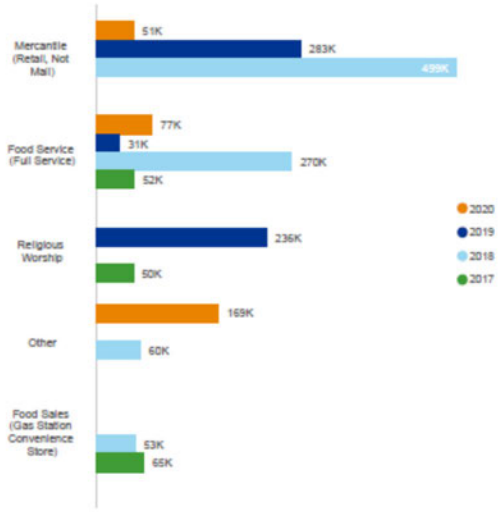
Spent **31%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)	0	98,352	180,923	156,020	125,394	
Total Program Participants (#)	0	7	36	27	17	
Total Gross Incremental Savings (kWh/yr)	0	166,507	1,000,716	695,521	380,315	
Total Net Incremental Savings (kWh/yr)	0	154,851	930,665	646,835	353,693	
Average Gross Incremental Demand Reduction (kW)	0	33	219	140	50	
Average Net Incremental Demand Reduction (kW)	0	30	204	130	47	
Total Net Lifetime Savings (kWh)	0	39,109	654,867	2,154,378	4,166,669	
Average Lifetime Demand Reduction (kW)	0	30	234	365	411	

TOTAL SAVING BY MEASURE TYPE
ALL IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



5.5.1 Program Description

In the Non-residential Small Business Improvement Program, qualifying customers are eligible to receive an on-site energy assessment, or audit, by a participating contractor in Dominion Energy's Small Business contractor network. Eligible participants are non-residential customers with privately-owned businesses in five or fewer locations and have not exceeded monthly demand of 100 kilowatts more than three times in the past 12 months. The customer must be responsible for the electric bill and must be the owner of the facility or reasonably able to secure permission to complete the measures.

The program became available to customers in the Company's Virginia service territory in 2016. The program was approved in Virginia on April 19, 2016, in Case No. PUE-2015-00089. On October 26, 2016, the program was approved for implementation in North Carolina in Docket E-22, Sub 538 and launched in 2017.

After an energy assessment, the customer receives a personalized report showing the projected energy and cost savings anticipated from the implementation of energy efficiency measure options identified during the audit. Once a qualifying customer provides documentation that at least one of the recommended energy efficiency improvements have been made, a portion of the audit value is be refunded—based on the measures installed—up to the full value of the audit.

Since the program is implemented through a contractor network, customers must contact a participating contractor to receive the energy audit. Customers are not considered participants until a completed application form is processed and a rebate issued. Work must be completed within six months of the audit to qualify for a rebate.

The program measures are primarily energy efficiency measures designed to decrease energy consumption through replacement of less efficient equipment, installation of new equipment that exceeds current code efficiency standards or recommissioning of existing equipment. Measures eligible to receive a rebate through the program are shown in Table 5-25.

As a result of the Virginia SCC's June 2017 Final Order, refrigeration measures were no longer deemed eligible for a program incentive. These measures were later approved in the Company's Non-residential Prescriptive Program.

2020 was the last year that this version (DSM Phase V) of the Small Business Improvement Program was open to enrollment. In 2021, the next iteration of this program, the Small Business Improvement Enhanced Program (DSM Phase VIII) will be available to customers. It was approved in Virginia on July 30, 2020, in Case No. PUR-2019-00201.

2020 was an extraordinary year by all accounts, because of the COVID-19 pandemic. In response to the pandemic, this program was suspended in March for health and safety reasons and resumed on May 15, 2020. Upon it reopening, the implementation vendors set up new health and safety protocols such as requiring contractors to wear personal protective equipment ("PPE") against COVID-19, conducting temperature checks, implementing contact tracing (if there is a suspected COVID-19 exposure), social distancing when at the customer site or offer to visit the customer site after hours. Anecdotally, customers were pleased with the implementation contractor's processes.

Also, in response to the pandemic, the company suspended conventional program marketing approaches during the March through May period. Such marketing efforts to include bill inserts and online marketing. Conventional marketing approaches resumed in August. Alternatively, the implementation vendors also increased marketing to customers more directly through one-on-one phone calls to building managers and other customers and to trade organizations.

Table 5-25. Measures Offered Through Small Business Improvement Program

End-Use	Measure
Lighting	T5/T8 Fluorescent Lamp/Ballast
	LED Lamp/Fixture
	CFL Lamp/Fixture
	De-lamping
Refrigeration[124]	Door Gasket (cooler and freezer)
	Door Closer (cooler and freezer)
	Strip Curtain (cooler and freezer)
	Night Cover
HVAC	Unitary/Split AC & HP Upgrade
	Mini-split Heat Pump
	Dual Enthalpy Air-side Economizer
	Variable Frequency Drive
	Programmable Thermostat
HVAC, recommissioning	Duct Testing & Sealing
	Unitary/Split AC & HP Tune-up
	Refrigerant Charge Correction
Other, recommissioning	Compressed Air Leak Repair

5.5.2 Methods for the Current Reporting Period

For the current period, the approach included reviewing the tracking data, then estimating gross energy and demand savings using STEP Manual calculations.

Table 5-26 outlines Dominion Energy's initial program planning assumptions used to design the program. DNV uses the planned NTG factor in its net savings calculations for the program measures that have not yet been verified through EM&V.

Table 5-26. Non-residential Small Business Improvement Program (Phase V) Planning Assumptions System-wide

Assumption	Value
Target Market	Non-residential, small business customers
NTG Factor	93%
Measure Life (years)	14
Gross Annual Energy Savings per Participant (kWh/year)	17,717
Net Average Annual Energy Savings per Participant (kWh/year)	16,477
Gross Average Peak Demand Reduction (kW) per Participant	5.1
Net Average Peak Demand Reduction (kW) per Participant	4.7
Average Rebate (US$) per Participant	$6,304

5.5.3 Assessment of Program Progress towards Plan

The next subsections describe the program's progress towards planned participants, energy savings, and demand reduction.

[124] As of June 1, 2017, refrigeration measures ceased to be offered through this program as a result of the ruling in Virginia SCC Case No. PUE-2016-00111 issued and effective on the same date.

5.5.3.1 Key Virginia Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for Virginia appear below. Following this summary, Table 5-27 provides performance indicator data annually and from program inception through 2020. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.15, cumulative gross savings are in Appendix C.7 and cumulative net savings are in Appendix D.7.

- The program enrolled 327 participants in 2020, approximately 30% of planned participation.
- Cumulatively, from program inception through 2020, the program has enrolled a total of 2,344 participants, approximately 65% of planned participation.

- The program achieved net annual energy savings of 7,530,972 kWh in 2020, approximately 26% of planned savings.
- Cumulatively, from program inception through 2020, the program achieved net annual energy savings of 47,524,120 kWh/year, approximately 94% of planned savings.
- Average net annual energy savings per participant was 23,030 kWh/year, approximately 140% of planned savings per participant from Table 5-26.
- The program achieved a net demand reduction of 1,510 kW in 2020, approximately 27% of planned reduction from Table 5-26.
- Cumulatively, from program inception through 2020, the program achieved net demand reduction of 10,121 kW, approximately 106% of planned savings.
- Average net demand reduction per participant was 4.6 kW, approximately 98% of planned reduction per participant.

- Total annual program costs were approximately 32% of planned costs in 2020.
- Total program costs, from program inception through 2020, have been approximately 46% of planned costs.

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Table 5-27. Virginia Non-residential Small Business Improvement Program Performance Indicators (2016-2020)

Category	Item	2016[125]	2017	2018	2019	2020	Program Total (2016-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]					
	Direct Implementation						
	Direct EM&V						
	Indirect Other (Administrative)	$21,431	$150,600	$190,612	$162,502	$146,422	$671,567
Total Costs ($)	Total[126]	$705,139	$3,827,332	$3,375,566	$3,446,135	$2,789,194	$14,143,366
	Planned	$2,306,687	$5,322,647	$6,548,890	$7,784,513	$8,769,684	$30,732,422
	Variance	-$1,601,548	-$1,495,315	-$3,173,324	-$4,338,378	-$5,980,489	-$16,589,056
	Annual % of Planned	31%	72%	52%	44%	31.8%	46.0%
Participants	Total (Gross)	67	937	510	503	327	2,344
	Planned (Gross)	216	635	780	928	1075	3,634
	Variance	-149	302	-270	-425	-748	-1,290
	Annual % of Planned (Gross)	31%	148%	65%	54%	30.4%	64.5%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	656,801	14,699,005	15,998,914	11,648,664	8,097,820	51,101,204
	Realization Rate Adjustment (100%)	0	0	0	0	0	0
	Adjusted Gross Savings	656,801	14,699,005	15,998,914	11,648,664	8,097,820	51,101,204
	Net-to-Gross Adjustment (93%)[127]	-45,976	-1,028,930	-1,119,924	-815,407	-566,847	-3,577,084

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

[125] The 2016 total gross deemed savings values reported in this table differ from values in the May 1, 2017 EM&V report and have been refiled with the Commission. The adjustments totalled -171,768 kWh/year and 3 kW for 2016 reported savings. The adjustments account for corrections to STEP Manual version 7.0.0 issued on May 1, 2017, in section 15. The adjustment was to waste heat factors (WHFe and WHFd) applied to lighting fixtures installed in 2016, where the program participant building HVAC systems were assumed to be heat pump heating and cooling systems, rather than the previous assumption of AC cool and non-electric heat systems. This adjustment was made in response to requests by the North Carolina Public Staff Utilities Commission Re: Docket No. E-22, Sub 545, on October 23, 2017. It is reflected in STEP Manual version 8.0.0 in this EM&V report.

[126] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

[127] On the rebate application form the program implementation vendor included the question, "Did the rebate incentive offered by Dominion Energy have any influence in your decision to have the work performed?" Of the participants who responded (from program inception to the end of this reporting period), the implementation vendor has calculated that 100% answered yes at the time they filled out the rebate application. This is not a substitute for a net-to-gross analysis conducted by an independent evaluator. See section 3.1 3 Net Savings Estimation for a description of net-to-gross estimation approaches.

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Category	Item	2016[125]	2017	2018	2019	2020	Program Total (2016-2020)
	Net Adjusted Savings	610,825	13,670,074	14,878,990	10,833,258	7,530,972	47,524,120
	Planned Savings (Net)	1,255,549	4,323,476	5,760,927	9,774,740	29,581,410	50,696,102
	Annual % Toward Planned Savings (Net)	49%	316%	258%	110.8%	25.5%	93.7%
	Avg. Savings per Participant (Gross)	9,803	15,687	31,370	23,158	24,764	21,801
	Avg. Savings per Participant (Net)	9,117	14,589	29,174	21,537	23,030	20,275
Installed Demand Reduction (kW)	Total Gross Deemed Demand	131.5	3,098.0	3,475.7	2,553.5	1,623.5	10,882.3
	Realization Rate Adjustment (100%)	0.0	0.0	0.0	0.0	0.0	0.0
	Adjusted Gross Demand	131.5	3,098.0	3,475.7	2,553.5	1,623.5	10,882.3
	Net-to-Gross Adjustment (93%)[128]	-9.2	-216.9	-243.3	-178.7	-1e13.6	-761.8
	Net Adjusted Demand	122.3	2,881.2	3,232.4	2,374.8	1,509.8	10,120.5
	Planned Demand (Net)	308.0	660.7	1,135.0	1,930.3	5,545.5	9,579.6
	Annual % Toward Planned Reduction (Net)	40%	436%	285%	123.0%	27.2%	105.6%
	Avg. Demand per Participant (Gross)	2.0	3.3	6.8	5.1	5.0	4.6
	Avg. Demand per Participant (Net)	1.8	3.1	6.3	4.7	4.6	4.3
Program Performance	Annual $Admin. per Participant (Gross)	$320	$161	$374	$323	$448	$287
	Annual $Admin. per kWh/year (Gross)	$0.03	$0.01	$0.01	$0.01	$0.02	$0.01
	Annual $Admin. per kW (Gross)	$163	$49	$55	$64	$90.19	$62
	Annual $EM&V per Total Costs ($)	6.5%	2.9%	3.3%	2.2%	4.1%	3%
	Annual $Rebate per Participant (Gross)	$1,364	$2,686	$4,180	$4,510	$4,813	$3,662

Table 5- shows the program's gross and net annualized energy savings (kWh/year) and demand reduction (kW/year) by measure, from program inception to close, in Virginia.

Table 5-29. Virginia Non-residential Small Business Improvement (DSM Phase V) Measure-Level Performance Indicators (2016-2020)

[128] Ibid.

DNV

Program	kWh/year		kW	
Non-residential Small Business Improvement – Virginia (DSM V)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	93%	100%	93%
Measure	Gross	Net	Gross	Net
	Gross	Net	Gross	Net
AC Tune-Ups	685,607	637,614	499.6	464.6
Door Closer	38,035	35,373	4.3	4
Door Gasket	432,590	402,309	50.6	47
Duct Test and Seal	1,685,930	1,567,915	596.4	554.7
Economizers	1,352	1,257	0	0
Heat Pump Upgrade	190	176	0.08	0.08
LED Lamps	47,326,974	44,014,085	9,641.5	8,966.7
Night Cover	162,902	151,499	0	0
Occupancy Sensors	23,691	22,032	2.9	2.7
Programmable Thermostats	5,827	5,419	0	0
Refrigerant Charge Adjustment (AC-HP)	80	74	0.04	0.04
Strip Curtain	683,569	635,719	78	72.5
T8/T5 Lamps	31,015	28,844	7.9	7.3
Variable Frequency Drivers (VFD)	23,442	21,801	0.8	0.8
Total	51,101,204	47,524,120	10,882.3	10,120.5

5.5.3.2 Key North Carolina Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for North Carolina appear below. Following this summary, Table 5-28 provides performance indicator data annually and from program inception through 2020. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix B.7, cumulative gross savings are in Appendix C.7 and cumulative net savings are in Appendix D.7

- The program enrolled 17 participants in 2020, approximately 24% of planned participation.
- Cumulatively, from program inception through 2020, the program has enrolled a total of 87 participants, approximately 38% of planned participation.

- The program achieved net annual energy savings of 353,693 kWh/year in 2020, approximately 18% of planned savings.
- Average net annual energy savings per participant was 20,805 kWh/year, approximately 76% of planned savings per participant from Table 5-26.
- Cumulatively, from program inception through 2020, the program achieved net annual energy savings of 2,086,045 kWh/year, approximately 63% of planned savings.
- The program achieved a net demand reduction of 46.9 kW in 2020, approximately 13% of planned reduction.
- Average net demand reduction per participant was 2.8 kW, approximately 54% of planned reduction per participant from Table 5-26.
- Cumulatively, from program inception through 2020, the program achieved net demand reduction of 412 kW, approximately 67% of planned.

- Total annual program costs were approximately 23% of planned costs in 2019.
- Total program costs, from program inception through 2020, have been approximately 31% of planned costs.

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Table 5-28. North Carolina Non-residential Small Business Improvement Program Performance Indicators (2017–2020)

Category	Item	2017	2018	2019	2020	Program Total (2017–2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]				
	Direct Implementation					
	Direct EM&V					
	Indirect Other (Administrative)	$3,870	$10,216	$7,730	$6,786	$28,602
Total Costs ($)	Total[129]	$98,352	$180,923	$156,020	$125,394	$560,690
	Planned	$350,873	$420,342	$498,047	$556,969	$1,826,231
	Variance	-$252,521	-$239,419	-$342,027	-$431,575	-$1,265,541
	Annual % of Planned	28%	43%	31%	22.5%	30.7%
Participants	Total (Gross)	7	36	27	17	87
	Planned (Gross)	42	53	62	72	229
	Variance	-35	-17	-35	-55	-142
	Annual % of Planned (Gross)	17%	68%	44%	23.6%	38.0%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	166,507	1,000,716	695,521	380,315	2,243,059
	Realization Rate Adjustment (100%)	0	0	0	0	0
	Adjusted Gross Savings	166,507	1,000,716	695,521	380,315	2,243,059
	Net-to-Gross Adjustment (93%)[130]	-11,655	-70,050	-48,686	-26,622	-157,014
	Net Adjusted Savings	154,851	930,665	646,835	353,693	2,086,045
	Planned Savings (Net)	288,232	384,890	653,054	1,976,344	3,302,520
	Annual % Toward Planned Savings (Net)	54%	242%	99%	17.9%	63.2%
	Avg. Savings per Participant (Gross)	23,787	27,798	25,760	22,371	25,782

[129] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

[130] On the rebate application form the program implementation vendor included the question, "Did the rebate incentive offered by Dominion Energy have any influence in your decision to have the work performed?" Of the participants who responded (from program inception to the end of this reporting period), the implementation vendor has calculated that 100% answered yes at the time they filled out the rebate application. This is not a substitute for a net-to-gross analysis conducted by an independent evaluator. See section 3.1 3 Net Savings Estimation for a description of net-to-gross estimation approaches.

DNV

Category	Item	2017	2018	2019	2020	Program Total (2017–2020)
	Avg. Savings per Participant (Net)	22,122	25,852	23,957	20,805	23,978
Installed Demand Reduction (kW)	Total Gross Deemed Demand	32.6	219.1	140.2	50.5	442.4
	Realization Rate Adjustment (100%)	0.0	0.0	0.0	0.0	0.0
	Adjusted Gross Demand	32.6	219.1	140.2	50.5	442.4
	Net-to-Gross Adjustment (93%)[131]	-2.3	-15.3	-9.8	-3.5	-31.0
	Net Adjusted Demand	30.3	203.8	130.4	46.9	411.5
	Planned Demand (Net)	43.7	76.0	129.0	370.5	619.2
	Annual % Toward Planned Demand (Net)	69%	268%	101.1%	12.7%	66.5%
	Avg. Demand per Participant (Gross)	4.7	6.1	5.2	3.0	5.1
	Avg. Demand per Participant (Net)	4.3	5.7	4.8	2.8	4.7
Program Performance	Annual $Admin. per Participant (Gross)	$553	$284	$286	$399	$329
	Annual $Admin. per kWh/year (Gross)	$0.02	$0.01	$0.01	$0.02	$0.01
	Annual $Admin. per kW (Gross)	$119	$47	$55	$134	$65
	Annual $EM&V per Total Costs ($)	7.4%	3.9%	3.1%	5.8%	4.7%
	Annual $Rebate per Participant (Gross)	$3,778	$2,791	$3,050	$3,089	$3,009

[131] Ibid.

Table 5-29 shows the program's gross and net annualized energy savings (kWh/year) and demand reduction (kW/year) by measure, from program inception to close, in North Carolina.

Table 5-29. North Carolina Non-residential Small Business Improvement (DSM Phase V) Measure-Level Performance Indicators (2017-2020)

Program	kWh/year		kW	
Non-residential Small Business Improvement – North Carolina (DSM V)	Realization Rate	Net-to-Gross	Realization Rate	kW
	100%	93%	100%	93%
Measure	Gross	Net	Gross	Net
	Gross	Net	Gross	Net
AC Tune-Ups	4202	3907	2.8	2.6
Duct Test and Seal	7612	7079	4	3.7
LED Lamps	2,231,245	2,075,058	435.6	405.1
Total	2,243,059	2,086,045	442.4	411.5

5.5.3.3 Additional Virginia Program Data

This subsection provides a series of charts to show the program performance over the life of the program in Virginia, by year, by measure type and by building type. Note that program implementation did not begin until July 1, 2016.

Note participation in these charts are the count of new unique customers in the “all measures” presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

In Figure 5-39, it can be seen that LED lamps, AC tune-ups, and duct test and seal measures were the most frequently installed measures by participants in 2020, continuing a trend that begun in 2018. As previously indicated, refrigeration measures were discontinued midway through 2017.

Figure 5-39. Virginia Non-residential Small Business Improvement Program Participation by Measure and Year

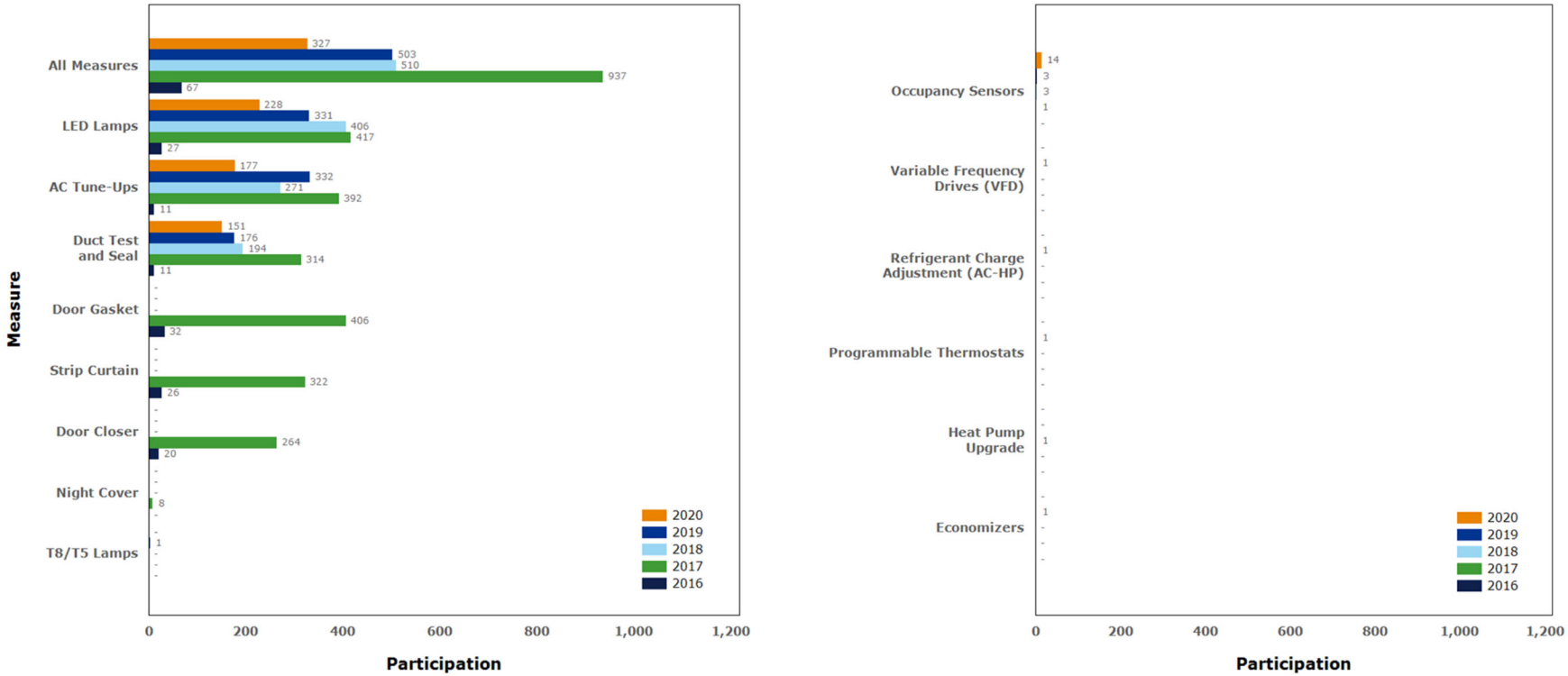
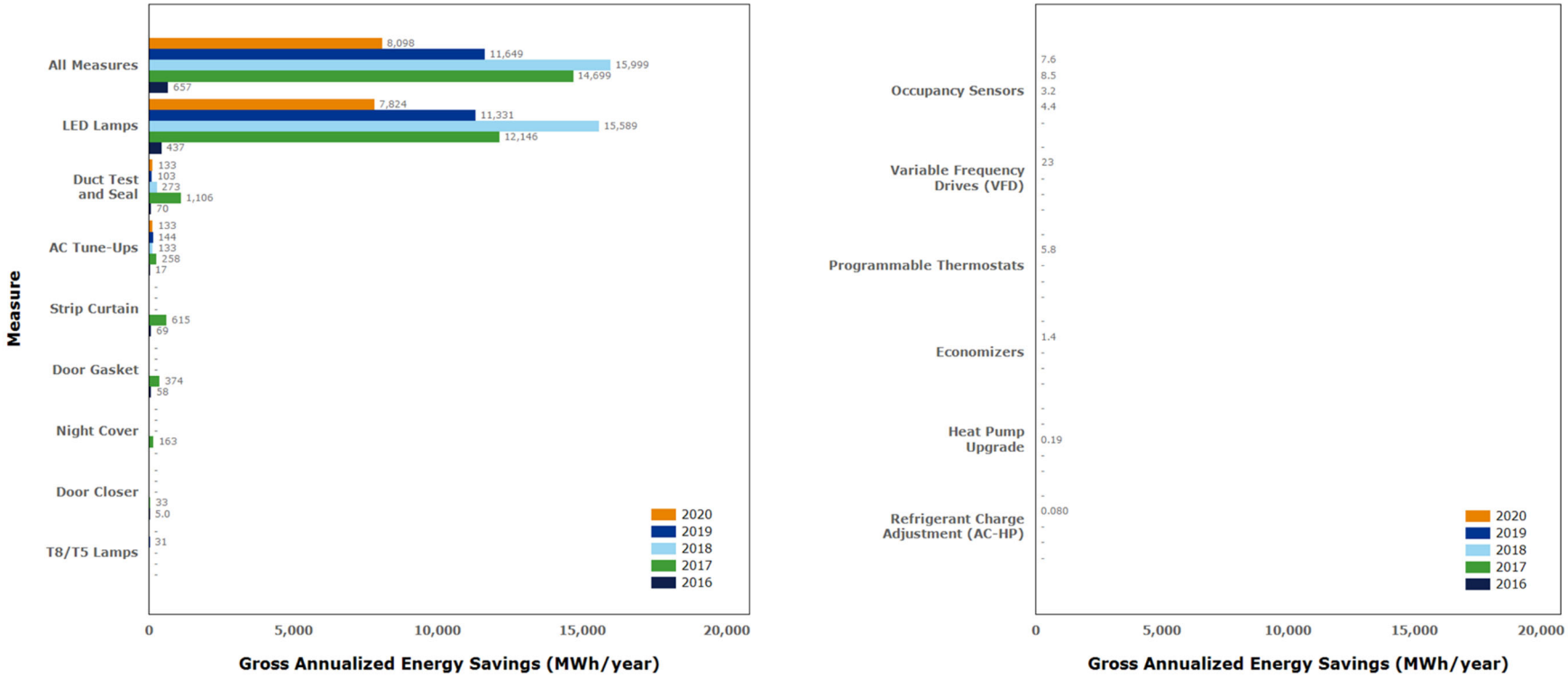


Figure 5-40 shows that LED lamps accounted for the vast majority of 2020 energy savings.

Figure 5-40. Virginia Non-residential Small Business Improvement Program Gross Annualized Energy Savings (MWh/year) by Measure and Year



In Figure 5-41, the average energy savings per participant (gross annualized) are shown for each measure category, by year and cumulatively. In 2020 and cumulatively, LED lamps have yielded the highest average savings per participant.

Figure 5-41. Virginia Non-residential Small Business Improvement Program Average Gross Annualized Energy Savings per Participant (MWh/year-participant) by Measure

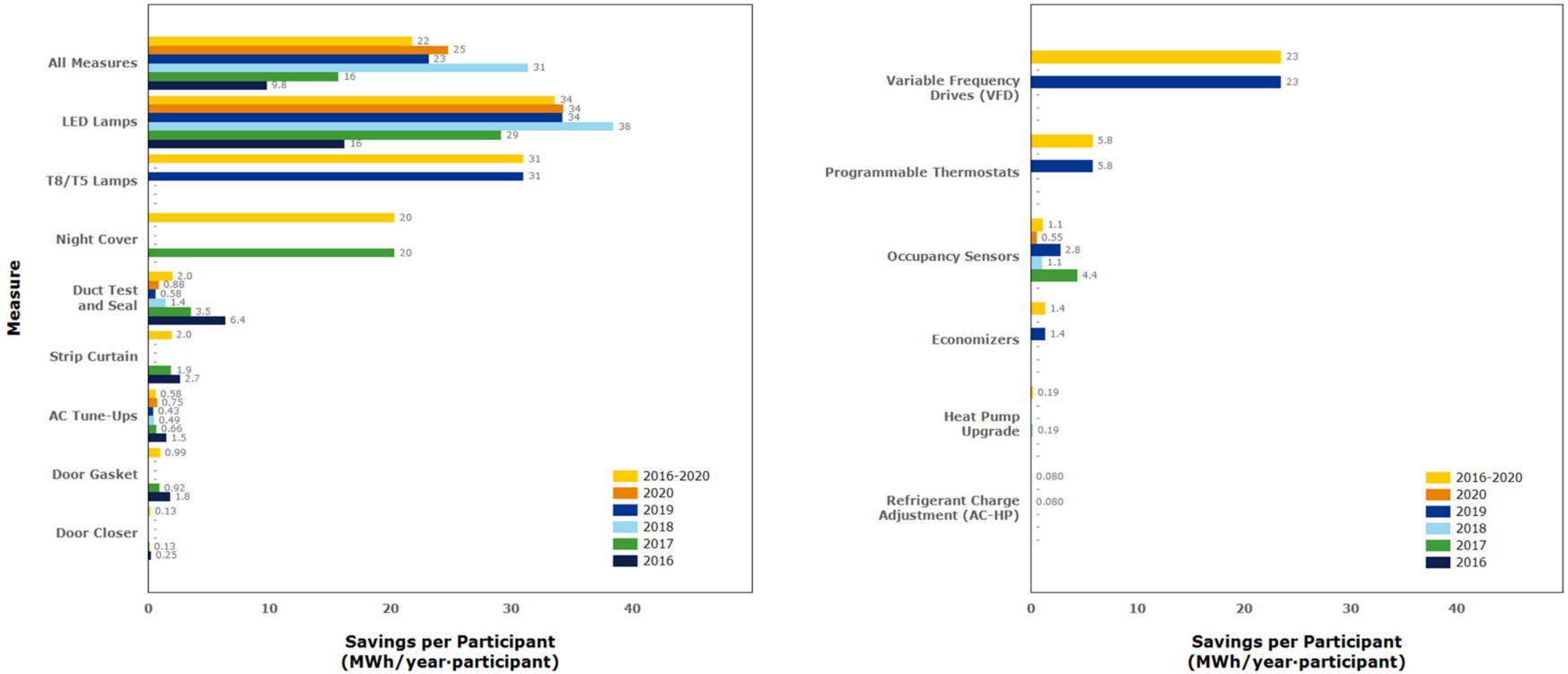


Figure 5-42 shows the participant building types by year and cumulatively for all program years. A participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

In 2020, religious worship buildings participated most frequently in the program, accounting for 76 participants, approximately 23% of participants for the year. Religious worship and food service (full service) enrolled the most participants since program inception both are approximately 20% of total program participants.

Figure 5-42. Virginia Non-residential Small Business Improvement Program Participation by Building Type and Year

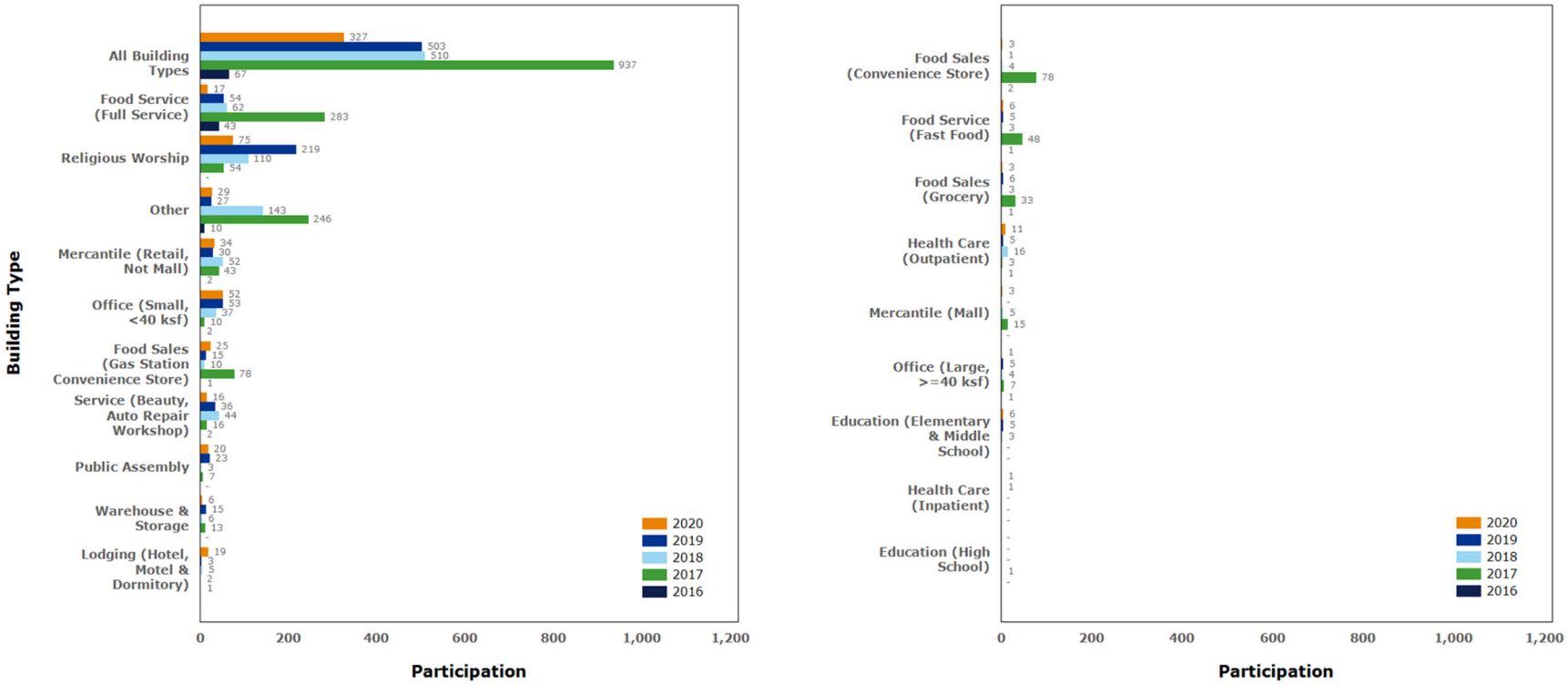
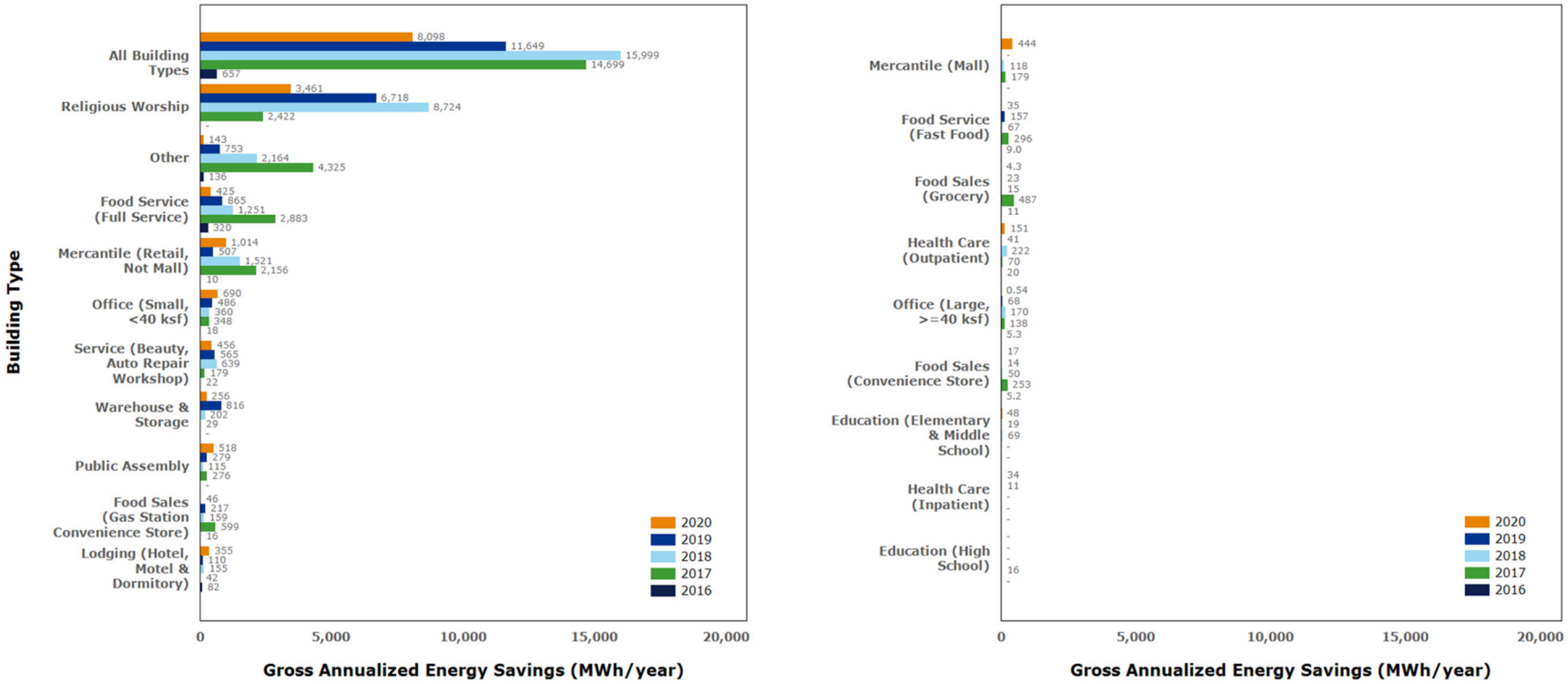


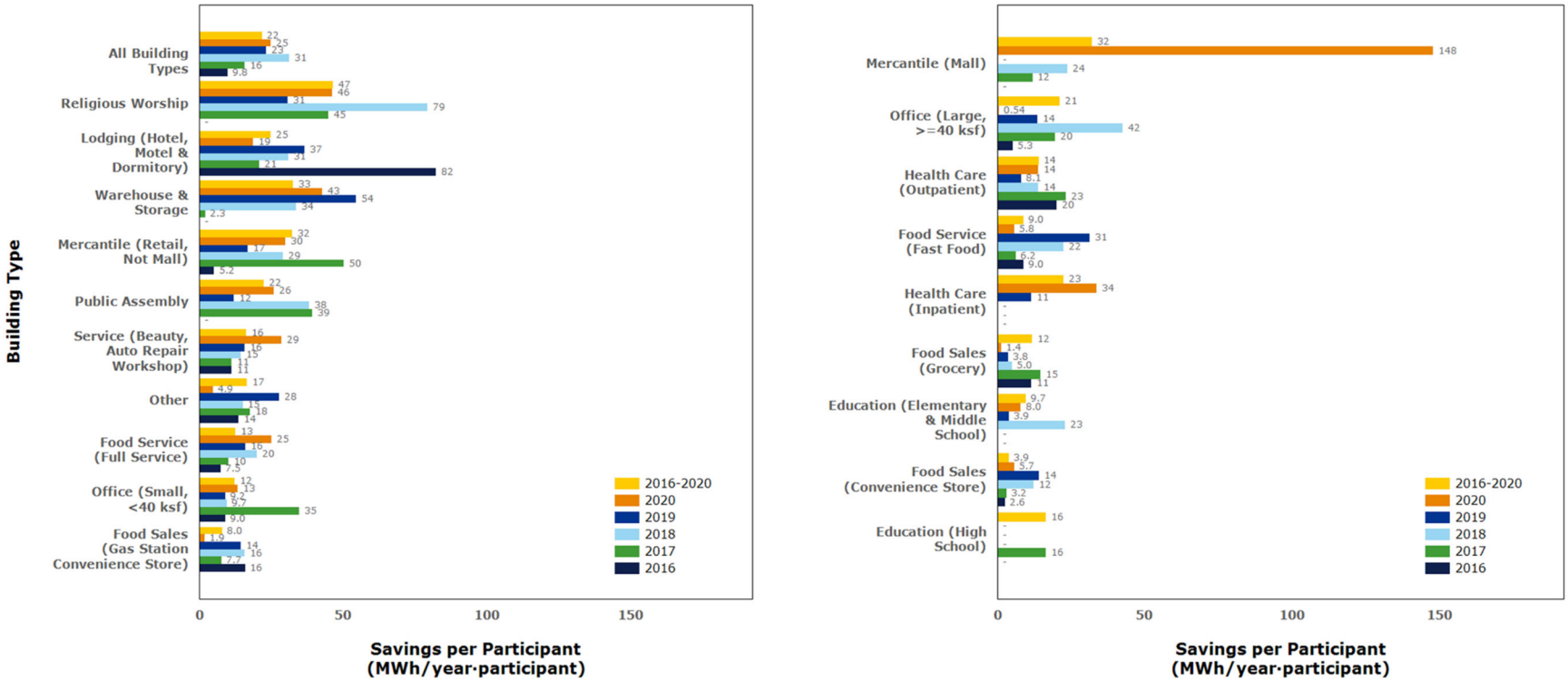
Figure 5-43 shows that religious worship buildings contributed the most gross annual energy savings in 2020 and cumulatively for the life of the program.

Figure 5-43. Virginia Non-residential Small Business Improvement Program Gross Annualized Energy Savings (MWh/year) by Building Type and Year



In 2020, mercantile (mall) buildings had the highest average energy savings per participant, as shown in Figure 5-44. Cumulatively, over the life of the program, religious worship buildings had the highest savings per participant.

Figure 5-44. Virginia Non-residential Small Business Improvement Program Average Gross Annualized Energy Savings per Participant (MWh/year-participant) by Building Type and Year



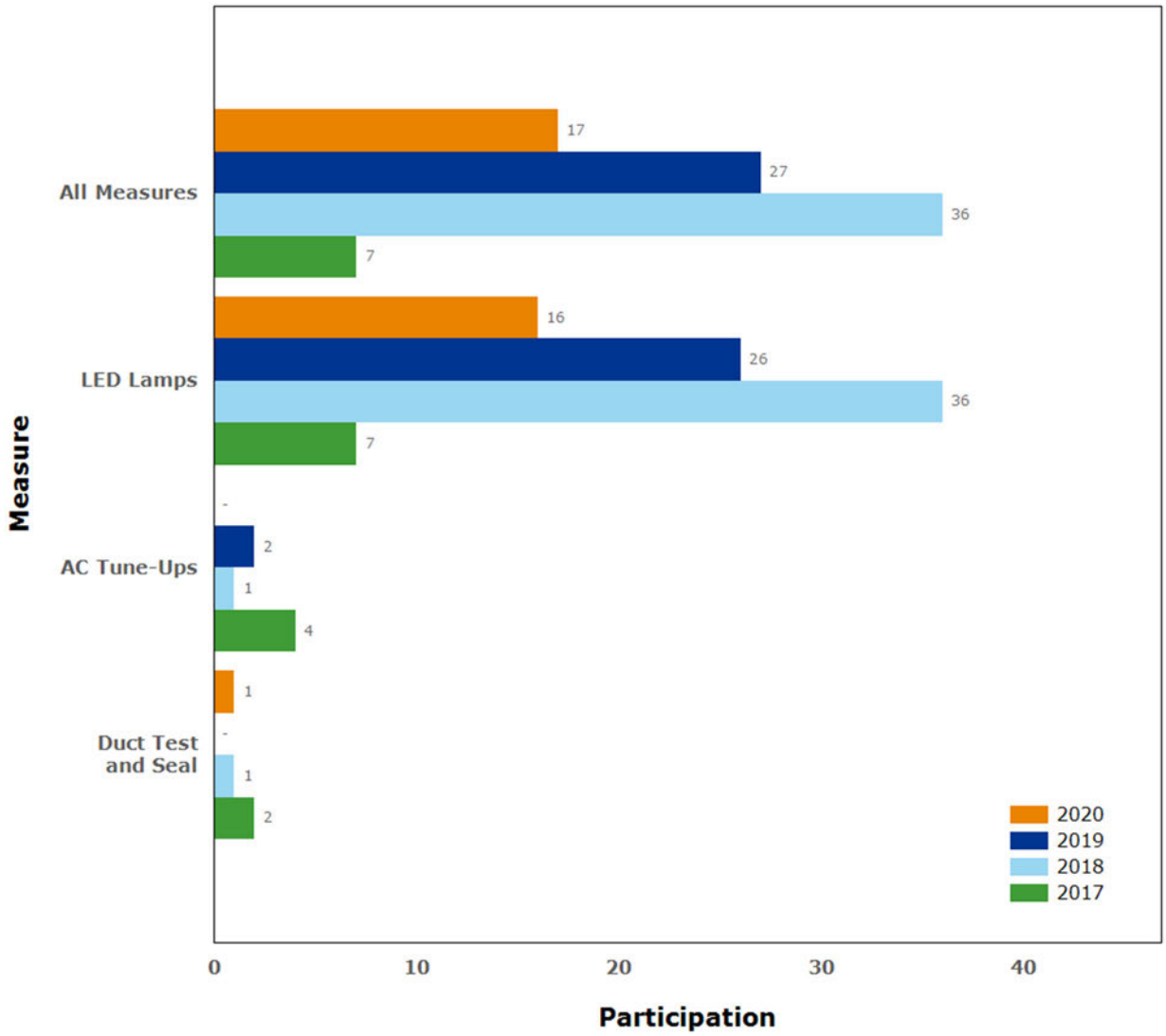
5.5.3.4 Additional North Carolina Program Data

This section provides a series of charts to show the program performance in North Carolina from program inception in 2017, through 2019, by measure type and by building type.

Note participation in these charts are the count of new unique customers in the “all measures” presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

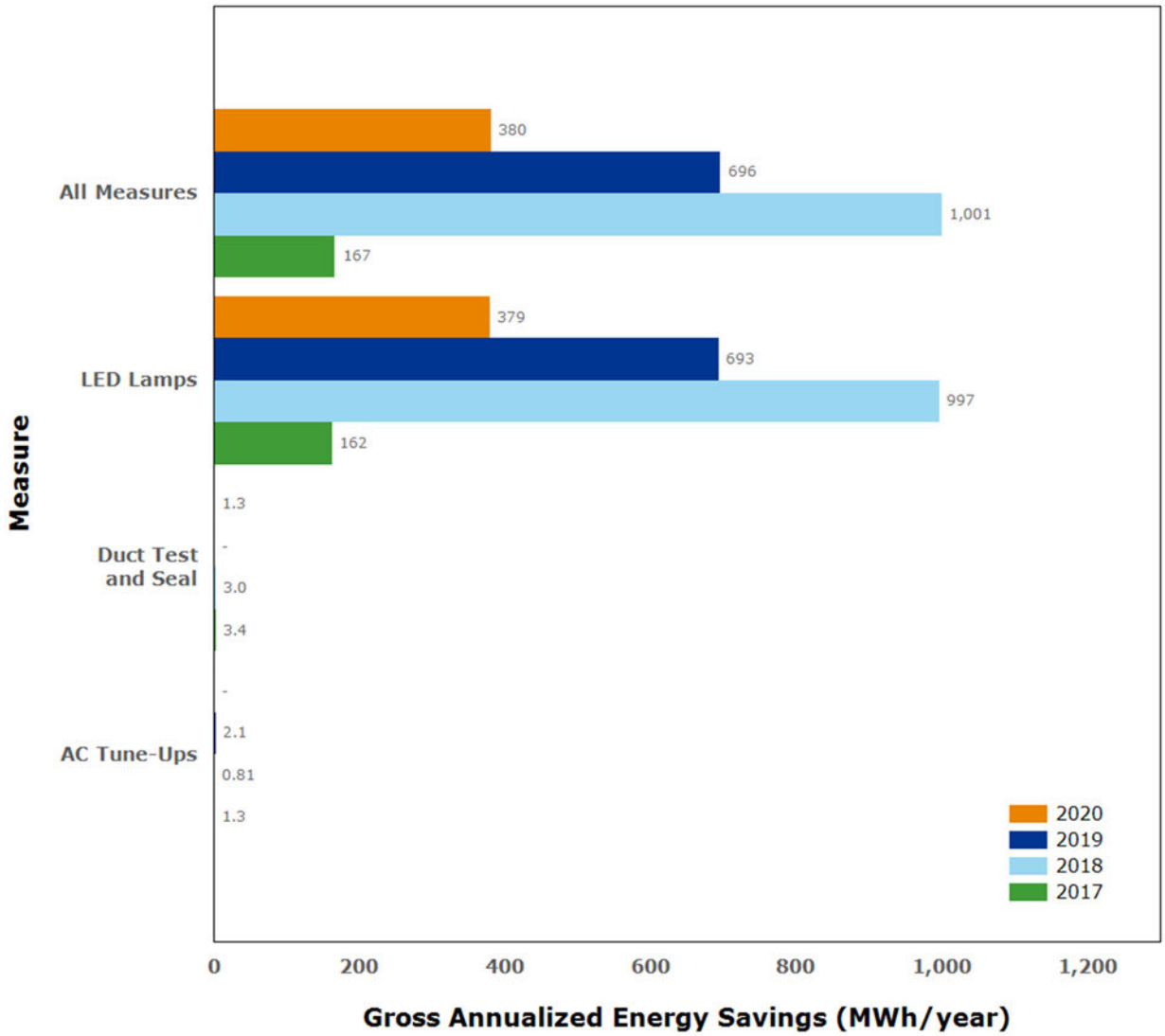
The number of participants by measure and the distribution of savings by measure are shown in Figure 5-45 and Figure 5-46, respectively. In 2020, LED lamps were the most frequently adopted measure by participants, continuing the trend of the previous three years.

Figure 5-45. North Carolina Non-residential Small Business Improvement Program Participation by Measure and Year



Annual program energy savings in 2020, and cumulatively, have been comprised almost entirely of LED lamp installations, 99.7% and 99.4% respectively.

Figure 5-46. North Carolina Non-residential Small Business Improvement Program Gross Annualized Energy Savings (MWh/year) by Measure and Year



In Figure 5-47, the average energy savings per participant (gross annualized) is shown for each measure that has been installed. The savings per participant for LED lamp installations are markedly higher than the other measure(s) installed in 2020 and cumulatively.

Figure 5-47. North Carolina Non-residential Small Business Improvement Program Average Gross Annualized Energy Savings per Participant (MWh/year-participant) by Measure and Year

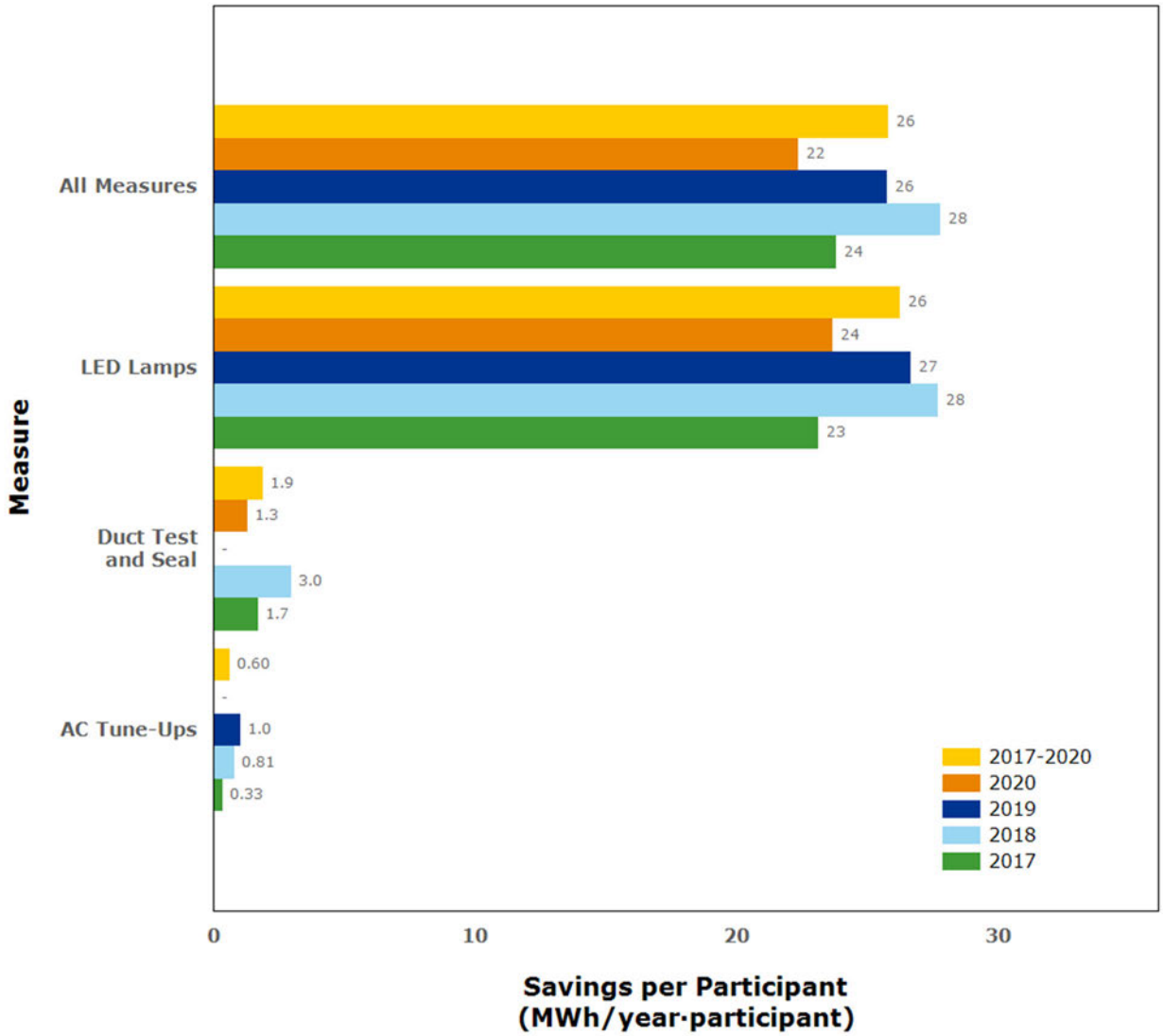


Figure 5-48 through Figure 5-50 show the participation, total gross energy savings, and average gross energy savings by building type for each program year and cumulatively for all program years (through 2020). A participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

Figure 5-48 and Figure 5-49 show that other buildings participated most frequently and contributed the most energy savings to the program in 2020. This is a change in the trend the last two years in which mercantile (retail, not mall) dominated participation and savings.

Figure 5-48. North Carolina Non-residential Small Business Improvement Program Participation by Building Type and Year

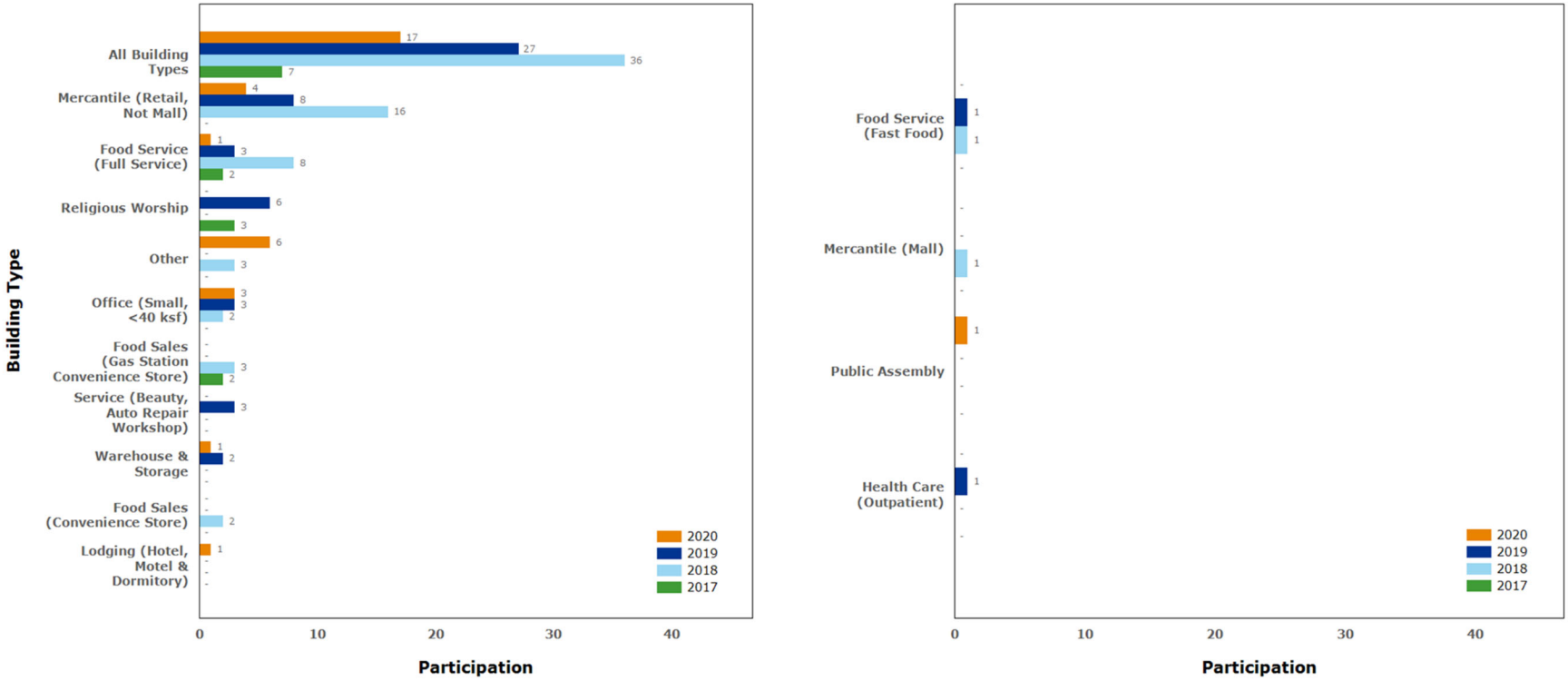
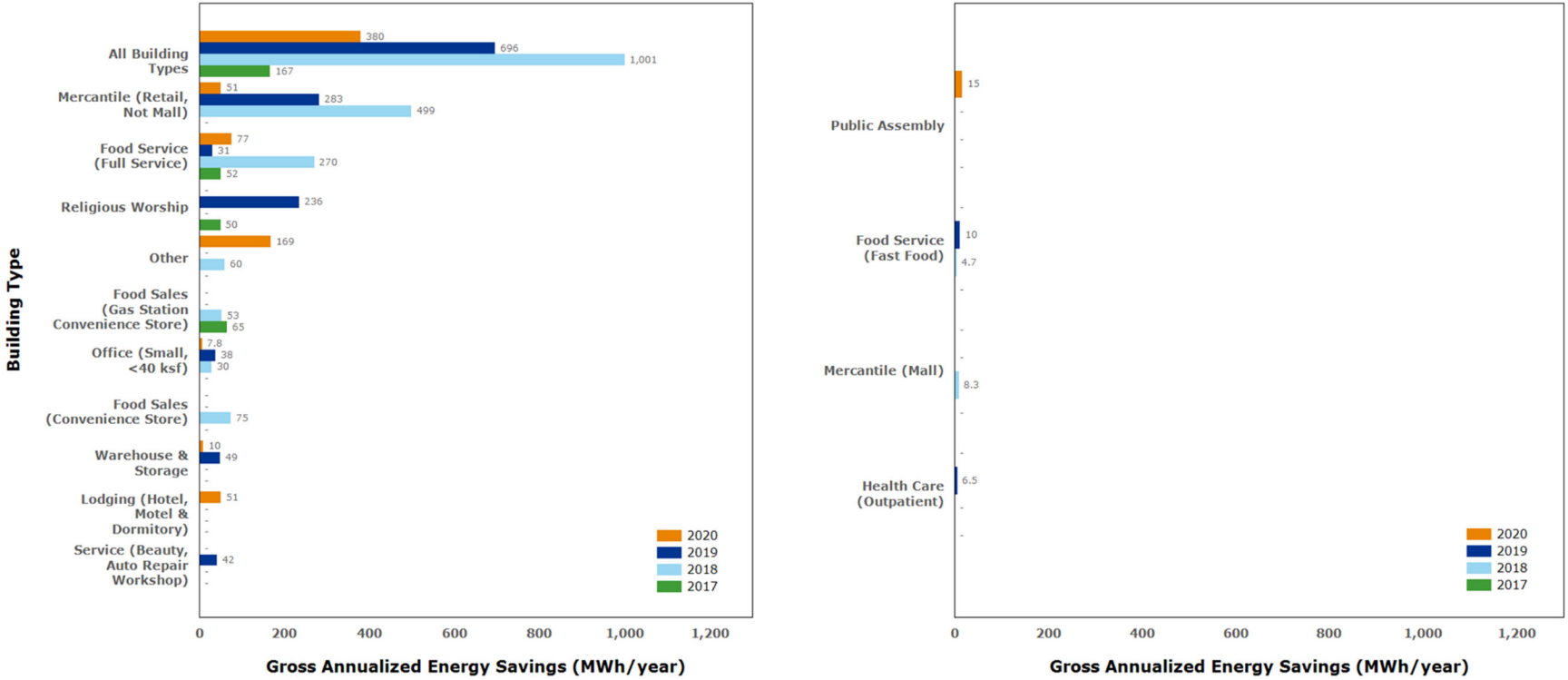
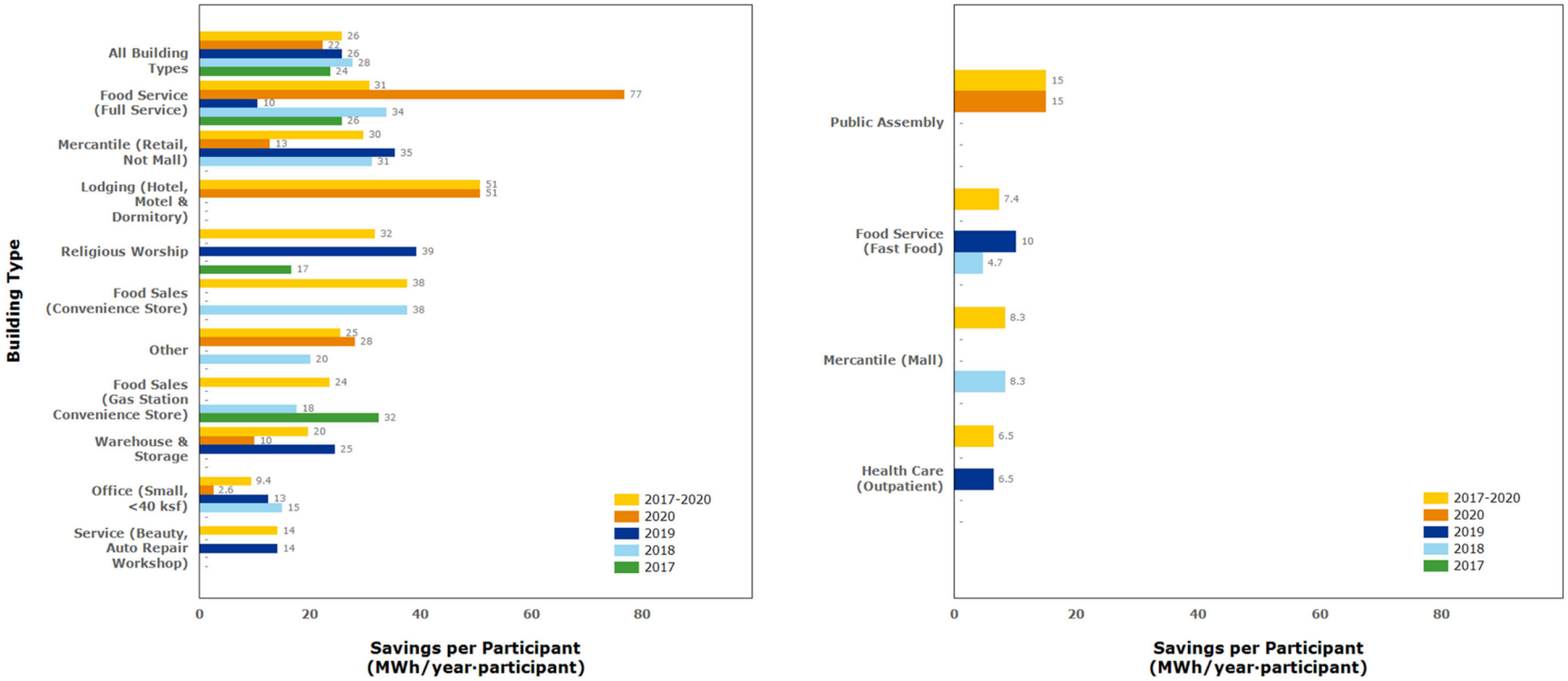


Figure 5-49. North Carolina Non-residential Small Business Improvement Program Gross Annualized Energy Savings (MWh/year) by Building Type and Year



When looking at the average participant savings by building type, Figure 5-50 shows that food service (full service) saved the most per participant in 2020.

Figure 5-50. North Carolina Non-residential Small Business Improvement Program Average Gross Annualized Energy Savings per Participant (MWh/year-participant) by Building Type and Year



5.6 Non-residential Prescriptive – Virginia and North Carolina

Virginia

Case #: PUE-2016-00111

NON-RESIDENTIAL PRESCRIPTIVE

2017-PRESENT
13,545 kWh/yr Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Properly sealed duct and air distribution systems
- Efficient heating and cooling systems
- Efficient refrigeration system and kitchen appliances

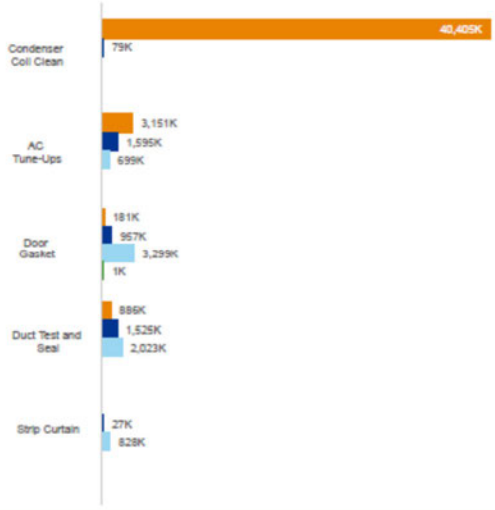
Enrolled **2,112** customers, **137%** of planned participation

Achieved net annual energy savings of **28,606 MWh/year**, **73%** of planned energy savings

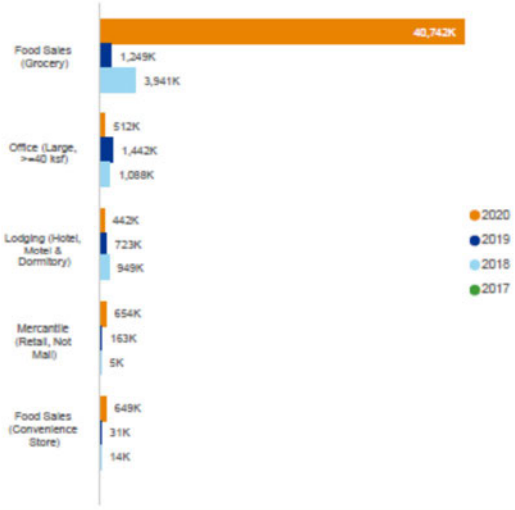
Spent **108%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)		734,410	6,748,855	5,887,581	11,128,206	24,499,052
Total Program Participants (#)		4	865	666	577	2,112
Total Gross Incremental Savings (kWh/yr)		699	7,023,169	4,403,947	45,108,795	
Total Net Incremental Savings (kWh/yr)		594	5,969,694	3,743,355	18,892,507	
Average Gross Incremental Demand Reduction (kW)		0	3,366	3,385	5,921	
Average Net Incremental Demand Reduction (kW)		0	2,861	2,877	3,787	
Total Net Lifetime Savings (kWh)		50	3,828,000	11,815,917	30,419,066	183,556,130
Average Lifetime Demand Reduction (kW)		0	2,861	5,739	9,526	9,526

TOTAL SAVING BY MEASURE TYPE
TOP 5 IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



DNV

North Carolina

Docket #: E-22 Sub 543

NON-RESIDENTIAL PRESCRIPTIVE

2018-PRESENT
13,862 kWh/yr Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Properly sealed duct and air distribution systems
- Efficient heating and cooling systems
- Efficient refrigeration system and kitchen appliances

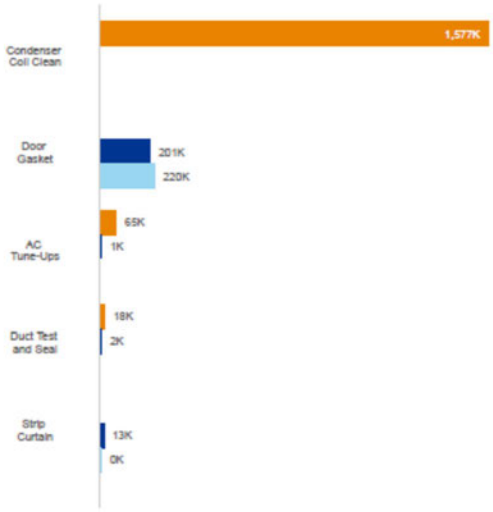
Enrolled **76** customers, **87%** of planned participation

Achieved net annual energy savings of **1,053 MWh/year**, **47%** of planned energy savings

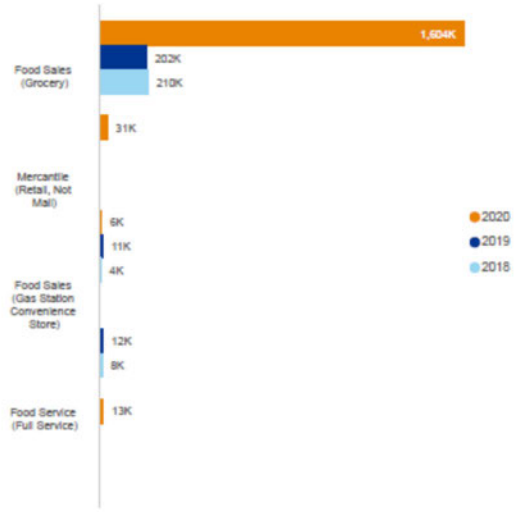
Spent **62%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)			180,139	189,380	372,698	742,217
Total Program Participants (#)			21	36	19	76
Total Gross Incremental Savings (kWh/yr)			221,779	227,788	1,671,465	
Total Net Incremental Savings (kWh/yr)			188,512	193,620	666,832	
Average Gross Incremental Demand Reduction (kW)			25	30	180	
Average Net Incremental Demand Reduction (kW)			21	26	112	
Total Net Lifetime Savings (kWh)			27,070	385,859	999,903	6,730,853
Average Lifetime Demand Reduction (kW)			21	47	159	159

TOTAL SAVING BY MEASURE TYPE
TOP 5 IN KWH



TOTAL SAVINGS BY BUILDING TYPE
ALL IN KWH



5.6.1 Program Description

In the Non-residential Prescriptive program, qualifying customers are eligible to pursue one or more of the qualified measures through a participating contractor registered with the program. To qualify for this program, the customer must be responsible for the electric bill and must be the owner of the facility or reasonably able to secure permission to complete the measures.

This program was approved in Virginia on June 1, 2017, in Case No. PUE-2016-00111, and the program became available to eligible customers in the Company's Virginia service territory in the last quarter of 2017. On October 16, 2017, the program was approved for implementation in North Carolina in Docket E-22, Sub 543 and launched in 2017. DNV developed an EM&V Plan for this program, which is included in APPENDIX X.

Since the program is implemented through a contractor network, customers must contact a participating vendor to pursue the qualifying measures. Upon completion of the work, a rebate application is submitted by the contractor. Customers can either opt to receive the rebate directly or authorize the rebate to be paid to the contractor. Customers are not counted as participants until a completed application form is processed and a rebate has been issued.

The program measures offered are primarily EE measures designed to decrease energy consumption through replacement of inefficient equipment, installation of new equipment that exceeds current code efficiency standards and recommissioning of existing HVAC equipment. Measures eligible to receive a rebate include those shown in Table 5-30.

2020 was an extraordinary year by all accounts, because of the COVID-19 pandemic. In response to the pandemic, this program was suspended in March for health and safety reasons and resumed on May 15, 2020. Upon it reopening, the implementation vendors set up new health and safety protocols such as requiring contractors to wear personal protective equipment ("PPE") against COVID-19, conducting temperature checks, implementing contact tracing (if there is a suspected COVID-19 exposure), social distancing when at the customer site or offering to visit the customer site after hours. Anecdotally, customers were pleased with the implementation contractor's processes.

Also, in response to the pandemic, the company suspended conventional program marketing approaches during the March through May period. Such marketing efforts included bill inserts and online marketing. Conventional marketing approaches resumed in August, though some of the advertising for this program did not resume until November. Alternatively, the implementation vendors increased marketing to customers more directly through one-on-one phone calls to building managers and other customers and to trade organizations. There was a large influx of program applications from grocery stores due to the use of this approach.

Table 5-30. Measures offered through Non-residential Prescriptive Program

End-Use	Measure
Cooking	Commercial Convection Oven
	Commercial Electric Combination Oven
	Commercial Electric Fryer
	Commercial Griddle
	Commercial Hot Food Holding Cabinet
	Commercial Steam Cooker
HVAC	Duct Testing & Sealing
	Unitary/Split AC & HP Tune-up
	Variable Speed Drives on Kitchen Fan
Plug Load	Smart Strip
Refrigeration	Door Closer
	Door Gasket
	Evaporator Fan Control
	Floating Head Pressure Control
	Refrigeration Night Cover
	Refrigeration Coil Cleaning
	Suction Pipe Insulation
	Strip Curtain
	Vending Machine Miser
	Commercial Freezers and Refrigerators – Solid Door
	Ice Maker
	Low/No-Sweat Door Film

5.6.2 Methods for the Current Reporting Period

DNV developed an EM&V Plan for this program, which is included in APPENDIX X. For the current period, the approach included reviewing the tracking data, then estimating gross energy and demand savings using STEP Manual calculations.

Table 5-31 outlines Dominion Energy's initial program planning assumptions used to design the program.

Table 5-31. Non-residential Prescriptive Program Planning Assumptions

Assumption	Value
Target Market	Non-residential customers
NTG Factor	85%
Measure Life (years)	6.3
Gross Average Annual Energy Savings per Participant (kWh/year)	128,984
Gross Average Coincident Peak Demand Reduction per Participant (kW)	19.29
Net Average Annual Energy Savings per Participant (kWh/year)	109,636
Net Average Coincident Peak Demand Reduction (kW) per Participant	16.40
Average Rebate per Participant (US$)	$10,091 per participant

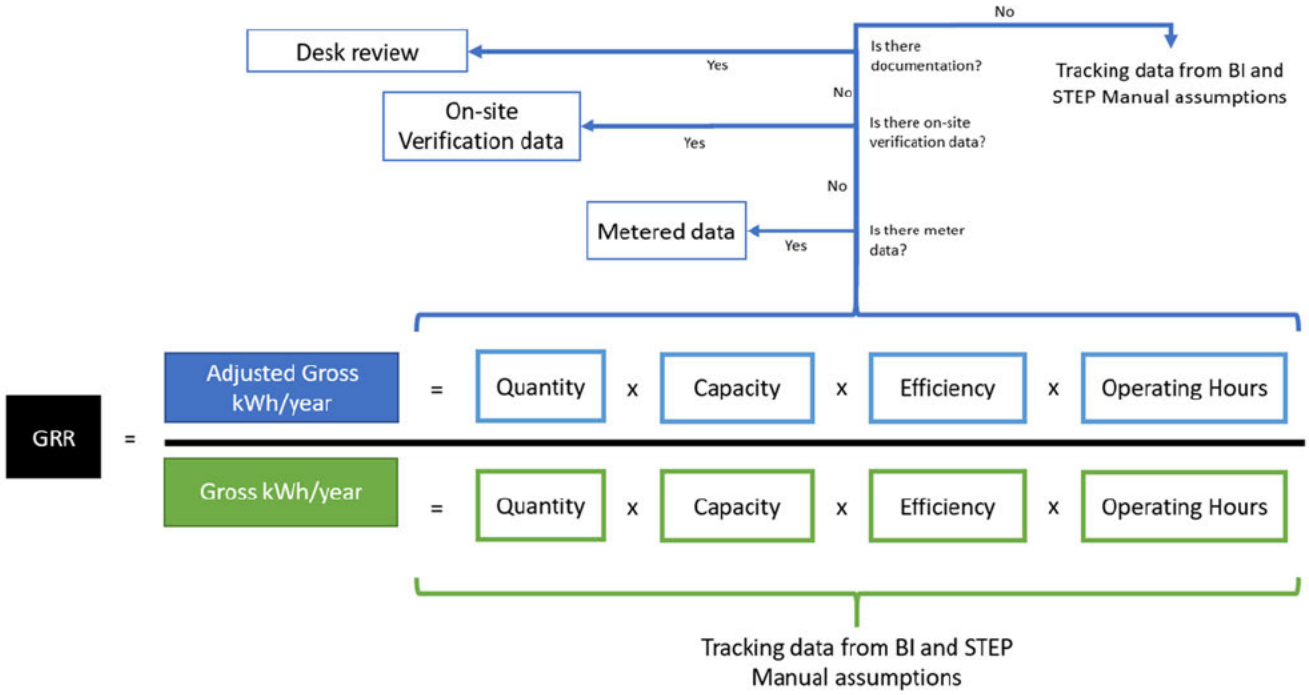
5.6.3 Impact Evaluation of Program

This section provides an overview of the key findings from the impact evaluation of the Non-residential Prescriptive Program. The full report of the impact evaluation can be found in Appendix X.1.

5.6.3.1 Methodology and approach

This section describes how DNV calculated the adjusted gross savings factors and adjusted NTG ratios. Figure 5-51 provides a high-level overview of the methodology for the adjusted gross savings factors. Appendix X.1 contains the discussion of the methodology for NTG ratios.

Figure 5-51. Gross Realization Rate Methodology Overview



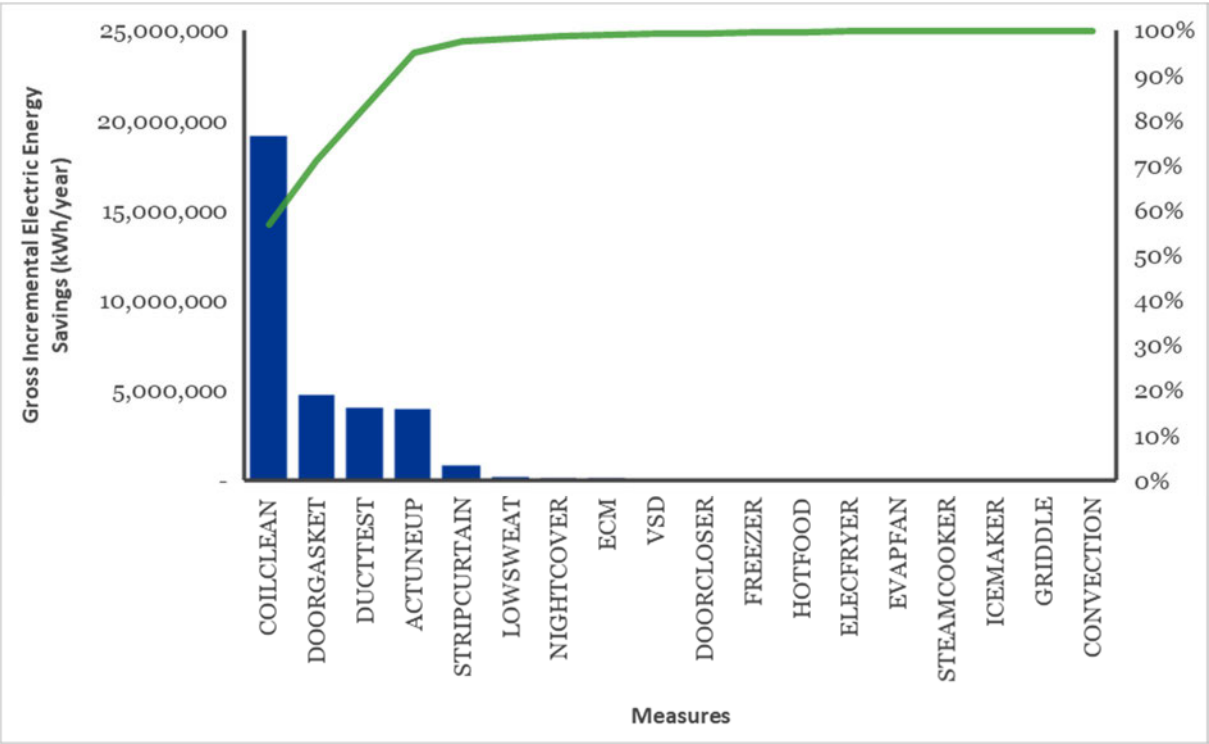
The study followed the Non-residential Prescriptive Program EM&V Plan (Version 11), provided in APPENDIX X and national protocols (e.g., the Uniform Methods Project ("UMP")) for designing survey and survey samples, and measuring net savings. [132] The evaluation used well-established survey methodologies to estimate program impacts.

DNV created an in-depth interview (IDI) survey instrument containing sections to ascertain measure installation and operation, program attribution, and program satisfaction. This survey was administered to a census of the program's customer population via email and phone calls. The survey instrument can be found in the full report (Appendix X.1).

5.6.3.2 Sample Design

Program tracking data from December 2017 to July 2020 showed that five measures accounted for more than 97% of annualized gross program savings. Figure 5-52 provides a graphical presentation of the measure savings distribution for the program, which indicates that coil cleaning, door gaskets, duct test and seal, AC tune-up, and strip curtains accounted for the majority of program savings.

Figure 5-52. Non-residential Prescriptive Program Savings Distribution by Measure (July 2017 – August 2020)



In addition to the high concentration of savings within a small group of measures, the program was also made of a high concentration of a few large businesses—primarily national grocery store chains—that accounted for most of the program savings. There were 20 program participant contacts who accounted for both 80% of the program savings and 41% of the participant facilities. With this concentration of savings within such a small group of participants, it was imperative that on-site data collection activities focused on these participants.

132 Tiessen, A. 2017. Chapter 16: Retrocommissioning Evaluation Protocol, The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures. Golden, CO; National Renewable Energy Laboratory. NREL/ SR-7A40-68572. http://www.nrel gov/docs/fy17osti/68572 pdf; Romberger, Jeff. 2017. Chapter 18: Variable Frequency Drive Evaluation Protocol, The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures. Golden, CO; National Renewable Energy Laboratory. NREL/ SR-7A40-68574. http://www.nrel gov/docs/fy17osti/68574.pdf.

The on-site data collection sample design organized the data by application contact information (i.e., customer name) and then by premise location and measures installed. Since the program savings were concentrated within a small group of grocery store chains and other retail chains, those customer groups were each established as their own separate sampling strata. Each of the retail customer strata were further stratified based on measures and sampled. Stores were selected within each of these customer specific strata. The sampling unit was at the premise location level, and all of the installed measures at a sampled location were verified, while some measures (i.e., condenser coil cleaning and VSDs on kitchen exhaust fans) received short-term interval metering.

5.6.3.3 Adjusted Gross Savings

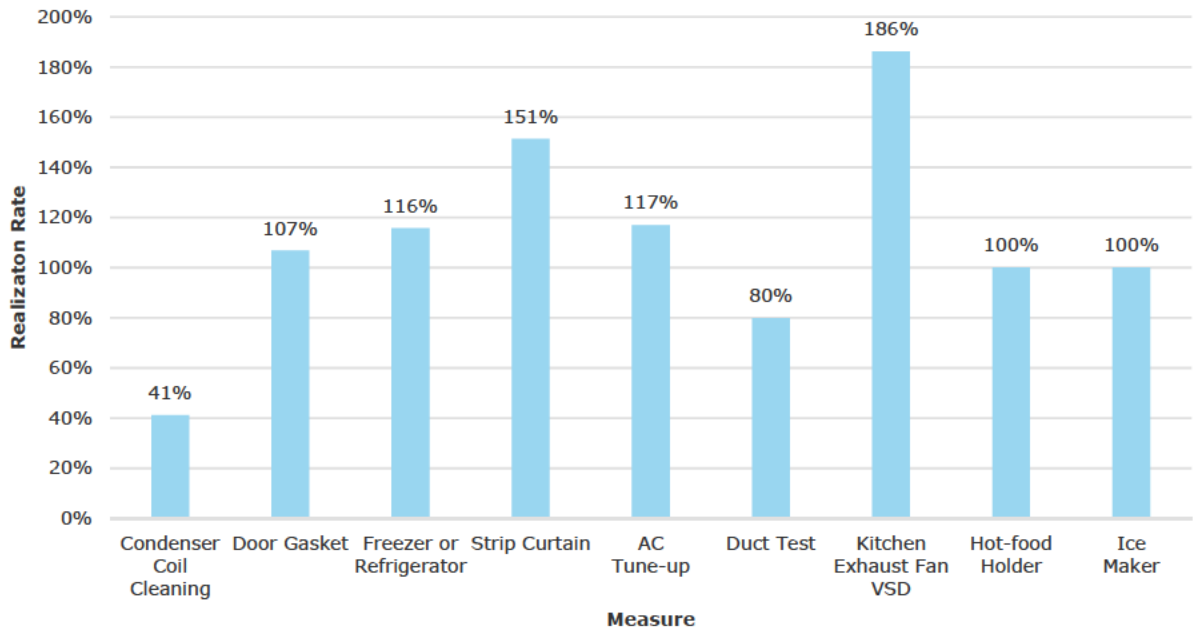
This study found that adjustments were needed to the programs' gross energy savings estimates because:

1. For coil cleaning measures (the measure with the highest gross annualized savings), DNV's review and onsite measurement and verification activities found that the on-site refrigeration load plans (and metered operating data) for refrigeration systems differed from the values reported in program tracking data and documentation provided by the implementer.
2. Quantities of door gaskets and strip curtains verified during on-sites differed from those reported in program tracking data and documentation provided by the implementer.
3. On-site verification of AC tune-ups and duct sealing measures revealed HVAC system capacities and number of units serviced that differed from the program tracking data and documentation provided by the implementer.
4. Analysis of meter data collected for VSDs on kitchen exhaust fans resulted in operating hours that differed from STEP Manual assumptions.

Figure 5-53 shows the breakdown of gross savings adjustment factors or realization rates for evaluated measures, the program overall gross realization rate for energy savings was 69% (±4% at 85% confidence interval (CI)).[133]

[133] Confidence Intervals (CI) for displayed measures are as follows: coil clean: ±58% at 85%, door gasket: ±6% at 85%, freezer fridge: ±22% at 85%, strip curtain: ±58% at 85%, AC tune-up: ±14% at 85%, Duct test and seal: ±31% at 85%; VSD kitchen exhaust, hot food holders, and ice makers did not have enough sample to calculate confidence intervals. All other non-evaluated measures were assigned gross realization rate of 100% with no CI.

Figure 5-53. Energy Savings Gross Realization Rate by Measure



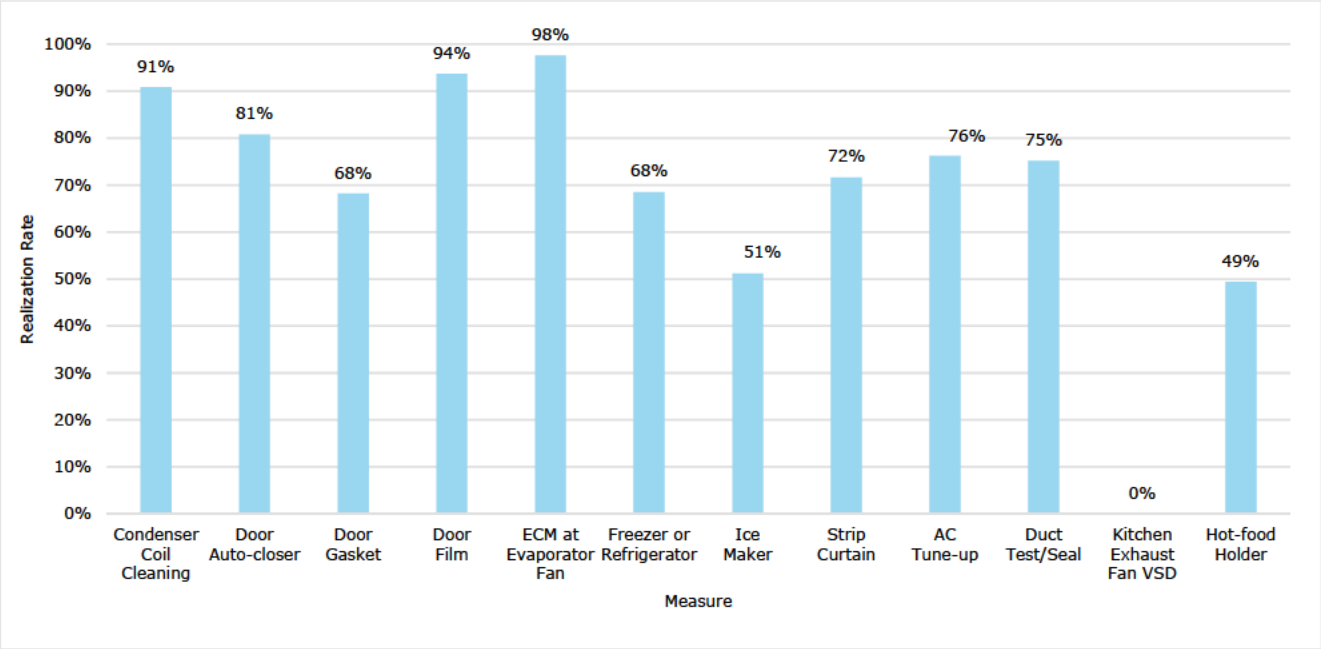
5.6.3.4 Net Savings

The DNV team calculated adjustment factors for net savings (or net-to-gross rate) using self-reported values from in-depth interviews. These values were averaged within measures utilizing weights based on program tracking savings by measure and customer. The program-level NTGR based on the evaluation of the 2017-2020 program participants was 83%, ±22% at 85% CI. Figure 5-54 shows the breakdown of NTG estimates by measure.[134, 135]

[134] Program NTG is 83% (±22% at 85% CI)

[135] Confidence Intervals (CI) for displayed measures are as follows: Door Auto-Closer: ±8% at 85%, Door Gasket: ±5% at 85%, AC Tune-up: ±11% at 85%, and Duct Test: ±25% at 85%; All other measures did not have enough sample to calculate confidence intervals, and All non-surveyed measures received the program design NTG of 85%.

Figure 5-54 Program-Net-to-Gross Ratios by Measure



5.6.4 Assessment of Program Progress towards Plan

The next subsections describe the program's progress towards planned participants, energy savings, and demand reduction targets.

5.6.4.1 Key Virginia Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for Virginia appear below. Following this summary, Table 5-32 provides performance indicator data annually and from program inception through 2020. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.17, cumulative gross savings are in Appendix C.8 and cumulative net savings are in Appendix D.8.

- The program enrolled 577 participants in 2020, approximately 135% of planned participation.
- From program inception through 2020, the program enrolled 2,112 participants, approximately 137% of planned participation.

- The program achieved net annual energy savings of 18,892,507 kWh in 2020, approximately 405% of planned net energy savings.
- Since program inception cumulative net energy savings were 28,606,150 kWh, approximately 73% of the planned value.
- Average net annual energy savings per participant in 2020 were 32,743 kWh, approximately 30% of planned net energy savings per participant.
    - The program achieved a net demand reduction of 3,787 kW in 2020, approximately 204% of planned net demand savings.

- Average net demand reduction per participant in 2020 was 6.6 kW, approximately 40% of planned net demand savings per participant.

- Total annual program costs were approximately 177% of planned costs in 2020.
- Total program costs, from program inception through 2020, have been approximately 108% of planned costs.
- All costs were related to rebates, program implementation, EM&V, and other administrative activities to operate the program.

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Table 5-32. Virginia Non-residential Prescriptive Program Performance Indicators (2017–2020)

Category	Item	2017	2018[136]	2019	2020	Program Total (2017–2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]				
	Direct Implementation					
	Direct EM&V					
	Indirect Other (Administrative)	$28,898	$381,096	$281,598	$579,427	$1,271,019
Total Costs ($)	Total[137]	$734,410	$6,748,855	$5,887,581	$11,128,206	$24,499,052
	Planned	$3,735,349	$6,246,114	$6,354,082	$6,282,076	$22,617,621
	Variance	-$3,000,939	$502,740	-$466,501	$4,846,131	$1,881,431
	Annual % of Planned	20%	108%	93%	177%	108%
Participants	Total (Gross)	4	865	666	577	2,112
	Planned (Gross)	266	427	427	427	1,547
	Variance	-262	438	239	150	565
	Annual % of Planned (Gross)	2%	203%	156%	135%	137%
Installed Energy Savings (kWh/year)	Total Gross Energy Savings (kWh/yr)	699	7,023,169	4,403,947	45,108,795	60,231,873
	Realization Rate weighted by Measure	100%	100%	100%	48%	
	Realization Rate Adjustment (kWh/yr)	0	0	0	-23,380,737	-23,380,737
	Realization Rate Adjusted Savings (kWh/yr)	699	7,023,169	4,403,947	21,728,058	33,155,873
	Net-To-Gross Rate Weighted by Measure[138]	85%	85%	85%	89%	

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

[136] 2018 Total Gross Deemed Savings changed as a result of an error correction made in this report (May 1, 2020). The correction assigns a full 5% savings to records with refrigerant charge adjustments completed during their HVAC tune-up activities. Previously, those records were not being assigned savings for refrigerant charge adjustments, which was incorrect. The correction resulted in a savings increase of 273,003 kWh/year (gross) in Virginia for program year 2018, from what was previously reported (in the May 1, 2019 EM&V report) as 6,750,166 kWh/year (gross). This change resulted in a 20% increase in 2018 total installed gross energy savings (kWh/year). The Total Gross Deemed Demand also increased from 3,083.6 kW (gross) to 3,366.4 kW (gross) for program year 2018, which was a 10% increase.

[137] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

[138] On the rebate application form the program implementation vendor included the question, "Did the rebate incentive offered by Dominion Energy have any influence in your decision to have the work performed?" Of the participants who responded (from program inception to the end of this reporting period), the implementation vendor has calculated that 95% answered yes at the time they filled out the rebate application. This is not a substitute for a net-to-gross analysis conducted by an independent evaluator. See section 3.1 3 Net Savings Estimation for a description of net-to-gross estimation approaches.

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Category	Item	2017	2018[136]	2019	2020	Program Total (2017–2020)
	Net-To-Gross Adjustment (kWh/yr)	-105	-1,053,475	-660,592	-2,835,551	-4,549,723
	Net Adjusted Savings (kWh/yr)	594	5,969,694	3,743,355	18,892,507	28,606,150
	Planned Net Savings (kWh/yr)	5,959,948	26,839,364	1,672,489	4,662,193	39,133,993
	Annual % Toward Planned Net Savings (kWh)	0.01%	22%	224%	405%	73%
	Avg. Gross Savings Per Participant (kWh/yr)	175	8,119	6,613	78,178	28,519
	Avg. Net Savings Per Participant (kWh/yr)	149	6,901	5,621	32,743	13,545
Installed Demand Reduction (kW)	Total Gross Demand Reduction (kW)	0.1	3,366.4	3,385.2	5,921.1	12,672.8
	Realization Rate weighted by Measure	100%	100%	100%	79%	
	Realization Rate Adjustment (kW)	0.0	0.0	0.0	-1,272.2	-1,272.2
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.1	3,366.4	3,385.2	4,648.9	11,400.6
	Net-To-Gross Rate Weighted by Measure[139]	85%	85%	85%	83%	
	Net-To-Gross Adjustment (kW)	0.0	-505.0	-507.8	-862.1	-1,874.9
	Net Adjusted Demand Reduction (kW)	0.1	2,861.4	2,877.9	3,787.4	9,526.8
	Planned Net Demand Reduction (kW)	0.0	4,296.0	684.7	1,858.4	6,839.0
	Annual % Toward Planned Net Reduction (kW)	N/A	66.6%	420%	204%	1.4
	Avg. Gross Demand Reduction Per Participant (kW)	0.02	3.9	5.1	10.3	6.0
	Avg. Net Demand Reduction Per Participant (kW)	0.02	3.3	4.3	6.6	4.5
Program Performance	Annual $Admin. per Participant (Gross)	$7,225	$441	$423	$1,004	$602
	Annual $Admin. per kWh/year (Gross)	$41	$0.05	$0.06	$0.01	$0.02
	Annual $Admin. per kW (Gross)	$351,557	$113	$83	$98	$100
	Annual $EM&V per $Total	11%	2.0%	2%	1%	1.9%
	Annual $Rebate per Participant (Gross)	$157	$5,315	$6,099	$15,519	$8,340

[139] Ibid.

Table 5-33. Virginia Non-residential Prescriptive Measure-Level Performance Indicators (2017-2020)

Program	Realization Rate				Net to Gross			
Non-residential Prescriptive–Virginia	kWh/year (2017-2019)	kW (2017-2019)	kWh/year (2020)	kW (2020)	kWh/year (2017-2019)	kW (2017-2019)	kWh/year (2020)	kW (2020)
	100%	100%	48%	79%	85%	85%	89%	83%
Measure	Realization Rate (2020)	kWh/year (2017-2020)	Net to Gross (2020)	kWh/year (2017-2020)	Realization Rate (2020)	kW/year (2017-2020)	Net to Gross (2020)	kW/year (2017-2020)
	Gross		Net		Gross		Net	
AC Tune-Ups	117%	5,444,849	76%	4,751,656	99%	6,838.8	76%	5,585.4
Condenser Coil Clean	41%	40,484,451	91%	15,142,521	62%	2,934.8	91%	1,657.5
Convection Oven	100%	1,259	85%	1,070	100%	0.6	85%	0.5
Door Closer	89%	49,576	81%	42,100	77%	5.6	81%	4.8
Door Gasket	107%	4,436,362	68%	3,748,806	107%	506.6	68%	428.1
Duct Test and Seal	80%	4,433,576	75%	3,547,096	77%	2,206.7	75%	1,714.8
ECM at evaporator fan	100%	134,283	98%	126,696	100%	15.3	98%	14.5
Electric Combination Oven	100%	0	85%	0	100%	0.0	85%	0.0
Electric Fryer	100%	39,294	85%	33,400	100%	7.0	85%	6.0
Evaporator Fan Control (Cooler and Freezer)	100%	27,937	85%	23,746	100%	2.9	85%	2.5
Floating Head Pressure Control	100%	0	85%	0	100%	0.0	85%	0.0
Freezer and Refrigerator	116%	46,869	68%	39,394	116%	6.2	68%	5.2
Griddle	100%	4,136	85%	3,515	100%	0.6	85%	0.5
Hot Food Holder	100%	41,806	49%	35,240	100%	11.4	49%	9.7
Ice Maker	100%	36,810	51%	23,447	100%	4.2	51%	2.7
Low/No Sweat Door Film	100%	227,191	94%	213,493	100%	5.5	94%	5.1
Night Cover	100%	153,406	85%	130,395	100%	0.0	85%	0.0
Smart Strip	100%	0	85%	0	100%	0.0	85%	0.0
Steam Cooker	100%	19,748	85%	16,786	100%	6.7	85%	5.7

Program	Realization Rate				Net to Gross			
Non-residential Prescriptive–Virginia	kWh/year (2017-2019)	kW (2017-2019)	kWh/year (2020)	kW (2020)	kWh/year (2017-2019)	kW (2017-2019)	kWh/year (2020)	kW (2020)
	100%	100%	48%	79%	85%	85%	89%	83%
Measure	Realization Rate (2020)	kWh/year (2017-2020)	Net to Gross (2020)	kWh/year (2017-2020)	Realization Rate (2020)	kW/year (2017-2020)	Net to Gross (2020)	kW/year (2017-2020)
	Gross		Net		Gross		Net	
Strip Curtain	151%	855,045	72%	726,788	151%	97.6	72%	83.0
Suction Pipe Insulation	100%	0	85%	0	100%	0.0	85%	0.0
Floating Head Pressure Control	100%	0	85%	0	100%	0.0	85%	0.0
Vending Machine Control	100%	0	85%	0	100%	0.0	85%	0.0
VSDS at Kitchen Exhaust Fan	186%	100,013	0%	0	93%	22.2	0%	0.0

5.6.4.2 Key North Carolina Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for North Carolina appear below. Following this summary, Table 5-34 provides performance indicator data annually and from program inception through 2020. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix B.8, cumulative gross savings are in Appendix C.8 and cumulative net savings are in Appendix D.8.

- The program enrolled 19 participants in 2020, approximately 66% of planned participation.
- From program inception through 2020, the program enrolled 76 participants, approximately 87% of planned participation.

- The program achieved net annual energy savings of 666,832 kWh in 2020, approximately 211% of planned net energy savings.
- Since program inception cumulative net energy savings were 1,048,964 kWh, approximately 47% of the planned value.
- Average net annual energy savings per participant in 2020 was 35,096kWh, approximately 32% of the planned value.
- The program achieved a net demand reduction of 112.2 kW in 2020, approximately 88.9% of the planned value.
- Average net demand reduction per participant in 2020 was 5.9 kW, approximately 36% of the planned value.

- Total annual program costs were approximately 93% of planned costs in 2020.
- Total program costs, from program inception through 2020, have been approximately 62% of planned costs.
- All costs were related to rebates, program implementation, EM&V, and other administrative activities to operate the program.

Table 5-34. North Carolina Non-residential Prescriptive Program Performance Indicators (2018–2020)

Category	Item	2018	2019	2020	Program Total (2018–2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]			
	Direct Implementation				
	Direct EM&V				
	Indirect Other (Administrative)	$10,172	$10,038	$19,470	$39,681
Total Costs ($)	Total[137]	$180,139	$189,380	$372,698	$742,217
	Planned	$400,909	$406,529	$398,979	$1,206,417
	Variance	-$220,770	-$217,149	-$26,281	-$464,200
	Annual % of Planned	45%	47%	93%	62%
Participants	Total (Gross)	21	36	19	76
	Planned (Gross)	29	29	29	87
	Variance	-8	7	-10	-11
	Annual % of Planned (Gross)	72%	124%	66%	87%
Installed Energy Savings (kWh/year)	Total Gross Energy Savings (kWh/yr)	221,779	227,788	1,671,465	2,121,031
	Realization Rate weighted by Measure	100%	100%	45%	
	Realization Rate Adjustment (kWh/yr)	0	0	-922,714	-922,714
	Realization Rate Adjusted Savings (kWh/yr)	221,779	227,788	748,751	1,198,317
	Net-To-Gross Weighted by Measure[140]	85%	85%	90%	
	Net-To-Gross Adjustment (kWh/yr)	-33,267	-34,168	-81,918	-149,353
	Net Adjusted Savings (kWh/yr)	188,512	193,620	666,832	1,048,964
	Planned Net Savings (kWh/yr)	1,822,814	113,588	316,636	2,253,038
	Annual % Toward Planned Net Savings (kWh)	10%	170%	211%	47%
	Avg. Gross Savings Per Participant (kWh/yr)	10,561	6,327	87,972	27,908
	Avg. Net Savings Per Participant (kWh/yr)	8,977	5,378	35,096	13,802
Installed Demand Reduction (kW)	Total Gross Demand Reduction (kW)	25.3	30.4	179.6	235.2
	Realization Rate weighted by Measure	100%	100%	74%	

[140] On the rebate application form the program implementation vendor included the question, "Did the rebate incentive offered by Dominion Energy have any influence in your decision to have the work performed?" Of the participants who responded (from program inception to the end of this reporting period), the implementation vendor has calculated that 95% answered yes at the time they filled out the rebate application. This is not a substitute for a net-to-gross analysis conducted by an independent evaluator. See section 3.1.3 Net Savings Estimation for a description of net-to-gross estimation approaches.

Category	Item	2018	2019	2020	Program Total (2018–2020)
	Realization Rate Adjustment (kW)	0.0	0.0	-46.0	-46.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	25.3	30.4	133.5	189.2
	Net-To-Gross Weighted by Measure[141]	85%	85%	86%	
	Net-To-Gross Adjustment (kW)	-3.8	-4.6	-21.3	-29.7
	Net Adjusted Demand Reduction (kW)	21.5	25.8	112.2	159.5
	Planned Net Demand Reduction (kW)	292.0	46.5	126.2	464.7
	Annual % Toward Planned Net Reduction (kW)	7.4%	55.5%	88.9%	34.3%
	Avg. Gross Demand Reduction Per Participant (kW)	1.2	0.8	9.5	3.1
	Avg. Net Demand Reduction Per Participant (kW)	1.0	0.7	5.9	2.1
Program Performance	Annual $Admin. per Participant (Gross)	$484	$279	$1,025	$522
	Annual $Admin. per kWh/year (Gross)	$0.05	$0.04	$0.01	$0.02
	Annual $Admin. per kW (Gross)	$403	$330	$108	$169
	Annual $EM&V per Total Costs ($)	5%	3.8%	2.3%	3%
	Annual $Rebate per Participant (Gross)	$3,919	$2,208	$13,717	$5,558

[141] Ibid.

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Table 5-35. North Carolina Non-residential Prescriptive Measure-Level Performance Indicators (2017-2020)

Program	Realization Rate				Net to Gross			
Non-residential Prescriptive– North Carolina	kWh/year (2017-2019)	kW (2017-2019)	kWh/year (2020)	kW (2020)	kWh/year (2017-2019)	kW (2017-2019)	kWh/year (2020)	kW (2020)
	100%	100%	45%	74%	85%	85%	90%	86%
Measure	Realization Rate (2020)	kWh/year (2017-2020)	Net to Gross (2020)	kWh/year (2017-2020)	Realization Rate (2020)	kW/year (2017-2020)	Net to Gross (2020)	kW/year (2017-2020)
	Gross		Net		Gross		Net	
AC Tune-Ups	117%	66,048	76%	58,692	99%	56.2	76%	42.4
Condenser Coil Clean	41%	1,576,700	91%	588,267	62%	114.2	91%	64.4
Convection Oven	100%	644	85%	547	100%	0.1	85%	0.08
Door Closer	89%	3,944	81%	3,352	77%	0.4	81%	0.4
Door Gasket	107%	421,333	68%	358,133	107%	48.0	68%	40.8
Duct Test and Seal	80%	19,560	75%	12,121	77%	11.2	75%	7.1
ECM at evaporator fan	100%	0	98%	0	100%	0.0	98%	0.0
Electric Combination Oven	100%	0	85%	0	100%	0.0	85%	0.0
Electric Fryer	100%	6,011	85%	5,109	100%	0.9	85%	0.8
Evaporator Fan Control (Cooler and Freezer)	100%	0	85%	0	100%	0.0	85%	0.0
Floating Head Pressure Control	100%	0	85%	0	100%	0.0	85%	0.0
Freezer and Refrigerator	116%	4,287	68%	3,614	116%	0.6	68%	0.5
Griddle	100%	4,510	85%	3,834	100%	0.7	85%	0.6
Hot Food Holder	100%	4,790	49%	4,072	100%	1.3	49%	1.1
Ice Maker	100%	0	51%	0	100%	0.0	51%	0.0
Low/No Sweat Door Film	100%	0	94%	0	100%	0.0	94%	0.0
Night Cover	100%	0	85%	0	100%	0.0	85%	0.0
Smart Strip	100%	0	85%	0	100%	0.0	85%	0.0
Steam Cooker	100%	0	85%	0	100%	0.0	85%	0.0
Strip Curtain	151%	13,204	72%	11,223	151%	1.5	72%	1.3

Program	Realization Rate				Net to Gross			
Non-residential Prescriptive– North Carolina	kWh/year (2017-2019)	kW (2017-2019)	kWh/year (2020)	kW (2020)	kWh/year (2017-2019)	kW (2017-2019)	kWh/year (2020)	kW (2020)
	100%	100%	45%	74%	85%	85%	90%	86%
Measure	Realization Rate (2020)	kWh/year (2017-2020)	Net to Gross (2020)	kWh/year (2017-2020)	Realization Rate (2020)	kW/year (2017-2020)	Net to Gross (2020)	kW/year (2017-2020)
	Gross		Net		Gross		Net	
Suction Pipe Insulation	100%	0	85%	0	100%	0.0	85%	0.0
Vending Machine Control	100%	0	85%	0	100%	0.0	85%	0.0
VSDS at Kitchen Exhaust Fan	186%	0	0%	0	93%	0.0	0%	0.0

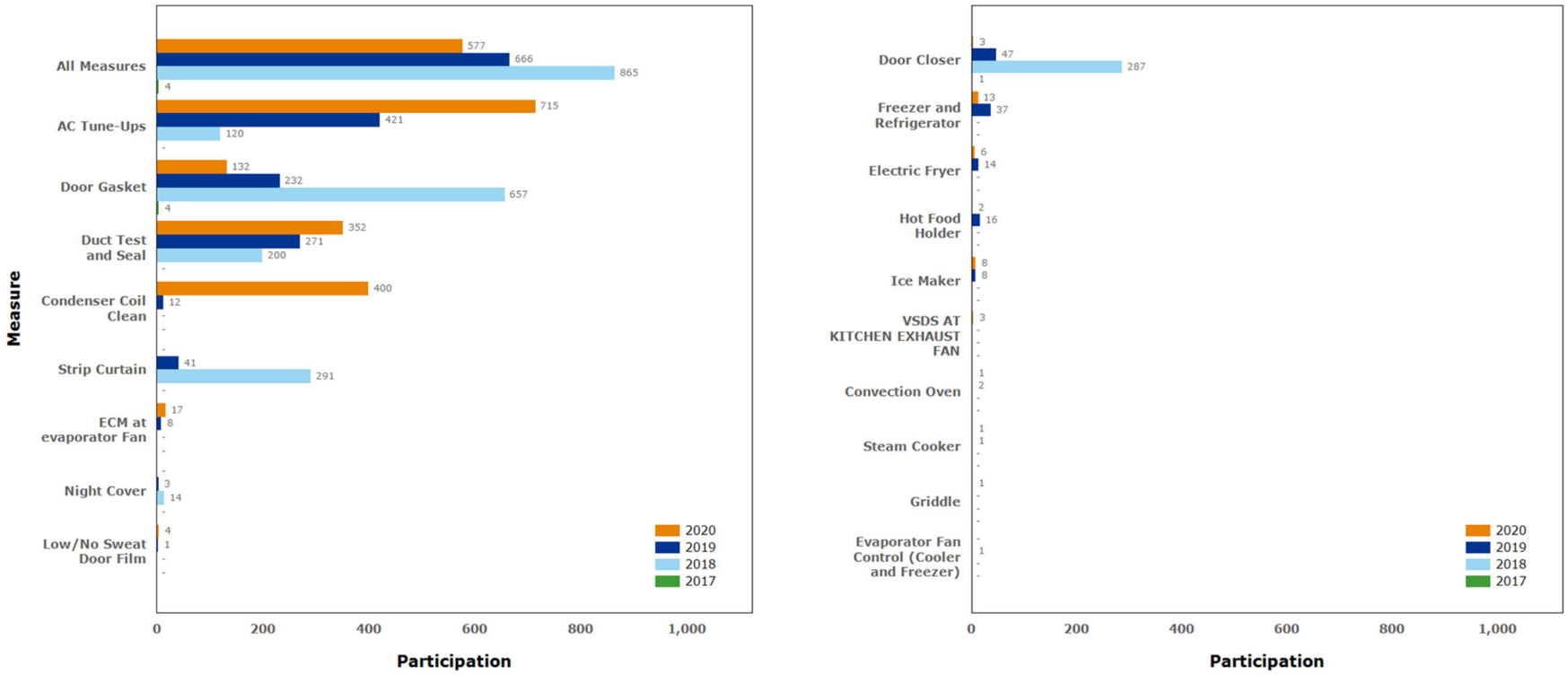
5.6.4.3 Additional Virginia Program Data

Additional program data regarding energy savings per participant, participation, and overall program savings for Virginia are provided below.

Note participation in these charts are the count of new unique customers in the "all measures" presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

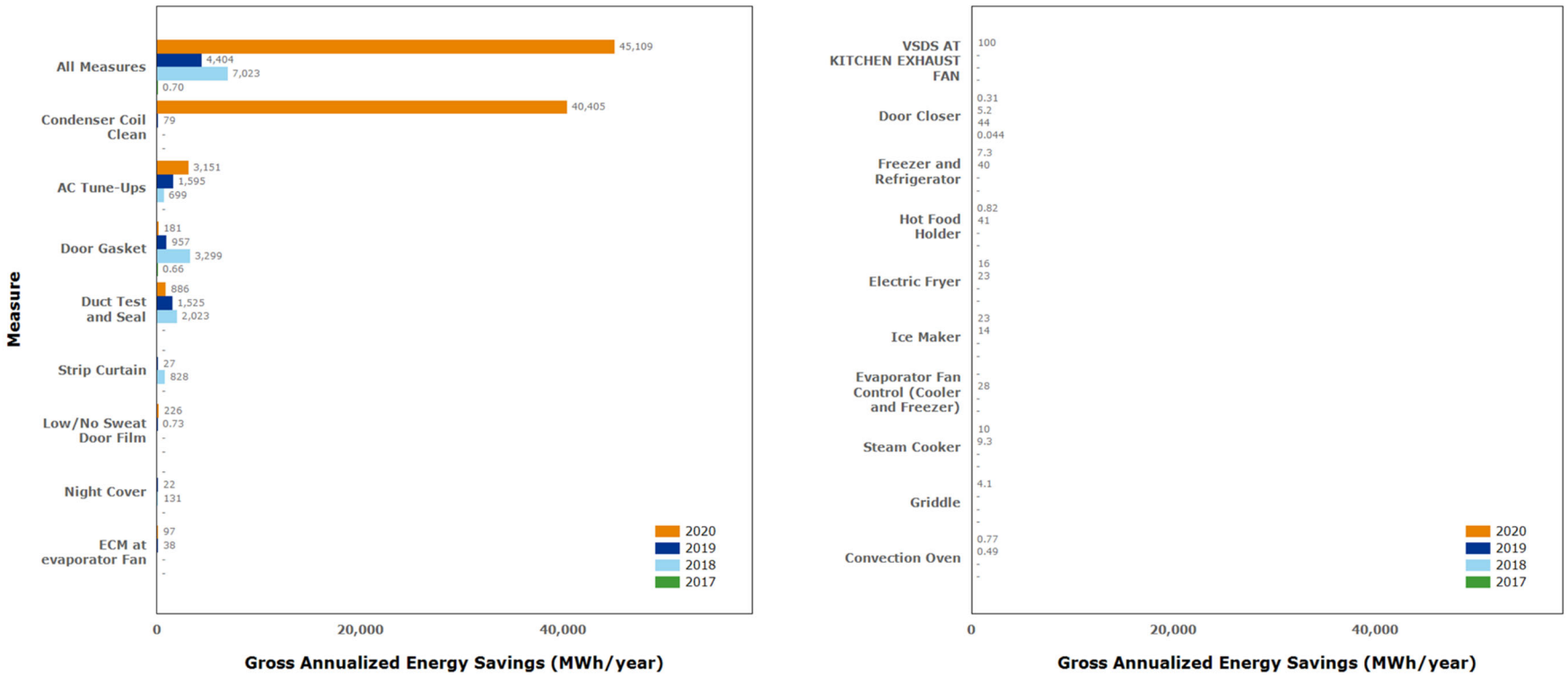
Figure 5-55 shows that AC tune-ups were the most frequently performed measure by participants in 2020, followed by condenser coil cleaning, then duct testing and sealing.

Figure 5-55. Virginia Non-residential Prescriptive Program Participation by Measure and Year



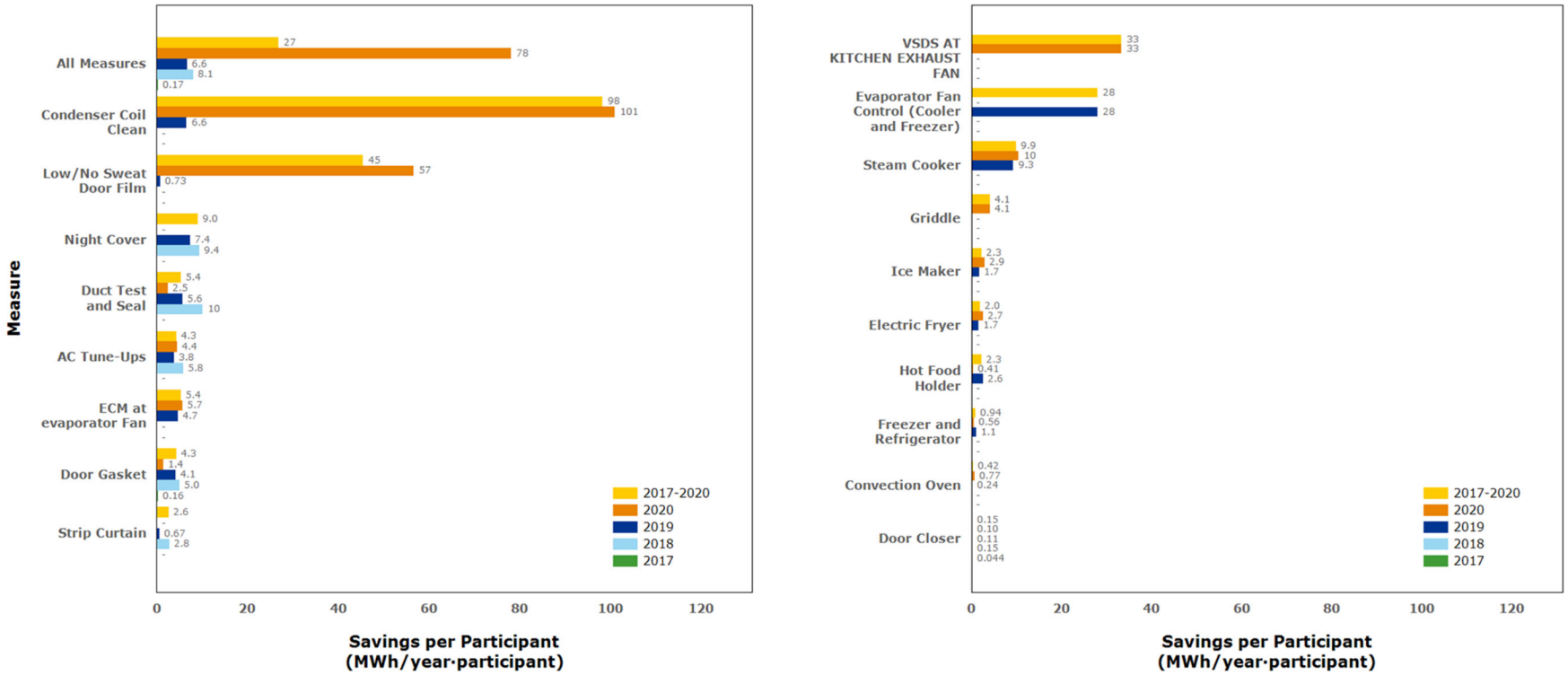
The program achieved gross annualized energy savings of 45,109 MWh/year in 2020, as shown in Figure 5-56. Condenser coil clean generated the vast majority of savings, accounting for approximately 90% of 2020 savings.

Figure 5-56. Virginia Non-residential Prescriptive Program Gross Annualized Energy Savings (MWh/year) by Measure and Year



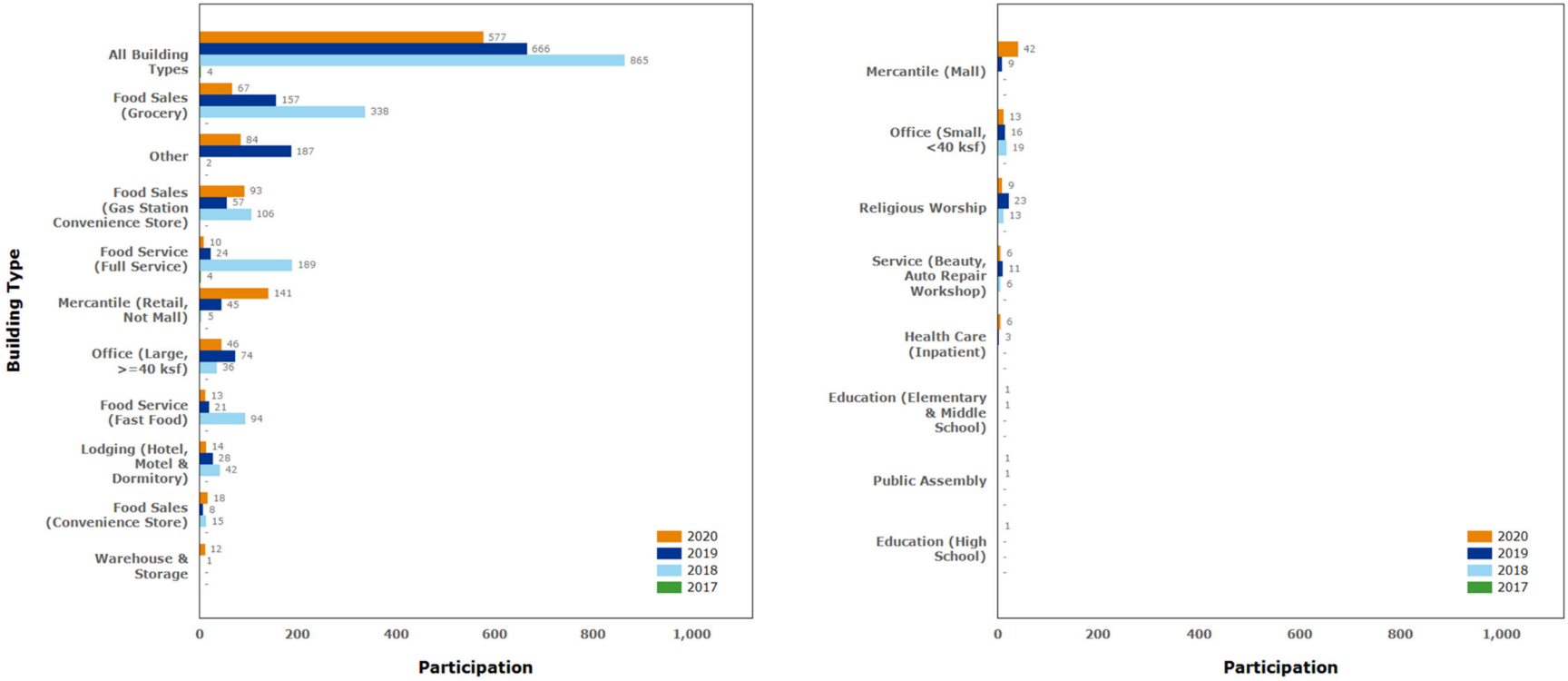
In 2020, there was an influx of program applications from grocery store chains due to program implementation staff actively reaching out to customers to assist the implementation contractor with outreach during the COVID-19 pandemic. Nearly all of these customers implemented condenser coil clean measures resulting in it earning highest average annual savings per participant, as shown in Figure 5-57. It is also the highest savings per participant cumulatively, across all program years.

Figure 5-57. Virginia Average Gross Annualized Energy Savings per Participant (kWh/year-participant) by Measure and Year



In 2020, the largest proportion of participants were located in “mercantile (retail, not mall)” building types, followed by food sales (gas station convenience store) buildings, as shown in Figure 5-58.

Figure 5-58. Virginia Non-residential Prescriptive Program Gross Participation by Building Type and Year



In 2020, food sales (grocery) participants contributed the majority savings (90%) to the program, as shown in Figure 5-59.

Figure 5-59. Virginia Non-residential Prescriptive Program Gross Annualized Energy Savings (MWh/year) by Building Type and Year

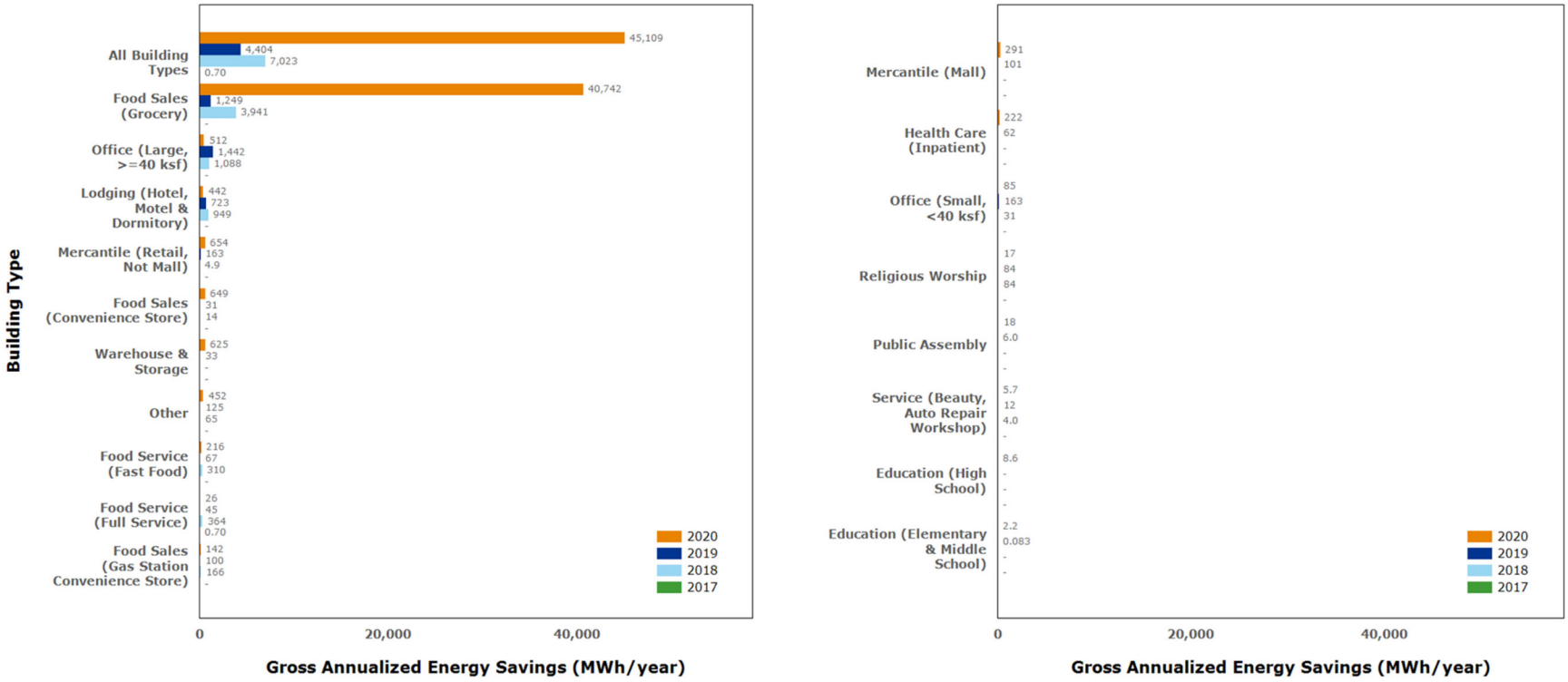
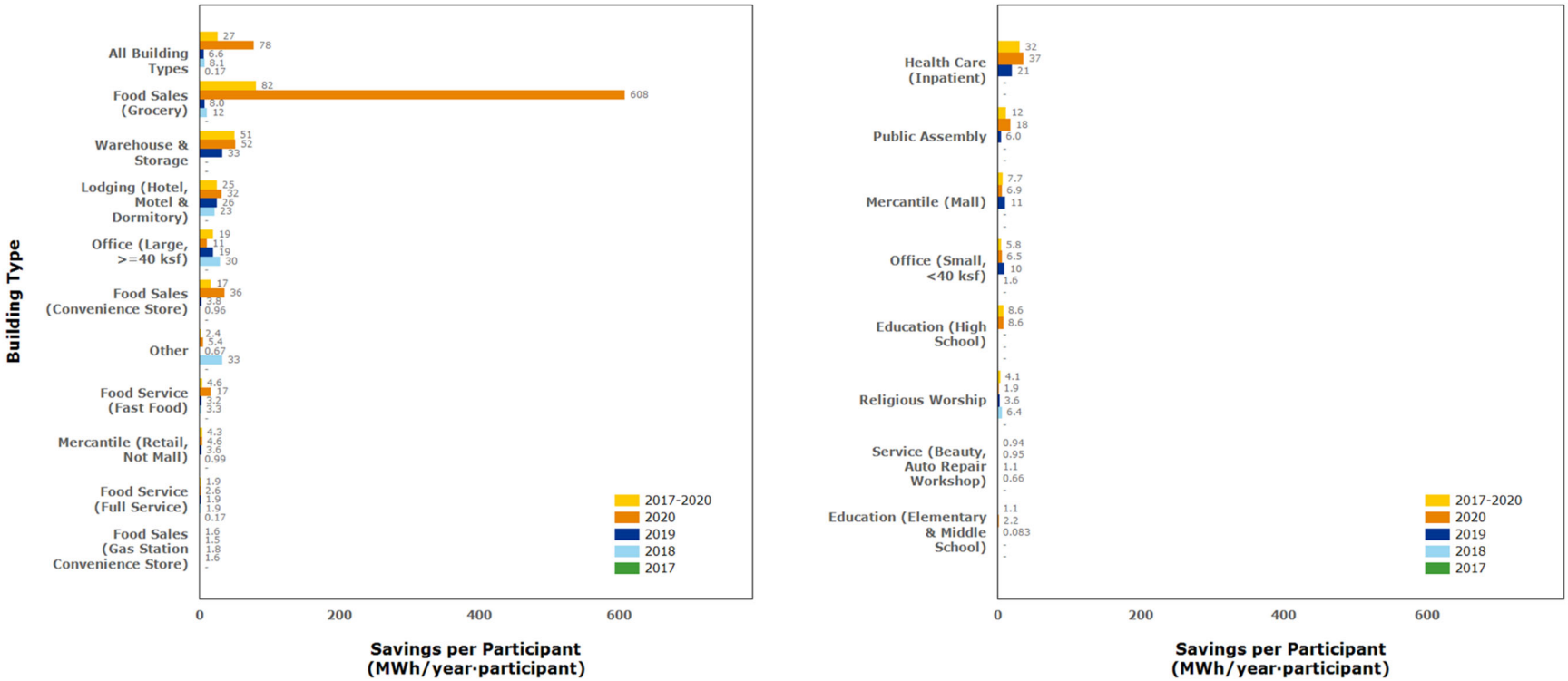


Figure 5-60 shows that the highest gross annualized energy savings per participant were achieved by food sales (grocery) buildings, in 2020 and cumulatively for the life of the program.

Figure 5-60. Virginia Non-residential Prescriptive Program Gross Annualized Energy Savings per Participant (kWh/year-participant) by Building Type and Year



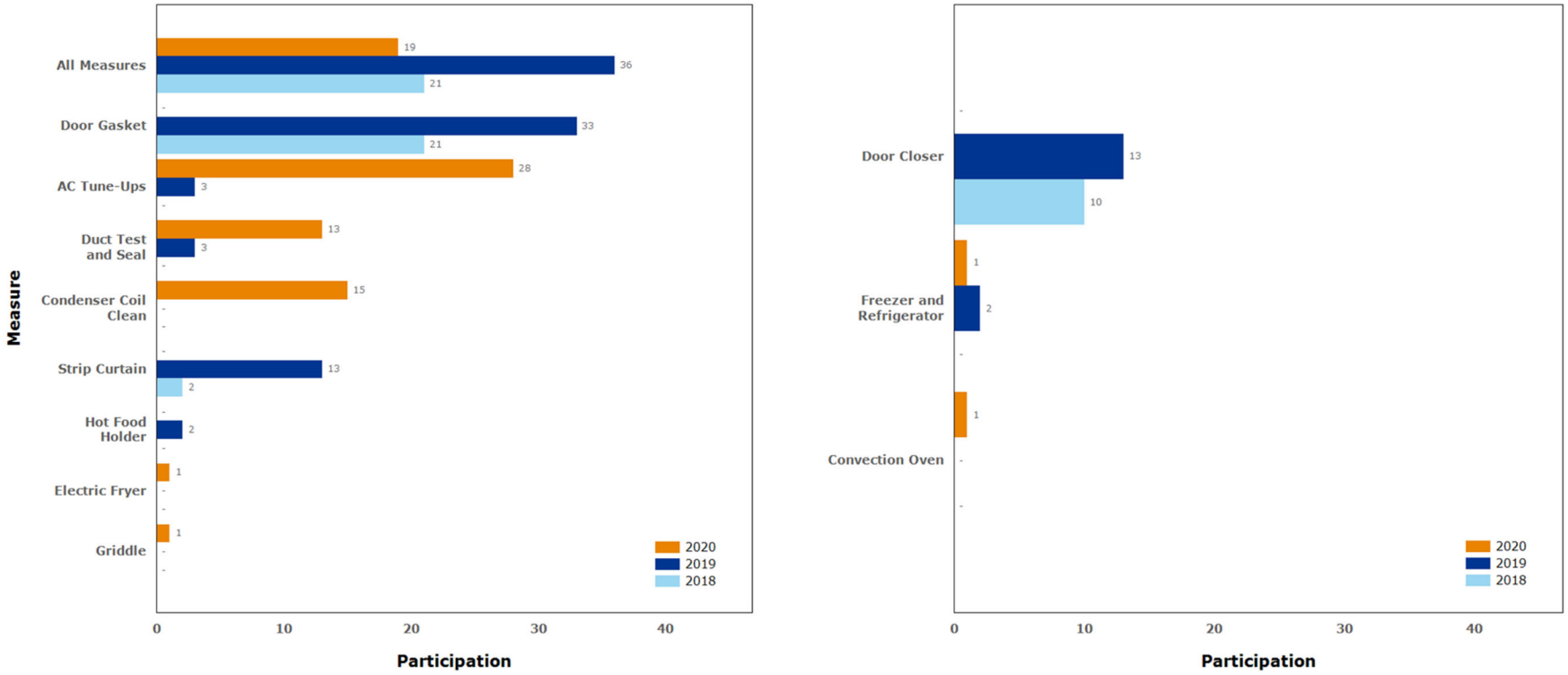
5.6.4.4 Additional North Carolina Program Data

Additional program data regarding energy savings per participant, participation, and overall program savings for North Carolina are provided below. To facilitate comparison of program performance across years the unadjusted gross energy savings values are displayed in the following charts. The adjusted gross energy savings are provided in the performance indicator tables in the previous sections.

Note participation in these charts are the count of new unique customers in the “all measures” presentation of the results. The results by specific measure names count all participants who installed measures in that year, regardless of whether they participated in the program in previous years. This differs from participation count presented in the Key Virginia Program Data and Key North Carolina Program Data sections above, where a participant is only counted once, the first time they receive a rebate. After the first time the participant enrolls in a program, future applications are not counted as a new participant, though their savings are counted.

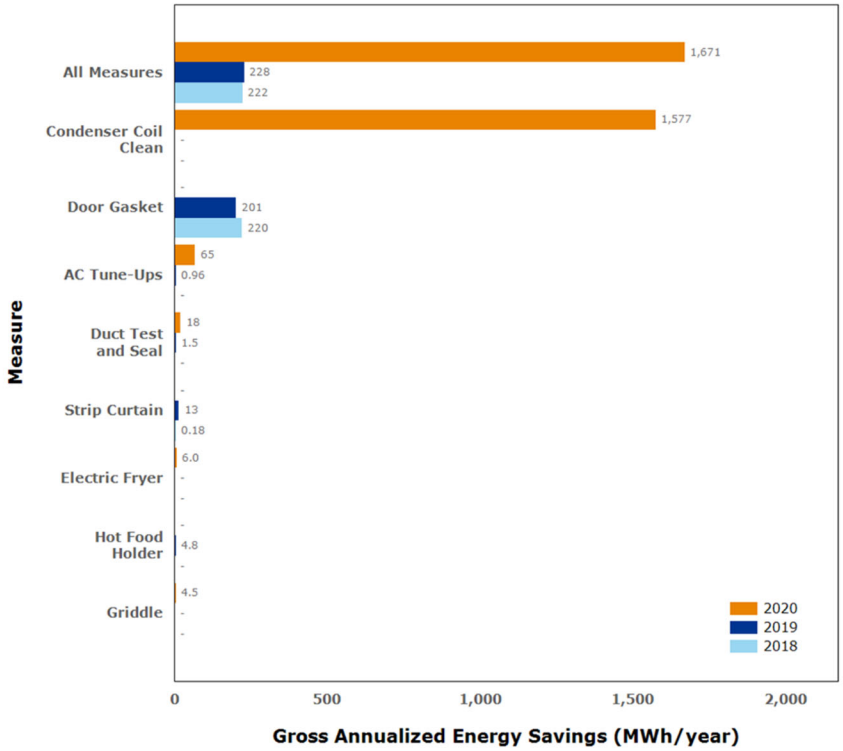
Figure 5-61 through Figure 5-63 show participation and net annualized energy savings by measure type and program year. AC tune-ups were the most frequently installed measure in 2020, implemented by approximately 95% of participants, as shown in Figure 5-61.

Figure 5-61. North Carolina Non-residential Prescriptive Program Participation by Measure



However, condenser coil clean accounted for a majority (94%) of the gross annualized savings in 2020 (Figure 5-62) and had the highest per-participant savings (Figure 5-63).

Figure 5-62. North Carolina Non-residential Prescriptive Program Gross Annualized Energy Savings (MWh/year) by Measure



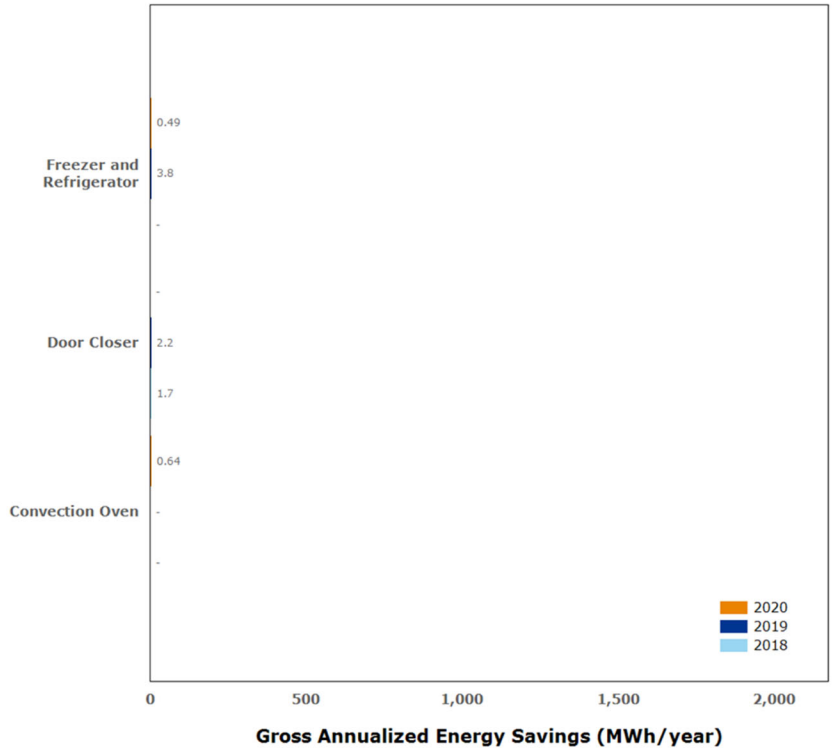


Figure 5-63. North Carolina Non-residential Prescriptive Program Average Gross Annualized Energy Savings per Participant (MWh/year-participant) by Measure

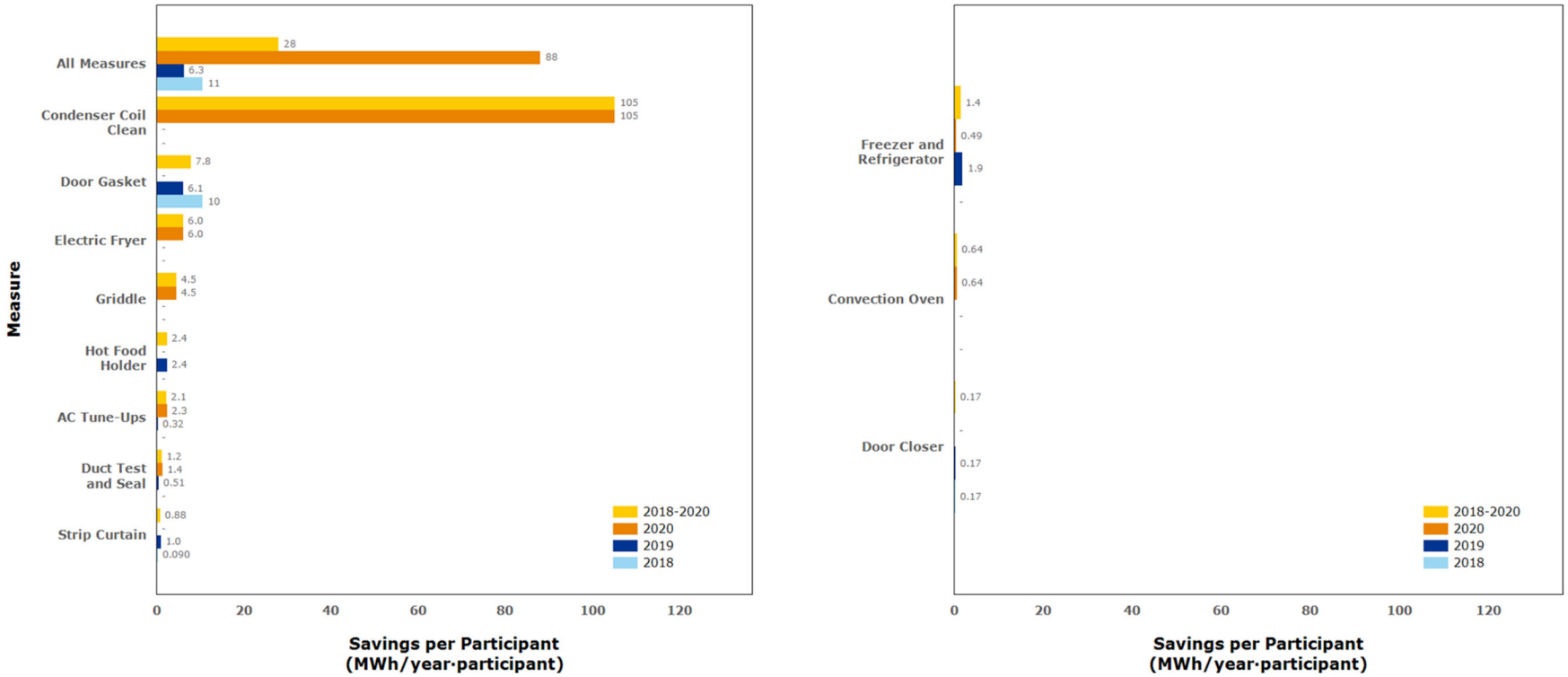


Figure 5-64 shows that mercantile (retail, not mall) were the most frequent new participants in 2020.

Figure 5-64. North Carolina Non-residential Prescriptive Program Gross Participation by Building Type

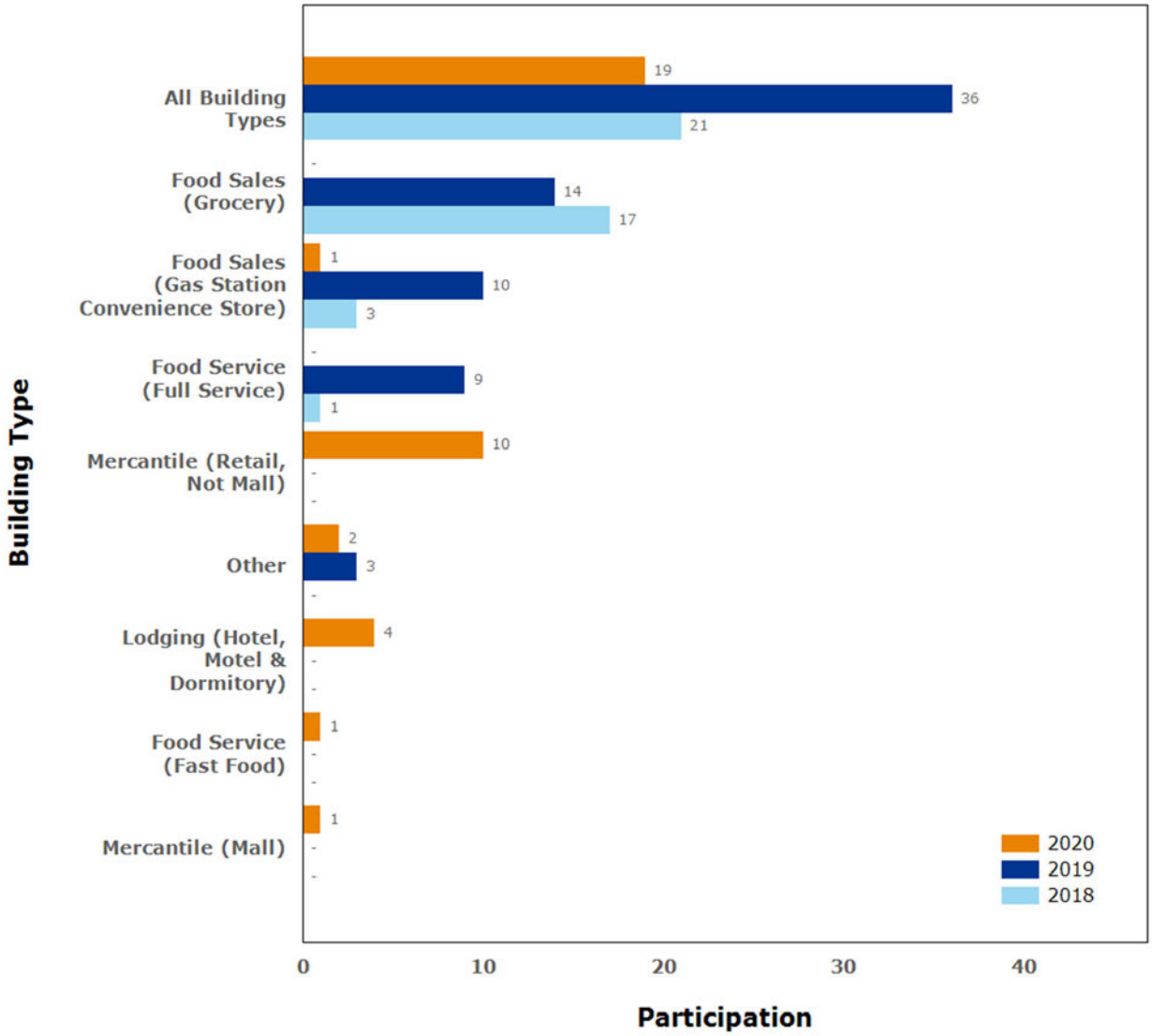
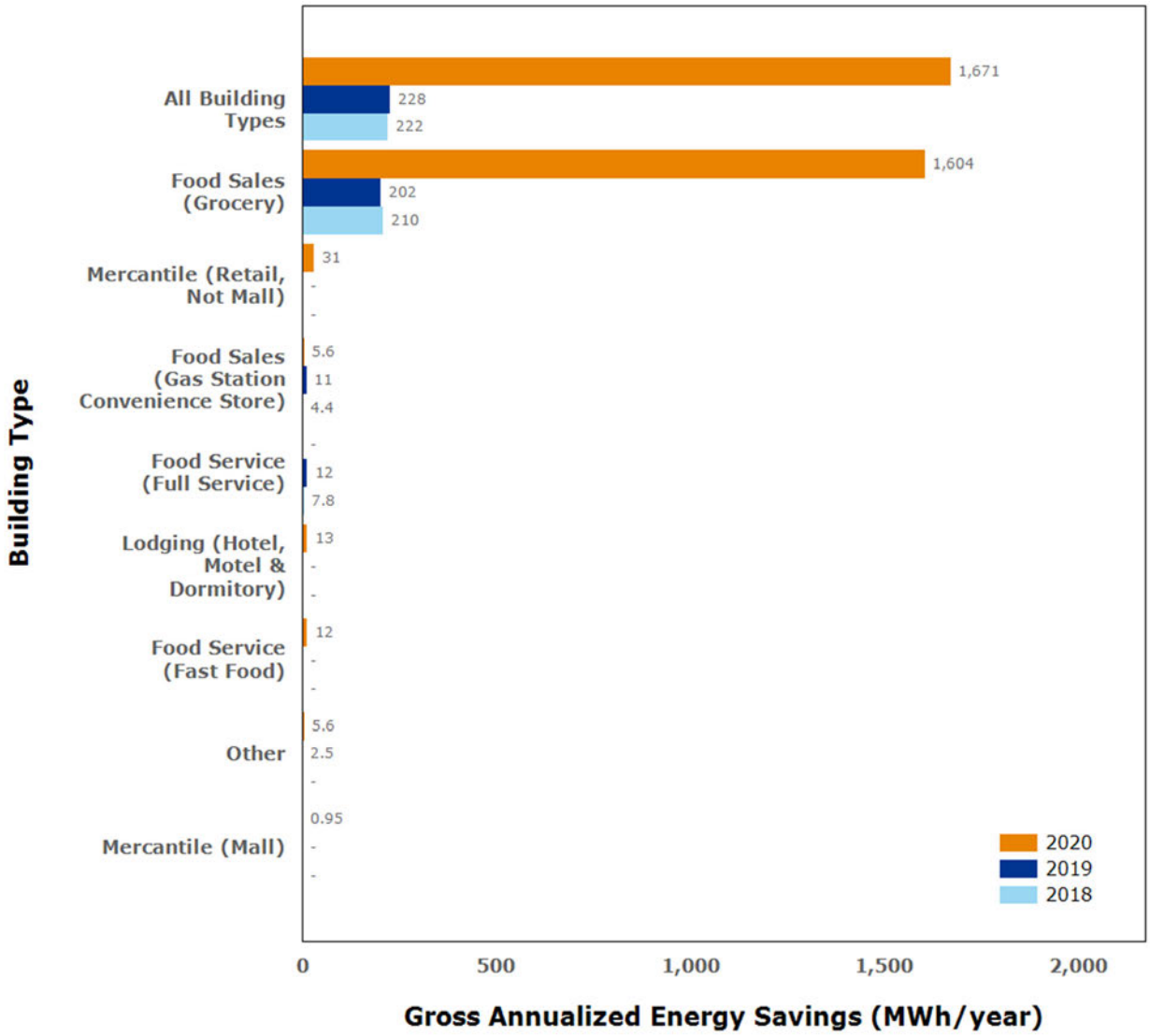


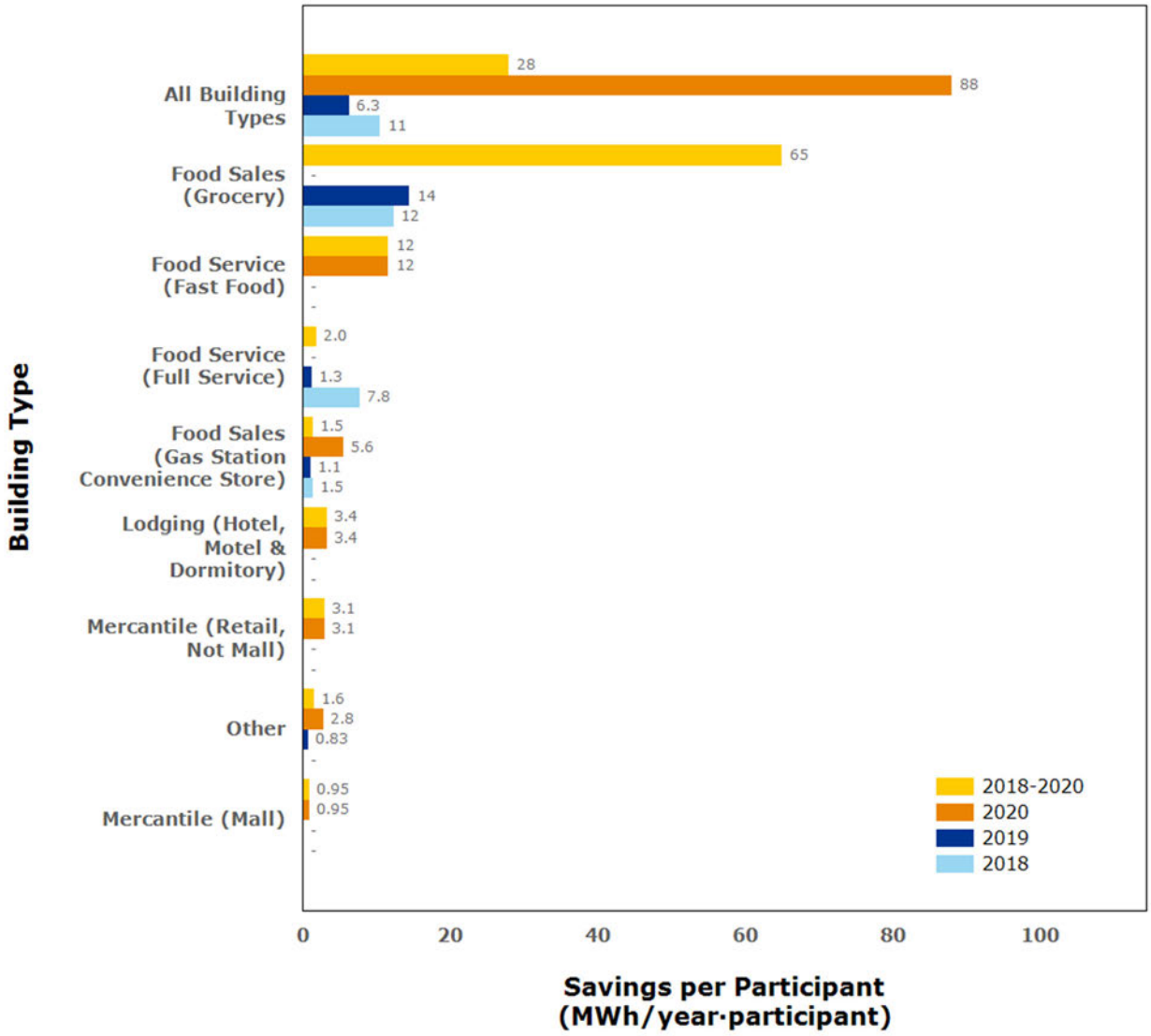
Figure 5-65 shows that the vast majority of the gross annual energy savings (96%) were generated by food sales (grocery) buildings in 2020, continuing a trend since 2018.

Figure 5-65. North Carolina Non-residential Prescriptive Program Gross Annualized Energy Savings (MWh/year) by Building Type



Food Service buildings had the highest average energy savings per participant in 2020, but Food Sales (Grocery) has the highest average energy savings per participant since program inception, Figure 5-66.

Figure 5-66. North Carolina Non-residential Prescriptive Program Average Gross Annualized Energy Savings per Participant (MWh/year-participant) by Building Type



5.7 Non-residential Small Manufacturing – Virginia and North Carolina

Virginia

Case #: PUE-2018-00168

NON-RESIDENTIAL SMALL MANUFACTURING

2019-PRESENT
- **kWh/yr** Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Facility assessment
- Compressed air leak repair
- No loss condensate drains
- Efficient VSD compressors
- Cycling refrigerant dryers

Enrolled **0** customers

Achieved net annual energy savings of **0 MWh/year**

Spent **33%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)				367,297	331,721	699,018
Total Program Participants (#)				0	0	
Total Gross Incremental Savings (kWh/yr)				0	0	
Total Net Incremental Savings (kWh/yr)				0	0	
Average Gross Incremental Demand Reduction (kW)				0	0	
Average Net Incremental Demand Reduction (kW)				0	0	
Total Net Lifetime Savings (kWh)				0	0	
Average Lifetime Demand Reduction (kW)				0	0	

DNV

North Carolina

Docket #: E-22 Sub 571

NON-RESIDENTIAL SMALL MANUFACTURING

2019-PRESENT
- **kWh/yr** Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Facility assessment
- Compressed air leak repair
- No loss condensate drains
- Efficient VSD compressors
- Cycling refrigerant dryers

Enrolled **0** customers, **0%** of planned participation

Achieved net annual energy savings of **0 kWh/year**, **0%** of planned energy savings

Spent **24%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)					18,987	18,987
Total Program Participants (#)					0	
Total Gross Incremental Savings (kWh/yr)					0	
Total Net Incremental Savings (kWh/yr)					0	
Average Gross Incremental Demand Reduction (kW)					0	
Average Net Incremental Demand Reduction (kW)					0	
Total Net Lifetime Savings (kWh)					0	
Average Lifetime Demand Reduction (kW)					0	

5.7.1 Program Description

This program provides qualifying non-residential customers with incentives for the installation of energy efficiency improvements, consisting of primarily compressed air system measures for small manufacturing facilities.

This program is implemented through a contractor network, so customers must contact a participating contractor to be eligible for the rebate. All Dominion Energy non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out. Customers are not considered participants until a completed application form is processed and a rebate is issued. This process can take several months, as customers have 45 days to submit their rebate application and Dominion Energy has 90 days to process it.

The Virginia SCC approved this program, as part of the DSM Phase VII programs, on May 2, 2019, (Case No. PUR-2018-00168) for a five-year period of July 1, 2019, through June 30, 2024. The North Carolina Utilities Commission approved this program on November 13, 2019 (Docket No. E-22, SUB 571). Upon approval, the Company worked to finalize data systems, build contractor networks, and finalize implementation details.

2020 was an extraordinary year by all accounts, due to the COVID-19 pandemic. In response to the pandemic, this program was suspended in March for health and safety reasons and resumed on May 15, 2020. Upon its reopening, the implementation vendors set up new health and safety protocols such as requiring contractors to wear personal protective equipment ("PPE") against COVID-19, conducting temperature checks, and implementing contact tracing (in the event there was a suspected COVID-19 exposure).

Also in response to the pandemic, the Company suspended conventional program marketing approaches during the March through May period. Such marketing efforts include bill inserts and online marketing. Conventional marketing approaches resumed in August. Alternatively, the implementation vendors also increased targeted marketing to customers through one-on-one phone calls to building managers, other customers, and trade organizations.

Table 5-36 maps the applicable sections in this report to reporting requirements listed in the EM&V Rule section 50, "Standard Requirements for Evaluation, Measurement, and Verification Reporting."[142]

[142] 20 VAC 5-318-50

Table 5-36. Non-residential Small Manufacturing Program Compliance with EM&V Rule Section 50

Subsection within 20 VAC 5-318-50	Location and Description
H. EM&V Plan	APPENDIX AA. EM&V Plan
I. Utilizing utility-specific data or other data	**Per 20 VAC 5-318-40 A and B** 4. See APPENDIX F. STEP Manual v2020 for a description of all data or estimates used as inputs for this program and the measures within it. 5. See the Methodologies section (section 3) of this report for a description of the overarching EM&V methodologies used to produce results in this report. **Per 20 VAC 5-318-40 C** 6. There were no program participants in this program in 2020
J. Changes to measure-level inputs and assumptions, and inputs to cost/benefit estimates	3. See Table 5- for program planning assumptions 4. See documents filed with the Virginia State Corporation Commission Docket PUR-2018-00168 for approved measure-level inputs and assumptions, and the impact of such changes on original cost/benefit estimates for DSM programs or measures.
K. Measure-level data collection methodology	See response to A. and B. above.
L. Explanation of eligibility requirements for each rate schedule that program is offered	See program description above.
M. Comparison of measured annual measure or program savings estimates to the annual usage of the average rate schedule usage, and eligible customer in each rate schedule	There were no program participants in this program in 2020
N. Explanation of controls undertaken by utility	See APPENDIX KK

5.7.2 Methods for the Current Reporting Period

This section describes the program's planned participants, energy savings, and demand reduction.

Table 5-39. Non-residential Small Manufacturing Program (Phase VII) Planning Assumptions System-wide

Assumption	Value
Target Market	Non-residential customers
NTG Factor	90%
Measure Life (years)	12.24
Average Annual Energy Savings per Participant (kWh/year)	50,767
Average Coincident Peak Demand Reduction per Participant (kW)	10.7
Average Rebate per Participant (US$)	$9,815.00

5.7.3 Assessment of Program Progress towards Plan

The next section describes the program's progress towards planned participants, energy savings, and demand reduction.

5.7.3.1 Key Virginia Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for Virginia in 2020 immediately follow this paragraph. Following this summary, Table 5-37 provides performance indicator data from July 1, 2019 through

December 31, 2020, and shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.13.

- There were no participants in 2020.

- There were no kWh or kW savings because there were no participants in 2020.

- Total cost for 2020 was 27% of planned cost. Total cost for 2019-2020 was 33% of planned cost.
- All costs were related to program implementation, EM&V, and other administrative activities to launch the program.

Table 5-37. Virginia Non-residential Small Manufacturing Program Performance Indicators (2019-2020)

Category	Item	2019	2020	Program Total (2019-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]		
	Direct Implementation			
	Direct EM&V			
	Indirect Other (Administrative)	$12,414	$17,681	$30,095
Total Costs ($)	Total[143]	$367,297	$331,721	$699,018
	Planned	$862,936	$1,226,932	$2,089,868
	Variance	-$495,639	-$895,211	-$1,390,850
	Annual % of Planned	43%	27%	33%
Participants	Total (Gross)	0	0	0
	Planned (Gross)	35	66	101
	Variance	-35	-66	-101
	Annual % of Planned (Gross)	0%	0%	0%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	0	0	0
	Realization Rate Adjustment (100%)	0	0	0
	Adjusted Gross Savings	0	0	0

[143] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Category	Item	2019	2020	Program Total (2019-2020)
	Net-to-Gross Adjustment (80%)	0	0	0
	Net Adjusted Savings	0	0	0
	Planned Savings (Net)	351,539	3,320,243	3,671,782
	Annual % Toward Planned Savings (Net)	0%	0%	0%
	Avg. Savings per Participant (Gross)	N/A	N/A	N/A
	Avg. Savings per Participant (Net)	N/A	N/A	N/A
Installed Demand Reduction (kW)	Total Gross Deemed Demand	0.0	0.0	0.0
	Realization Rate Adjustment (100%)	0.0	0.0	0.0
	Adjusted Gross Demand	0.0	0.0	0.0
	Net-to-Gross Adjustment (90%)	0.0	0.0	0.0
	Net Adjusted Demand	0.0	0.0	0.0
	Planned Demand (Net)	0.0	0.0	0.0
	Annual % Toward Planned Demand (Net)	N/A	N/A	N/A
	Avg. Peak Demand per Participant (Gross)	N/A	N/A	N/A
	Avg. Demand per Participant (Net)	N/A	N/A	N/A
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A
	Annual $EM&V per Total Costs ($)	21.0%	30.0%	25.1%
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A

5.7.3.2 Key North Carolina Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for North Carolina in 2020 appear below. Following this summary, Table 5-38 provides performance indicator data from July 1, 2019 through December 31, 2020, and shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix B.11.

- There were no participants in 2020.

- There were no kWh or kW savings because there were no participants in 2020.

- Total cost for 2020 was 24% of planned cost.
- All costs were related to program implementation, EM&V, and other administrative activities to launch the program.

Table 5-38. North Carolina Non-residential Small Manufacturing Program Performance Indicators (2020)

Category	Item	2020
Operations and Management Costs ($)	Direct Rebate	[redacted]
	Direct Implementation	
	Direct EM&V	
	Indirect Other (Administrative)	$987
Total Costs ($)	Total[144]	$18,987
	Planned	$77,923
	Variance	-$58,937
	Annual % of Planned	24%
Participants	Total (Gross)	0
	Planned (Gross)	4
	Variance	-4
	Annual % of Planned (Gross)	0%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	0
	Realization Rate Adjustment (100%)	0
	Adjusted Gross Savings	0
	Net-to-Gross Adjustment (80%)	0
	Net Adjusted Savings	0
	Planned Savings (Net)	0
	Annual % Toward Planned Savings (Net)	N/A
	Avg. Savings per Participant (Gross)	N/A
	Avg. Savings per Participant (Net)	N/A
Installed Demand Reduction (kW)	Total Gross Deemed Demand	0.0
	Realization Rate Adjustment (100%)	0.0
	Adjusted Gross Demand	0.0
	Net-to-Gross Adjustment (90%)	0.0
	Net Adjusted Demand	0.0

[144] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Category	Item	2020
	Planned Demand (Net)	0.0
	Annual % Toward Planned Demand (Net)	N/A
	Avg. Peak Demand per Participant (Gross)	N/A
	Avg. Demand per Participant (Net)	N/A
Program Performance	Annual $Admin. per Participant (Gross)	N/A
	Annual $Admin. per kWh/year (Gross)	N/A
	Annual $Admin. per kW (Gross)	N/A
	Annual $EM&V per Total Costs ($)	24.4%
	Annual $Rebate per Participant (Gross)	N/A

5.7.3.3 Additional Virginia Program Data

Since no Virginia customers have participated in the program through 2020, no additional data are available.

5.7.3.4 Additional North Carolina Program Data

Since no North Carolina customers have participated in the program through 2020, no additional data are available.

5.7.3.5 Comparison of Savings with Usage

Since no Virginia customers have participated in the program through 2020, no comparison of savings to usage is possible.

5.8 Non-residential Office – Virginia and North Carolina

Virginia

Case #: PUE-2018-00168

NON-RESIDENTIAL OFFICE

2019-PRESENT
19,713 kWh/yr Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Facility assessment
- Lighting equipment scheduling
- HVAC equipment scheduling
- Night temperature setback
- Supply air temperature setback

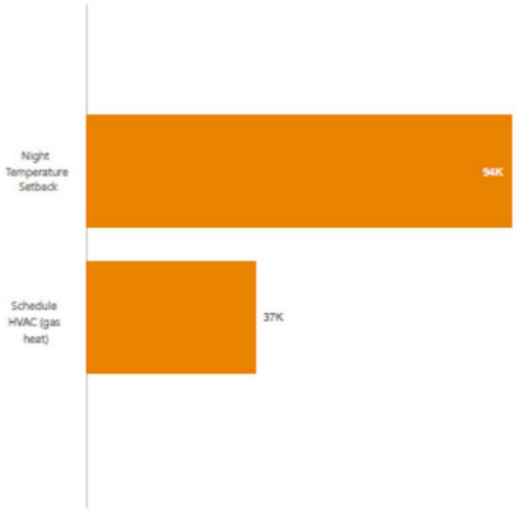
Enrolled **6** customers, **5%** of planned participation

Achieved net annual energy savings of **118,275 kWh/year**, **2%** of planned energy savings

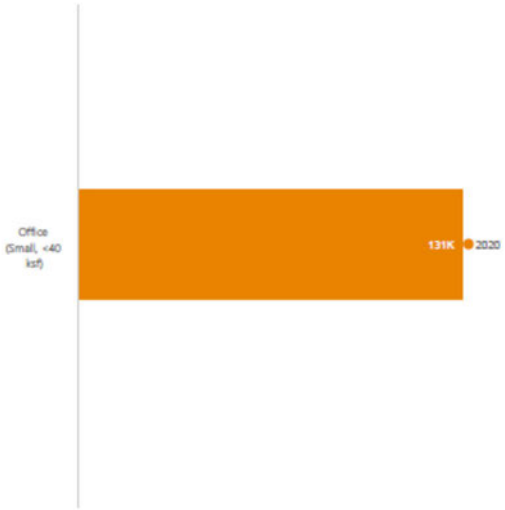
Spent **41%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)				405,507	408,837	814,344
Total Program Participants (#)				0	6	6
Total Gross Incremental Savings (kWh/yr)				0	131,417	
Total Net Incremental Savings (kWh/yr)				0	118,275	
Average Gross Incremental Demand Reduction (kW)				0	0	
Average Net Incremental Demand Reduction (kW)				0	0	
Total Net Lifetime Savings (kWh)				0	18,563	827,926
Average Lifetime Demand Reduction (kW)				0	0	0

TOTAL SAVING BY MEASURE TYPE
TOP 5 IN KWH



TOTAL SAVINGS BY BUILDING TYPE
TOP 5 IN KWH



DNV

North Carolina

Docket #: E-22 Sub 572

NON-RESIDENTIAL OFFICE

2019-PRESENT
- **kWh/yr** Average Net Savings Per Participant

Eligibility

- All non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out
- Must be the owner of the facility or reasonably able to secure permission to complete measures
- Work must be completed by participating contractor

Measures

- Facility assessment
- Lighting equipment scheduling
- HVAC equipment scheduling
- Night temperature setback
- Supply air temperature setback

Enrolled **0** customers, **0%** of planned participation

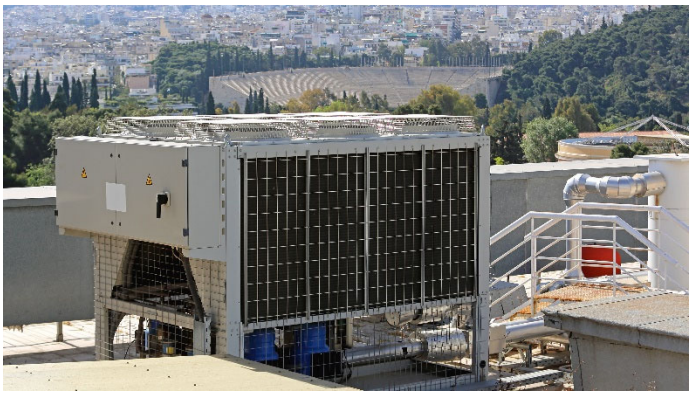
Achieved net annual energy savings of **0 kWh/year**, **0%** of planned energy savings

Spent **29%** of planned expenditures

Category	2016	2017	2018	2019	2020	Lifetime
Total Program Cost ($)					21,142	21,142
Total Program Participants (#)					0	
Total Gross Incremental Savings (kWh/yr)					0	
Total Net Incremental Savings (kWh/yr)					0	
Average Gross Incremental Demand Reduction (kW)					0	
Average Net Incremental Demand Reduction (kW)					0	
Total Net Lifetime Savings (kWh)					0	
Average Lifetime Demand Reduction (kW)					0	

5.8.1 Program Description

This program provides qualifying non-residential customers with incentives for the installation of energy efficiency improvements, consisting of recommissioning measures at small office facilities. Measures eligible to receive a rebate include:



- Reduce Lighting Schedule
- HVAC Unit Scheduling
- Temperature Setback
- Condensing Water Reset
- Discharge Air Temperature Reset
- Static Pressure Reset
- VAV Minimum Flow Reduction
- Enthalpy Economizer Control
- Economizers

This program is implemented through a contractor network, so customers must contact a participating contractor to be eligible for the rebate. All Dominion Energy non-residential customers are eligible except those who are exempt by statute, special contract, or have opted-out. Customers are not considered participants until a completed application form is processed and a rebate is issued. This process can take several months, as customers have 45 days to submit their rebate application and Dominion Energy has 90 days to process it.

The Virginia SCC approved this program, as part of the DSM Phase VII programs, on May 2, 2019 (Case No. PUR-2018-00168) for a five-year period of July 1, 2019, through June 30, 2024. The North Carolina Utilities Commission approved this program on November 13, 2019 (Docket No. E-22, SUB 572). Upon approval, the Company worked to finalize data systems, build contractor networks, and finalize implementation details.

The COVID-19 pandemic caused the program to be suspended from March through May for health and safety reasons. Upon reopening, the implementation vendors set up new health and safety protocols such as requiring contractors to wear personal protective equipment ("PPE") against COVID-19, conducting temperature checks, implementing contact tracing (if there is a suspected COVID-19 exposure), social distancing when at the customer site or offer to visit the customer site after hours.

Table 5-39 maps the applicable sections in this report to reporting requirements listed in the EM&V Rule section 50, "Standard Requirements for Evaluation, Measurement, and Verification Reporting."[145]

[145] 20 VAC 5-318-50

Table 5-39. Non-residential Office Program Compliance with EM&V Rule Section 50

Subsection within 20 VAC 5-318-50	Location and Description
A. EM&V Plan	APPENDIX Z, EM&V Plan
B. Utilizing utility-specific data or other data	**Per 20 VAC 5-318-40 A and B** 1. See APPENDIX F. STEP Manual v2020 for a description of all data or estimates used as inputs for this program and the measures within it. 2. See the Methodologies section (section 3) of this report for a description of the overarching EM&V methodologies used to produce results in this report. **Per 20 VAC 5-318-40 C** 3. There were six program participants in this program in 2020
C. Changes to measure-level inputs and assumptions, and inputs to cost/benefit estimates	1. See Table 5-40 for program planning assumptions 2. See documents filed with the Virginia State Corporation Commission Docket PUR-2017-00129 for approved measure-level inputs and assumptions, and the impact of such changes on original cost/benefit estimates for DSM programs or measures.
D. Measure-level data collection methodology	See response to A. and B. above.
E. Explanation of eligibility requirements for each rate schedule that program is offered	See program description above.
F. Comparison of measured annual measure or program savings estimates to the annual usage of the average rate schedule usage, and eligible customer in each rate schedule	See Section 5.8.3.5
G. Explanation of controls undertaken by utility	See APPENDIX KK

5.8.2 Methods for the Current Reporting Period

The next section describes the program's progress towards planned participants, energy savings, and demand reduction.

Table 5-40. Non-residential Office Program (Phase VII) Planning Assumptions System-wide

Assumption	Value
Target Market	Non-residential customers
NTG Factor	90%
Measure Life (years)	7
Average Annual Energy Savings per Participant (kWh/year)	65,104.24
Net Average Annual Energy Savings per Participant (kWh/year)	58,593.82
Average Coincident Peak Demand Reduction (kW) per Participant	1
Average Rebate (US$) per Participant	$6,649

5.8.3 Assessment of Program Progress towards Plan

The next section describes the program's progress towards planned participants, energy savings, and demand reduction.

5.8.3.1 Key Virginia Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for Virginia appear below. Following this summary, Table 5-41 provides performance indicator data annually and from program inception through 2020.

Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix A.19, cumulative gross savings are in Appendix C.10, and cumulative net savings are in Appendix D.10.

- 2020 was the first year with program activity, with six participants.
- Participation was only 8% of planned participation.
- Low participation in 2020 may partially have been due to the COVID-19 pandemic and the resulting temporary suspension of program activities.

- In 2020, the program achieved net energy savings of 118,275 kWh/year, approximately 2% of planned savings.
- In 2020, the average net energy savings per participant was 19,713 kWh, approximately 34% of the planned assumption for savings per participant.
- In 2020, there was no demand reduction with the planning assumed average coincident peak demand savings of 1 kW per participant.

- Total expenditures in 2020 were 36% of planned costs.
- 43% ($17,666) went towards direct rebates, all other costs were related to program implementation, EM&V, and other administrative activities to launch the program.

Table 5-41. Virginia Non-residential Office Program Performance Indicators (2019-2020)

Category	Item	2019	2020	Program Total (2019-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]		
	Direct Implementation			
	Direct EM&V			
	Indirect Other (Administrative)	$13,706	$21,271	$34,977
Total Costs ($)	Total[146]	$405,507	$408,837	$814,344
	Planned	$832,726	$1,140,867	$1,973,592
	Variance	-$427,218	-$732,030	-$1,159,248
	Annual % of Planned	49%	36%	41%

[146] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

Category	Item	2019	2020	Program Total (2019-2020)
Participants	Total (Gross)	0	6	6
	Planned (Gross)	42	79	121
	Variance	-42	-73	-115
	Annual % of Planned (Gross)	0%	8%	5%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	0	131,417	131,417
	Realization Rate Adjustment (100%)	0	0	0
	Adjusted Gross Savings	0	131,417	131,417
	Net-to-Gross Adjustment (90%)[147]	0	-13,142	-13,142
	Net Adjusted Savings	0	118,275	118,275
	Planned Savings (Net)	594,427	4,901,797	5,496,225
	Annual % Toward Planned Savings (Net)	0%	2%	2%
	Avg. Savings per Participant (Gross)	N/A	21,903	21,903
	Avg. Savings per Participant (Net)	N/A	19,713	19,713
Installed Demand Reduction (kW)	Total Gross Deemed Demand	0.0	0.0	0.0
	Realization Rate Adjustment (100%)	0.0	0.0	0.0
	Adjusted Gross Demand	0.0	0.0	0.0
	Net-to-Gross Adjustment (90%)[148]	0.0	0.0	0.0
	Net Adjusted Demand	0.0	0.0	0.0
	Planned Demand (Net)	0.0	427.4	427.4
	Annual % Toward Planned Demand (Net)	N/A	0.0%	0.0%
	Avg. Peak Demand per Participant (Gross)	N/A	-	-
	Avg. Demand per Participant (Net)	N/A	-	-
Program Performance	Annual $Admin. per Participant (Gross)	N/A	$3,545	$5,829
	Annual $Admin. per kWh/year (Gross)	N/A	$0.16	$0.27
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A
	Annual $EM&V per Total Costs ($)	25.8%	35.9%	30.9%
	Annual $Rebate per Participant (Gross)	N/A	$2,944	$2,944

[147] On the rebate application form the program implementation vendor included the question, "Did the rebate incentive offered by Dominion Energy have any influence in your decision to have the work performed?" Of the participants who responded (from program inception to the end of this reporting period), the implementation vendor has calculated that 100% answered yes at the time they filled out the rebate application. This is not a substitute for a net-to-gross analysis conducted by an independent evaluator. See section 3.1.3 Net Savings Estimation for a description of net-to-gross estimation approaches.

[148] Ibid.

Table 5-42. Virginia Non-residential Office (DSM Phase VII) Measure-Level Performance Indicators (2020)

Program	kWh/year		kW	
Non-residential Office – Virginia (DSM VII)	Realization Rate	Net-to-Gross	Realization Rate	Net-to-Gross
	100%	90%	100%	90%
Measure	**Gross**	**Net**	**Gross**	**Net**
	Gross	Net	Gross	Net
Night Temperature Setback	94,198	84,778	0.0	0.0
Schedule HVAC (gas heat)	37,218	33,497	0.0	0.0
Total	131,417	118,275	0.0	0.0

5.8.3.2 Key North Carolina Program Data

Key data highlights for enrollment, energy savings, demand reduction and program costs for North Carolina appear below. Following this summary, Table 5-43 provides performance indicator data for the year. Shaded cells are considered extraordinarily sensitive information. Detailed program indicators by year and month are provided in Appendix B.10.

- 2020 was the first year this program was active in NC.
- There were no participants in 2020.

- There were no annual kWh or kW savings because there were no participants in 2020.

- Total expenditures in 2020 were 29% of planned costs.
- All costs were related to program implementation and EM&V activities to launch the program.

Table 5-43. North Carolina Non-residential Office Program Performance Indicators (2020)

Category	Item	2020
Operations and Management Costs ($)	Direct Rebate	[redacted]
	Direct Implementation	
	Direct EM&V	
	Indirect Other (Administrative)	$0

Category	Item	2020
Total Costs ($)	Total[149]	$21,142
	Planned	$72,457
	Variance	-$51,316
	Annual % of Planned	29%
Participants	Total (Gross)	0
	Planned (Gross)	5
	Variance	-5
	Annual % of Planned (Gross)	0%
Installed Energy Savings (kWh/year)	Total Gross Deemed Savings	0
	Realization Rate Adjustment (100%)	0
	Adjusted Gross Savings	0
	Net-to-Gross Adjustment (90%)	0
	Net Adjusted Savings	0
	Planned Savings (Net)	310,240
	Annual % Toward Planned Savings (Net)	0%
	Avg. Savings per Participant (Gross)	N/A
	Avg. Savings per Participant (Net)	N/A
Installed Demand Reduction (kW)	Total Gross Deemed Demand	0.0
	Realization Rate Adjustment (100%)	0.0
	Adjusted Gross Demand	0.0
	Net-to-Gross Adjustment (90%)	0.0
	Net Adjusted Demand	0.0
	Planned Demand (Net)	28.9
	Annual % Toward Planned Demand (Net)	0.0%
	Avg. Peak Demand per Participant (Gross)	N/A
	Avg. Demand per Participant (Net)	N/A
Program Performance	Annual $Admin. per Participant (Gross)	N/A
	Annual $Admin. per kWh/year (Gross)	N/A
	Annual $Admin. per kW (Gross)	N/A
	Annual $EM&V per Total Costs ($)	39.8%
	Annual $Rebate per Participant (Gross)	N/A

[149] Program expenditures include operations and maintenance, capital spending, and common costs. Operations and maintenance spending are separated by direct rebate, direct implementation, direct EM&V, other indirect or administrative spending. The expenditures reported in this document do not include the Company's margins.

5.8.3.3 Additional Virginia Program Data

There was a total of six participants in 2020. All participants implemented both HVAC unit scheduling and night temperature setback. No other measures were implemented. About 72% of the total program savings (94 MWh/year) are from implementing night temperature setback. The remainder of the program savings, about 18%, result from implementing HVAC unit scheduling.

All participants in 2020 were at small office buildings (four stories or less).

5.8.3.4 Additional North Carolina Program Data

No North Carolina customers have participated in the program through 2020.

5.8.3.5 Comparison of Savings with Usage

See

Table 5-44 for a comparison of the 2020 program net adjusted savings in Virginia with the system-wide planned savings for the program, the annual usage for an average rate schedule, and the annual usage for eligible customers in the rate schedule.

Table 5-44. Virginia 2020 Non-residential Office (DSM Phase VIII) Program Comparison of Savings with Usage by Rate Schedule

Comparisons	Item	Value
Schedule GS-2		
Comparison of Savings	Net Systemwide Planned Savings	58,593.82 kWh/year per participant
	Net Adjusted Savings	10,838 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	18%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[150]	289,108 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	3.7%
Comparison to Annual Usage of Eligible Customers in Rate Schedule	Average Annual Usage	See "Comparison to Average Annual Usage for Rate Schedule"
	Net Adjusted Savings as Percent of Average Annual Usage	
Schedule GS-2T		
Comparison of Savings	Net Systemwide Planned Savings	58,593.82 kWh/year per participant
	Net Adjusted Savings	24,150 kWh/year per participant
	Net Adjusted Savings as Percent of Planned Savings	41%
Comparison to Average Annual Usage for Rate Schedule	Average Annual Usage[151]	483,421 kWh/participant
	Net Adjusted Savings as Percent of Average Annual Usage	5%
Comparison to Annual Usage of	Average Annual Usage	See "Comparison to Average Annual

[150] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304.1, Line 9, Column E (kWh of Sales Per Customer).

[151] FERC FINANCIAL REPORT FERC FORM No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report." For Virginia Electric and Power Company. Year/Period of Report End of 2018/Q4. Filed 3/26/2019. Page 304, Line 28, Column E (kWh of Sales Per Customer).

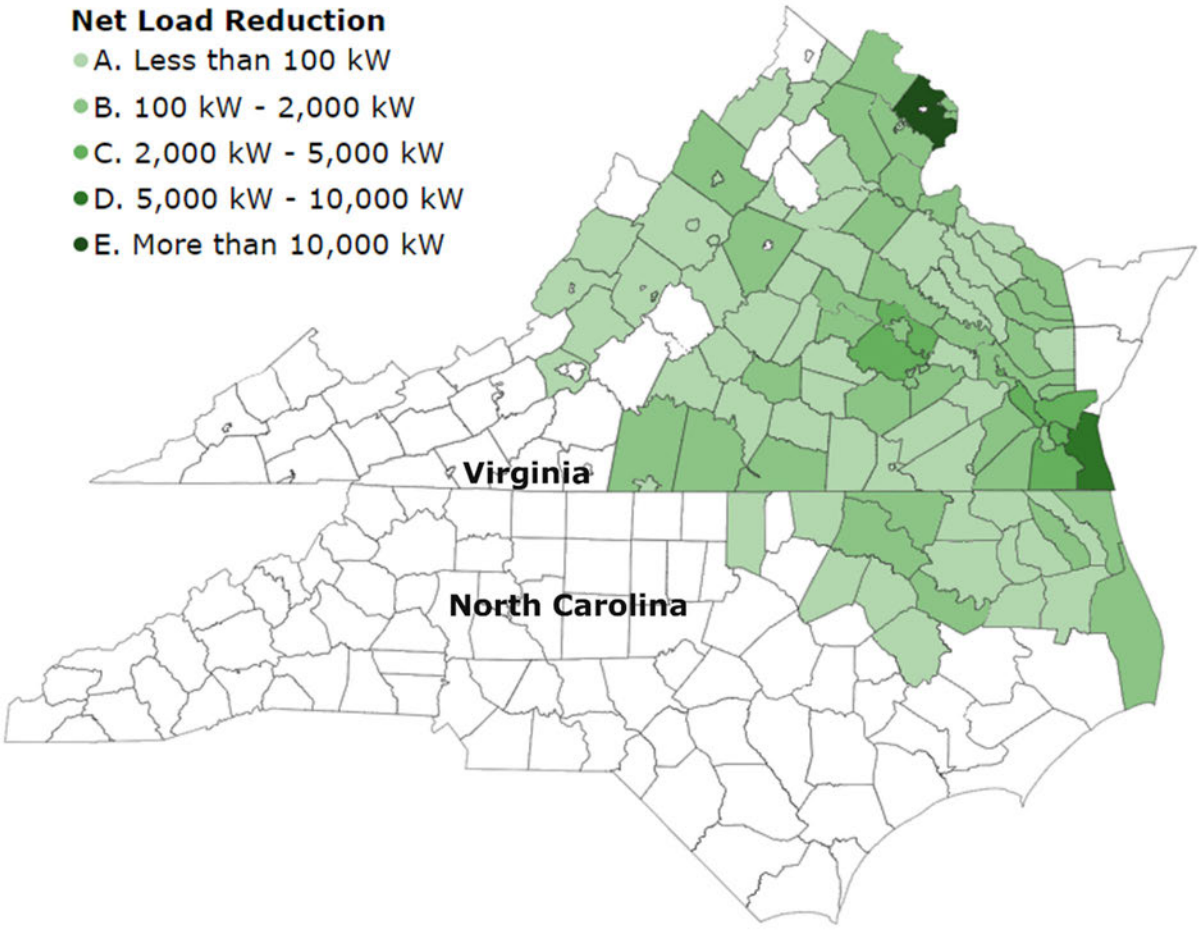
Comparisons	Item	Value
Eligible Customers in Rate Schedule	Net Adjusted Savings as Percent of Average Annual Usage	Usage for Rate Schedule"

6 PEAK SHAVING PROGRAMS

The Company operates two peak shaving (demand response) programs, the Residential AC Cycling Program and the Non-residential Distributed Generation ("DG") Program. Both programs operate by dispatching load on a limited number of non-holiday weekday hours, referred to as peak shaving events. Figure 6-1 illustrates the combined peak shaving potential (in kW) from both programs at the county level. The deeper the color, the greater the peak shaving potential.

As with the DSM energy efficiency programs, the Virginia counties with the highest potential center around Richmond, Norfolk, and northern Virginia. In decreasing order, the jurisdictions with the highest peak shaving potentials are Fairfax, Virginia Beach City, and Newport News City. In North Carolina, the jurisdictions with the highest peak shaving potentials are Dare, Halifax, and Currituck, in decreasing order.

Figure 6-1. Peak Shaving Potential for the Residential AC Cycling and Non-residential Distributed Generation Program by County as of December 31, 2020.



6.1 Residential AC Cycling – Virginia and North Carolina

Virginia

Case #: PUE-2016-00111

RESIDENTIAL AC CYCLING

2010-PRESENT
0.63 kW/participant potential reduction

Eligibility

- Eligible customers must reside in an owner-occupied single-family home, townhouse, or condominium
- A participant is defined as one customer account but a participant may have multiple AC switches

Events

- The AC Cycling event season spans June 1 through September 30 on non-holiday weekdays
- In 2019 the program called 23 events
- For the first time a 2-hour event was called outside the normal event season, on October 2

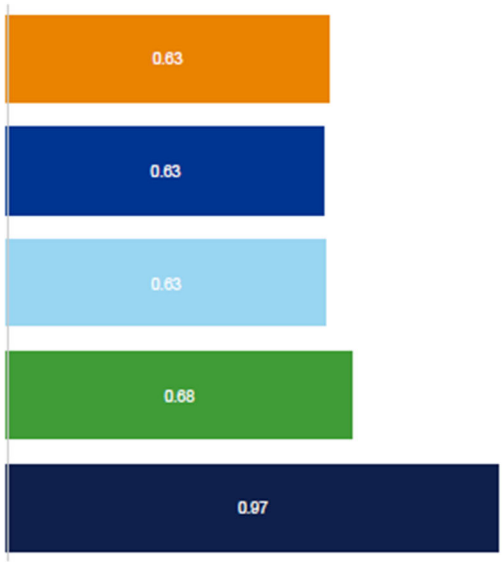
68,463 participants as of December 31st, 2020 representing **85%** of the planned total

43,383 potential kW reduction which was also **85%** of the planned total

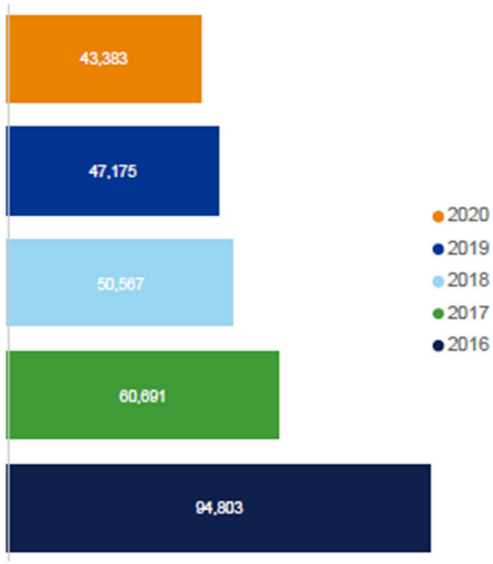
Spent **66%** of planned expenditures

Category	2016	2017	2018	2019	2020
Total Program Cost ($)	6,700,360	6,159,956	6,034,693	5,781,716	5,287,678
Total Program Participants (adjusted)	98,088	89,282	80,627	75,386	68,463
Demand Reduction at Peak Planning (kW/participant)	0.97	0.68	0.63	0.63	0.63
Dispatchable Peak Shaving Potential (kW)	94,803	60,691	50,567	47,175	43,383

EX-ANTE ESTIMATED PEAK SAVINGS
(KW PER PARTICIPANT)



DISPATCHABLE PEAK SHAVING POTENTIAL
(KW)



DNV

North Carolina

Docket #: E-22 Sub 545

RESIDENTIAL AC CYCLING

2011-PRESENT
0.63 kW/participant potential reduction

Eligibility

- Eligible customers must reside in an owner-occupied single-family home, townhouse, or condominium
- A participant is defined as one customer account but a participant may have multiple AC switches

Events

- The AC Cycling event season spans June 1 through September 30 on non-holiday weekdays
- In 2019 the program called 23 events
- For the first time a 2-hour event was called outside the normal event season, on October 2

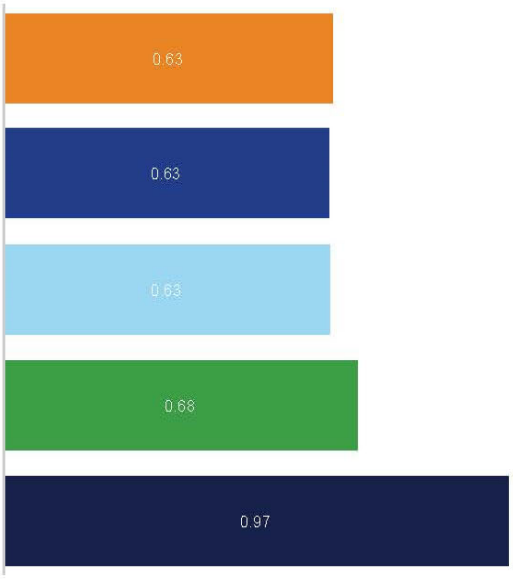
2,790 participants as of December 31st, 2020 representing **66%** of the planned total

1,769 potential kW reduction was also **66%** of the planned total

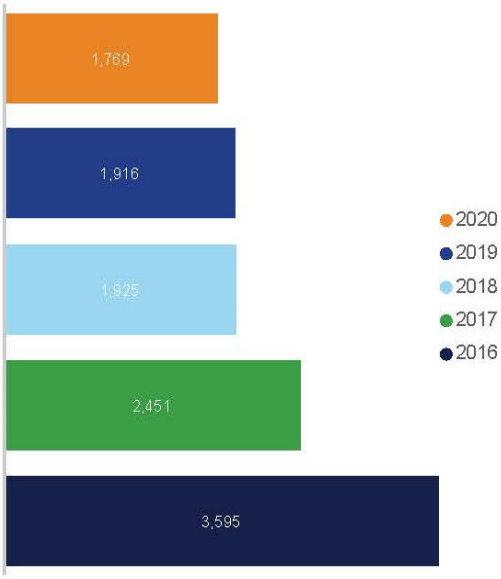
Spent **45%** of planned expenditures

Category	2016	2017	2018	2019	2020
Total Program Cost ($)	279,602	238,761	239,609	244,525	223,870
Total Program Participants (adjusted)	3,707	3,605	3,067	3,061	2,790
Demand Reduction at Peak Planning (kW/participant)	0.97	0.68	0.63	0.63	0.63
Dispatchable Peak Shaving Potential (kW)	3,595	2,451	1,925	1,916	1,769

EX-ANTE ESTIMATED PEAK SAVINGS
(KW PER PARTICIPANT)



DISPATCHABLE PEAK SHAVING POTENTIAL
(KW)



6.1.1 Program Description

The Residential AC Cycling Program, marketed as "Smart Cooling Rewards," was implemented in 2010 in Virginia and 2011 in North Carolina, to provide the Company a supply resource by shaving summer peak electric demand. Residential customers living in an owner-occupied single-family home, townhouse, or condominium with central air conditioners or electric and duel fuel heat pumps are eligible to participate and receive a $40 on-bill credit in the December billing cycle.

The AC Cycling event season spans June 1 through September 30 on non-holiday weekdays.[152] Events typically last between two and four hours. When AC cycling events are called, a radiofrequency (RF) paging signal is broadcast throughout the Company's service area. The signal is received by load curtailment switches installed on central air conditioners and heat pumps of participating customers. The dispatch of the RF signal to the load curtailment switch reduces the duty cycle of the registered AC units up to 50%. DNV evaluates the AC Cycling Program annually. The objectives of the evaluation are:

1. To estimate the demand reduction impacts of each dispatch event
2. To estimate the expected amount of peak kW delivered by the AC Cycling resource in different weather conditions and times of day, including the Company's summer peak planning conditions.

6.1.2 Program Performance

The AC Cycling program called 20 events in 2020 for a total of 63 controlled hours. Approximately 75,000 participants (accounts) and 77,500 air conditioners and heat pumps were controlled in 2020. The relative proportion of AMI to non-AMI participants remained consistent with prior years, at approximately 10%.

In 2020, the evaluated load impact for weather conditions observed during Dominion Energy's peak day conditions was 0.63 kW per participant.

The 2020 kW peak shaving potential for AC Cycling was 0.63 kW for both Virginia and North Carolina representing 84% of planned targets for Virginia and 66% for North Carolina. Virginia participation was 85% of the planned goal and North Carolina's participation was 66% of plan goal. Consequently, program expenditures were also below plan. The program expenditures, number of participants, and load reduction impact estimates are compared to Dominion's corresponding planning numbers in Table 6-2, Table 6-3, and Table 6-4. The annual impact evaluation of the 2020 season is included in Appendix EE-1.

6.1.3 Methods for the Current Reporting Period

The evaluation methodology has remained consistent since the beginning of the program with two exceptions:

- In 2015, the evaluation switched to a customer-level regression model to develop the event day baselines
- Since 2016, the analysis has been conducted on the census of AMI-enabled customers instead of a random sample of AMI-enabled customers

A detailed description of the evaluation methodology can be found in Appendix EE-1, Impact Evaluation of 2020 Dispatch Events.

[152] Events may be called after September 30 under extenuating circumstances.

6.1.4 STEP Manual Computation of Demand Reduction

The regression parameters for 2020 are included in the DNV Energy Standard Tracking and Engineering Protocols (STEP) Manual (v 2020).

6.1.5 Impact Analysis of 2020 Events

The following description summarizes the evaluation methodology. A more detailed description can be found in the Appendix EE-1:

3. Half-hourly interval AMI consumption data is collected for each AMI enabled participant.
4. AMI accounts are assigned weights based on state connected loads, and location within the Company's service territory to ensure that the AMI population is representative of the program population.
5. AMI interval data are merged with the customers' event control data for each event hour.
6. Using AMI data, event control data, and weather data, regression analysis is used to predict event-day baseline consumption for each controlled AMI-enabled account. The predicted and actual consumption for AMI-enabled accounts is weighted to the full program population and the difference between baseline predicted consumption and actual consumption is the calculated ex post impact.

6.1.5.1 Ex post Impact Regression Modeling

The ex post estimate, or what happened during the event, is the difference between the adjusted baseline during the event and the pre- and post-event baseline. Impacts are calculated for each event hour. The load reduction calculated for each event is aggregated and weighted to all participants to produce program level impact estimates. The ex post results for 2020 are found in Table 6-, Table 6-, and Table 6-8.

6.1.5.2 Ex ante Impact Regression Modeling

Ex ante results are the predicted impacts for each event hour and temperature humidity index ("THI") and are used to estimate the program impacts at the Company's peak planning conditions of 95°F at 43% relative humidity at hour-ending 17 (THI 83.4). The ex ante estimates are calculated using a regression analysis of the ex post impacts for each event-hour as the dependent variable and THI as the independent variable. The ex ante results are provided in Table 6-1. This method increases the reliability of the estimates of available program resources while considering that the kW resource is dependent on temperature, time, and load.

Table 6-1. Ex Ante per Participant Impacts by THI and Hour Ending

	Event Hour Ending		
THI	16	17	18
79	0.46	0.45	0.50
80	0.47	0.49	0.54
81	0.49	0.53	0.58
82	0.51	0.57	0.62
83	0.52	**0.62**	0.66
84	0.54	**0.66**	0.70
85	0.56	0.70	0.74
86	0.58	0.74	0.78
87	0.59	0.79	0.82
88	0.61	0.83	0.86

By interpolating between 83°F and 84°F at 17:00, the expected peak load reduction is 0.63 kW per participant for 20 AC Cycling events called in 2020.

6.1.6 Assessment of Program Progress towards Plan

Table 6-2 and Table 6-3 summarize the annual progress towards plan for key AC Cycling performance indicators in Virginia and North Carolina, respectively. The shaded cells are considered extraordinarily sensitive information. Detailed indicators by year and month are provided in Appendix A.25 (Virginia) and Appendix B.13 (North Carolina). Cumulative net reduction (kW) by year and month can be found in Appendix D.12.

Table 6-2. AC Cycling Program Planning Assumptions

Assumption	Value
Target Market	Owner-occupied SF-family home, townhouse, or condominium
Measure Life (years)	15 years
Average Number of AC Switches/Premise	1.13

6.1.6.1 Cumulative Indicators over Time vs. Planned — Virginia and North Carolina

- The number of participants for Virginia and North Carolina reached 85% and 66% of the program planning estimates, respectively.
- Cumulative net participants and kW peak shaving potential were derived by subtracting cumulative participants from cumulative removals and deactivations (Table 6-3 and Table 6-4).
- The peak shaving impact estimates at hour ending 17 during the 20 AC Cycling events called in 2020 are summarized in Table 6-1.

- The average kW peak shaving potential was 0.63 kW per participant for Virginia and North Carolina at Dominion Energy's peak condition.

- These peak shaving totals are 85% of the program planning estimates for Virginia and 66% for North Carolina.

- Key program cost data are found in the performance indicator summaries in Table 6-3 and Table 6-4.
- For the 2020 program year, Virginia's expenditures were $5,287,678, or 66% of the planned total. North Carolina expenditures were $223,870 for the program year, or 45% of planned totals.

Table 6-3. Virginia Residential AC Cycling Program Performance Indicators (2010-2020)

Category	Item	2020	Program Total (2010-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]	
	Direct Implementation		
	Direct EM&V		
	Indirect Other (Administrative)	$278,528	$4,766,371
Capital ($)	Direct Implementation	[redacted]	
Total Costs ($)	Total	$5,287,678	$82,568,545
	Planned	$8,070,360	$112,019,680
	Variance	-$2,782,682	-$29,451,136
	Cumulative % of Planned	66%	74%
Participants	Total (Cumulative @ End of Month)	155,586	155,586
	Removals (Uninstalled)/ Deactivations	-87,123	-87,123
	Net Participation	68,463	67,917
	Planned	80,765	80,765
	Variance	-12,302	-12,849
	Cum% toward planned total (Net basis)	85%	84%
	Removal (Uninstalled) /Deactivation Rate	-1.73%	-1.01%
	Connected Load kW	221,077	230,120
	Ex Ante Estimated kW	0.63	0.81
	Connected Load Per Participant (kW)	3.23	3.03
kW Potential	Peak Shaving Potential kW - Gross Participants	98,623.2	98,623.2
	Removed (Uninstalled) / Deactivated Peak Shaving Potential kW	-55,225.7	-55,225.7
	Dispatchable Peak Shaving Potential – Net Total kW	43,382.7	43,051.2
	Planned Demand	50,817	50,817
	% Toward Planned Total	85%	85%
Program Performance	$Admin. per Participant (Gross)	$31	$31
	$Admin. per kW (Gross)	$48	$46

Category	Item	2020	Program Total (2010-2020)
	$EM&V per Total Costs ($)	2%	2%
	$Rebate per Participant (Gross)	$193	$193

Table 6-4. North Carolina Residential AC Cycling Program Performance Indicators (2011-2020)

Category	Item	2020	Program Total (2011-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]	
	Direct Implementation		
	Direct EM&V		
	Indirect Other (Administrative)	$11,806	$138,125
Capital ($)	Direct Implementation	[redacted]	
Total Costs ($)	Total	$223,870	$3,389,390
	Planned	$497,320	$5,694,898
	Variance	-$273,449	-$2,305,509
	Cumulative % of Planned	45%	60%
Participants	Total (Cumulative @ End of Month)	6,279	6,279
	Removals (Uninstalled)/ Deactivations	-3,489	-3,489
	Net Participation	2,790	2,786
	Planned	4,235	4,235
	Variance	-1,445	-1,449
	Cum % toward planned total (Net basis)	66%	65.8%
	Removal (Uninstalled) /Deactivation Rate	-1.64%	-1.07%
	Connected Load kW	11,267	12,623
	Ex Ante Estimated kW	0.63	0.79
	Connected Load Per Participant (kW)	4.04	3.77
kW Potential	Peak Shaving Potential kW - Gross Participants	3,980.1	3,980.1
	Removed (Uninstalled) / Deactivated Peak Shaving Potential kW	-2,211.6	-2,211.6
	Dispatchable Peak Shaving Potential – Net Total kW	1,769	1,766
	Planned Demand	2,664	2,664
	% Toward Planned Total	66%	66%
Program Performance	$Admin. per Participant (Gross)	$22	$21
	$Admin. per kW (Gross)	$35	$35

	$EM&V per Total Costs ($)	2%	2%
	$Rebate per Participant (Gross)	$188	$188

Table 6-5. Disposition from Cumulative and Net Participants, and Peak Shaving Potential (kW) (through December 31, 2020)

Reduction Factor to Participants/Savings	Participants		Peak Shaving Potential (kW)	
	Virginia	North Carolina	Virginia	North Carolina
Cumulative Total	155,586	6,279	97,395	3,931
Reduction for Disenrollment	-87,123	-3,489	-54,538	-2,184
Net Total	68,463	2,790	42,843	1,747

Table 6-6. 2020 AC Cycling Ex Post Impacts by Event-Day and Hour (Jun 23–Jul 17)

Event Date	23-Jun	29-Jun	6-Jul	7-Jul	15-Jul	16-Jul	17-Jul
Consecutive Event-days	1	1	1	2	1	2	3
Opt-Out Percentage	0.01%	0.02%	0.03%	0.02%	0.01%	0.01%	0.01%
Temperature Humidity Index	81	80	83	81	80	79	84
15:00							
16:00			0.50	0.44			
17:00	0.42	0.35	0.57	0.50	0.44	0.38	0.48
18:00	0.44	0.39	0.62	0.48	0.40	0.38	0.54
19:00		0.37					
Average Impact (kW)	**0.43**	**0.37**	**0.56**	**0.47**	**0.42**	**0.38**	**0.51**

Table 6-7. 2020 AC Cycling Ex Post Impacts by Event-Day and Hour (Jul 20–Jul 29)

Event Date	20-Jul	21-Jul	22-Jul	27-Jul	28-Jul	29-Jul
Consecutive Event-days	1	2	3	1	2	3
Opt-Out Percentage	0.05%	0.05%	0.06%	0.03%	0.04%	0.02%
Temperature Humidity Index	85	85	84	83	84	81
15:00						
16:00	0.65	0.62	0.54	0.56	0.60	0.46
17:00	0.81	0.83	0.70	0.69	0.69	0.52
18:00	0.85	0.99	0.59	0.69	0.69	0.48
19:00						
Average Impact (kW)	**0.77**	**0.81**	**0.61**	**0.65**	**0.66**	**0.49**

Table 6-8. 2020 AC Cycling Ex Post Impacts by Event-Day and Hour (Aug 10–Sep 3)

Event Date	10-Aug	11-Aug	12-Aug	25-Aug	27-Aug	28-Aug	3-Sep
Consecutive Event-days	1	1	2	1	1	2	1
Opt-Out Percentage	0.01%	0.03%	0.02%	0.02%	0.02%	0.03%	0.03%
Temperature Humidity Index	82	82	82	82	83	83	84
15:00						0.37	
16:00	0.45	0.51	0.50	0.40	0.52	0.44	0.56
17:00	0.43	0.56	0.57	0.48	0.67	0.48	0.65
18:00	0.35	0.60	0.45	0.43	0.66		0.69
19:00							
Average Impact (kW)	**0.41**	**0.56**	**0.51**	**0.44**	**0.62**	**0.43**	**0.63**

6.2 Non-residential Distributed Generation – Virginia

Virginia

Case #: PUE-2016-00111

NON-RESIDENTIAL DISTRIBUTED GENERATION

2013-PRESENT
6.13 MW Average Net Savings Per Participant

Eligibility

- Large non-residential customers with at least 200 kW of dispatchable generation
- One participant is defined as 1 megawatt (MW) of enrolled capacity. A participating site may be counted as a fraction or more than one participant depending on enrolled generation

Events

- When electric demand is high, DG sites operate backup generators to reduce load on the system
- 29 events were called in 2020, all occurring in summer months

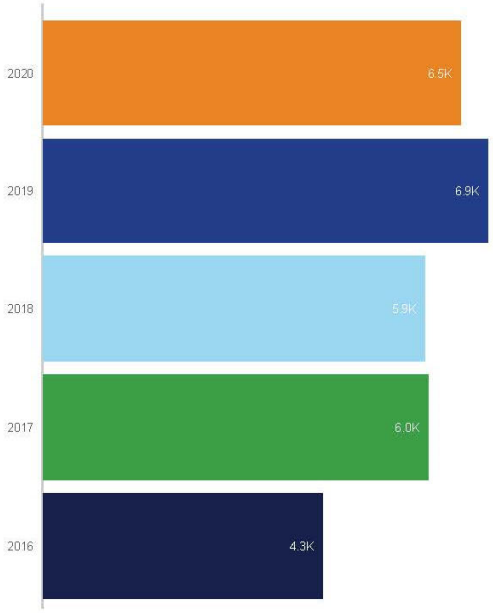
21 sites enrolled **6.13 MW,** achieving **68%** of planned total

Achieved overall annual **realization rate of 106%**

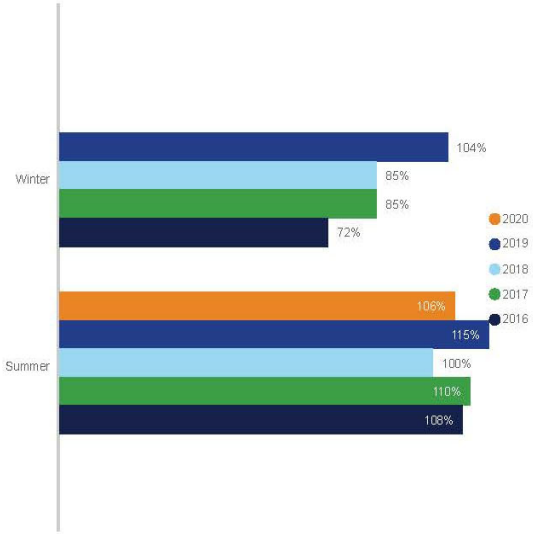
Spent **47%** of planned expenditures

Category	2016	2017	2018	2019	2020
Total Program Cost ($)	572,348	561,690	557,961	589,631	570,747
Total Program Participants (MW)	6.5	6.1	6.1	6.1	6.1
Total Demand Savings (kW)	4,348	5,992	5,946	6,927	6,498
Realization Rate (%)	106%	108%	97%	113%	106%

TOTAL DEMAND SAVINGS
BY YEAR



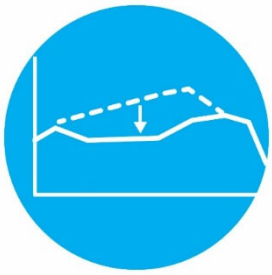
REALIZATION RATE BY YEAR/SEASON
MEASURED GENERATION / DISPATCHED GENERATION



6.2.1 Program Description

The DSM Phase II Non-residential DG program provides qualifying customers with an incentive to curtail load by operating backup generation upon request. Large non-residential customers with least 200 kW of demand are eligible to participate.[153] Each customer site commits to a targeted level of dispatchable power (kW) to be available to the Company for up to 120 hours per year. Load must be available/dispatchable on 30 minutes' notice. Dispatched power is measured for each event. The Company has the right to adjust the incentive amount based on evaluated performance if a site's dispatched load is less than 95% of its enrolled load.

The Virginia State Corporation Commission approved the Non-residential Distributed Generation Pilot on January 17, 2008. The DG Pilot subsequently achieved program status on April 30, 2012 and the pilot officially ended at the end of 2014. In June 2017, the program was extended for an additional five years through May 31, 2022.[154] Dominion is currently seeking an additional two-year extension.[155] Twenty-one sites were enrolled in 2020, which is consistent with prior years. The fully enrolled program capacity is 6,130 kW.



The DG program was not significantly impacted by the COVID-19 pandemic because the program is operated remotely.

6.2.2 Methods for the Current Reporting Period

An impact evaluation is conducted annually and the amount of generated load by participant per event-hour interval is measured on-site. Total and average dispatched generation, per event-hour, is aggregated and reported for daily, monthly, seasonal (winter/summer), and yearly intervals. The evaluation methodology is defined by the DNV Energy Standard Tracking and Engineering Protocols (STEP) Manual and has remained consistent over the program's history. See also Appendix EE-1, Impact Evaluation of 2020 Dispatch Events for more detail and impact results of the 2020 event season.

6.2.3 Computation of Demand Reduction

The key performance indicator for the Non-residential DG program is measured kW generated during dispatch events. The STEP Manual defines the methodology used to estimate demand reduction. Site-level realization rates are created by comparing measured generation (kW) to the dispatched generation (kW). Realization rates are calculated for each participant site by event-hour and aggregated to the event and program level.

6.2.4 Impact Analysis of 2020 Dispatch Events

The Non-residential DG Program is evaluated annually using metered power production data to verify event based dispatched load. The objectives for the Non-residential DG impact evaluation are:

- To compute aggregate kW of load curtailment for one-hour intervals on each event day
- To compute realization rates comparing actual load curtailed to dispatched load
- To describe trends across event intervals related to program performance versus planned assumptions

From January 1, 2020 to December 31, 2020, the program achieved an overall realization rate of 106% and exceeded its planned realization rate of 95%. Monthly realization rates in the summer ranged from 105% in June to 115% in September, which Table 6-2 illustrates the typical difference between summer and winter realization rates. There were no winter events

153 A participant is defined by its enrolled capacity, and one participant equals 1,000 kW of enrolled generation. The level of incentive corresponds with the kW of enrolled generation capacity and a customer with greater than 1,000 kW of enrolled capacity is counted as more than one participant.

154 Case No. PUE-2016-00111. Commonwealth of Virginia, State Corporation Commission, "Final Order" on the subject "For approval to implement new, and to extend existing, demand-side management programs and for approval of two updated rate adjustment clauses pursuant to § 56-585.1 A 5 of the Code of Virginia." June 1, 2017.

155 Case No. PUR-2020-00274) Commonwealth of Virginia, State Corporation Commission, "Petition of Dominion Energy Virginia for approval of its 2020 DSM Update June 1, 2017."

in 2020; therefore, only summer events are included in the 2020 analysis. Figure 6-2 shows the summer and winter realization rates by year since 2014.

Figure 6-2: Non-residential DG annual and seasonal realization rates, 2014–2020

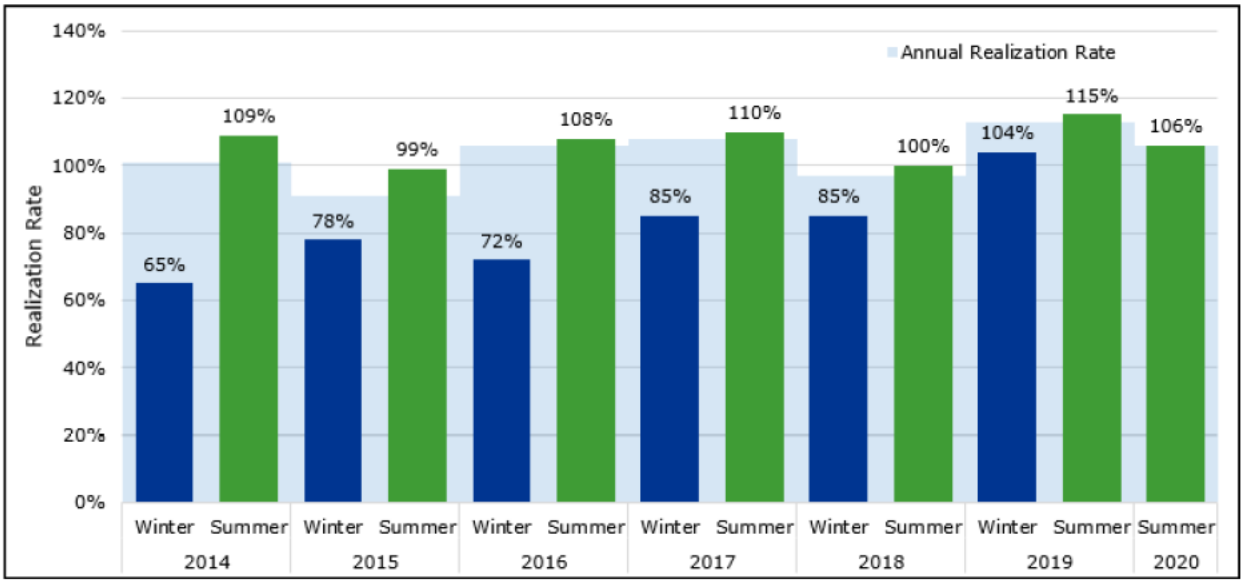


Table 6- shows 2020 program performance by kW and month. The total and average dispatched generation during the 2020 summer event intervals ranged from 5,550 kW to 6,130 in in summer (29 events). 27 of 29 summer event days (93%) met or exceeded the 95% target. The highest performing summer event day occurred August 2, generating 117% of the dispatched load on that day. The lowest performing summer event day occurred on July 26, yielding a realization rate of 59%. The other underperforming event occurred on July 6, resulting in a realization rate of 86%.

Table 6-9. DG Program Performance for 2020 Events by kW and month

2020	Planned (MW)	Enrolled (MW)	Net kW Planned	Net kW Enrolled	Event Days	Average Dispatched (kW)	Average Generation (kW)	Average Realization Rate
June	9.03	6.13	9,025	6,130	3	6,005	6,294	105%
July	9.03	6.13	9,025	6,130	18	5,902	6,172	105%
August	9.03	6.13	9,025	6,130	7	5,967	6,478	109%
Sept	9.03	5.94	9,025	6,130	1	5,940	6,808	115%

Table 6- outlines the DG program planning assumptions.

Table 6-10. Non-residential DG Program Planning Assumptions

Assumption	Value
Target Market	Non-residential customers with at least 200 kW of backup generation.
Participant Definition	1 participant equals 1,000 kW of enrolled generation. For example, a site with 250 kW of generation has a participant value of 0.25.
NTG Factor	100%

Measure Life (years)	N/A

6.2.5 Assessment of Program Progress towards Plan

Table 6-5 summarizes the annual progress towards plan for key program performance indicators in Virginia. The shaded cells are considered extraordinarily sensitive information. Detailed indicators by month and year are provided in Appendix A.28. Cumulative net kW reduction by year and month can be found in Appendix D.13.

Table 6-5. Virginia Non-residential Distributed Generation Program Performance Indicators (2012–2020)

Category	Item	2019	2020	Program Total (2012-2020)
Operations and Management Costs ($)	Direct Rebate	[redacted]		
	Direct Implementation			
	Direct EM&V			
	Indirect Other (Administrative)	$26,331	$30,369	$312,066
Total Costs ($)	Total	$589,631	$570,747	$5,676,993
	Planned	$909,830	$1,014,629	$12,063,897
	Variance	$320,199	$443,882	$6,386,905
	Cumulative % of Planned	65%	56%	47%
Participants	Total (Cumulative @ End of Month)	6.13	6.1	6.1
	Planned	7.59	9.0	9.0
	Variance	-1.5	-2.9	-2.9
	% Toward Planned Total (Net basis)	81%	68%	68%
kW Potential	Total (Cumulative @ End of Month)	6,130	6,130	6,130
	Realization Rate	113%	106%	106%
	Net kW	6,927	6,498	6,498
	Planned	7,592	9,025	9,025
	% Toward Planned Total (Net basis)	91%	72%	72%
	Avg. per Net Participant (Net kW)	1,130	1,060	910
Program Performance	$Admin. per Participant (Gross)	$4,295	$4,954	$4,954
	$Admin. per kW (Gross)	$4	$5	$5
	$EM&V per Total Costs ($)	13%	13%	13%
	$Rebate per Participant (Gross)	$651,772	$728,973	$728,973

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Table 6-6. Average Realization Rates by Site and Event Day (January 1-July 26, 2020)

Site ID	Jun			July													
	3	23	29	3	6	7	14	15	16	17	18	19	20	21	22	23	26
1	80%	75%	81%	86%	64%	87%	80%	81%	85%	90%	90%	90%	90%	12%	89%	87%	10%
2	96%	105%	104%	107%	80%	107%	111%	114%	112%	113%	113%	114%	100%	128%	109%	107%	85%
3	110%	100%	0%			104%		1%	92%	83%	83%	92%	98%	26%	108%	105%	83%
4	109%	108%	108%	109%	82%	112%	108%	109%	109%	110%	110%	111%	109%	0%	28%		85%
5	87%		79%				84%	28%	34%	0%	0%	0%	13%	92%	0%	4%	58%
6	107%	114%	110%	117%	88%	115%	109%	110%	107%	124%	124%	125%	124%	116%	123%	110%	64%
7	123%	122%	81%	119%	89%	123%	113%	107%	114%	118%	118%	121%	122%	94%	121%	119%	77%
8	128%	120%	144%	136%	101%	136%	141%	135%	138%	143%	143%	145%	152%	149%	144%	122%	117%
9	101%	107%	115%	106%	80%	107%	102%	120%	110%	120%	120%	125%	118%	108%	106%	119%	6%
10	130%	137%	152%	143%	104%	135%	133%	131%	133%	136%	136%	143%	145%	146%	126%	140%	96%
11	238%	233%	218%	243%	181%	232%	234%	244%	236%	245%	245%	44%	81%		219%		
12	97%	98%	84%	98%	76%	106%	97%	100%	98%	97%	97%	102%	98%	87%		93%	60%
13	121%	130%	128%	134%	99%	132%	131%	131%	126%	126%	126%	134%	140%	122%	130%	138%	100%
14	100%	98%	75%	106%	80%	98%	109%	106%	59%	109%	109%	114%	114%	97%	95%	108%	67%
15	119%	115%	153%	119%	88%	140%	129%	133%	141%	147%	147%	146%	156%	177%	149%	134%	112%
16	96%	105%	102%	100%	76%	93%	92%	98%	90%	103%	103%	108%	105%	117%	106%	91%	79%
17	101%	105%	109%	102%	77%	105%	96%	26%	101%	0%	0%			127%	113%	101%	88%
18	146%	158%	152%	155%	116%	171%	171%	167%	164%	172%	172%	178%	64%	165%	174%	161%	114%
19		249%	268%	255%	192%	247%	246%	247%	242%	258%	258%	266%	263%	288%	261%	242%	187%
20	203%	203%	208%	210%	158%	202%	200%	192%	192%	205%	205%	219%	209%	1076%	216%	188%	156%
21	189%	184%	0%	180%	125%	124%	187%	186%	183%	197%	197%		202%	131%			

Legend
> 95%
< 95% ≥50%
< 50%
No event called

Table 6-7. Average Realization Rates by Site and Event Day (July 27 – September 3, 2020)

Site ID	July				August							Sept
	27	28	29	30	2	10	11	12	25	27	28	3
1	88%	88%	90%	90%	89%	90%	85%	81%	85%	86%	87%	91%
2	109%	107%	109%	109%	104%	45%	45%	45%	45%	45%	45%	45%
3	111%	102%	105%	105%	100%	103%	108%	106%	111%	111%	114%	114%
4	112%	107%	111%	111%	108%	103%	108%	101%	112%	112%	112%	111%
5	13%	0%	89%	89%	91%	84%	82%	87%	88%	83%	85%	85%
6	121%	110%	121%	121%	120%	120%	120%	112%	113%	115%	113%	121%
7	121%	117%	118%	118%	119%	118%	119%	119%	124%	119%	122%	123%
8	145%	138%	147%	147%	152%	137%	139%	142%	137%	141%	145%	147%
9	116%	115%	113%	113%	111%	106%	29%	112%	109%	0%	110%	125%
10	136%	130%	133%	133%	141%	131%	135%	141%	137%	135%	137%	143%
11	47%	102%	238%	238%	257%	248%	248%	250%	245%	245%	255%	255%
12	98%	95%	95%	95%	95%	93%	97%	88%	95%	95%	98%	100%
13	133%	137%	140%	140%	127%	128%	131%	125%	134%	133%	135%	134%
14	108%	107%	106%	106%	109%	102%	109%	11%	107%	105%	108%	106%
15	132%	145%	148%	148%	132%	127%	144%	131%	131%	136%	145%	133%
16	107%	92%	99%	99%	103%	89%	89%	88%	90%	92%	87%	94%
17	110%	106%	108%	108%	107%	99%	100%	108%	108%	106%	109%	107%
18	173%	164%	156%	156%	172%							
19	261%	244%	254%	254%	248%	240%	240%	245%	249%	248%	248%	251%
20	212%	198%	206%	206%	209%	187%	196%	209%	0%	197%	199%	204%
21	203%	191%	0%		197%	188%	183%	195%	189%	192%	191%	203%

Legend
> 95%
< 95% ≥50%
< 50%
No event called

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Table 6-8. Average Realization Rates by Site and Event Month (2020)

Site ID	Jun	July	Aug	Sept
1	79%	79%	86%	91%
2	101%	101%	54%	45%
3	66%	66%	108%	114%
4	108%	108%	108%	111%
5	83%	83%	86%	85%
6	110%	110%	116%	121%
7	107%	107%	120%	123%
8	132%	132%	142%	147%
9	108%	108%	82%	125%
10	140%	140%	137%	143%
11	229%	229%	250%	255%
12	92%	92%	94%	100%
13	126%	126%	130%	134%
14	90%	90%	93%	106%
15	131%	131%	135%	133%
16	100%	100%	91%	94%
17	105%	105%	105%	107%
18	152%	152%	172%	
19	260%	260%	245%	251%
20	205%	205%	171%	204%
21	117%	117%	191%	203%

Legend
> 95%
< 95% ≥50%
< 50%
No event called

Table 6-9. Non-residential DG Program 2019 Monthly Average Performance Metrics

2020	Planned (MW)	Enrolled (MW)	Net kW Planned	Net kW Enrolled	Event Days	Average Dispatched (kW)	Average Generation (kW)	Average Realization Rate
June	9.03	6.13	9,025	6,130	3	6,005	6,294	105%
July	9.03	6.13	9,025	6,130	18	5,902	6,172	105%
August	9.03	6.13	9,025	6,130	7	5,967	6,478	109%
September	9.03	5.94	9,025	6,130	1	5,940	6,808	115%

7 CLOSED PROGRAMS

This section provides an overview of the DSM programs that have been closed in Virginia and North Carolina. Their gross and net savings that are persisting are presented in APPENDIX C and APPENDIX D of this report, respectively.

1. Residential
   a) DSM Phase I
      i. Residential Lighting
      ii. Residential Low-Income
   b) DSM Phase II
      i. Residential Heat Pump Upgrade
      ii. Residential Heat Pump Tune-up
      iii. Residential Duct Sealing
      iv. Residential Home Energy Check-up
   c) DSM Phase IV
      i. Residential Appliance Recycling
   d) DSM Phase V
      i. Residential Retail LED

2. Non-residential
   a) DSM Phase I
      i. Commercial Lighting
      ii. Commercial HVAC
   b) DSM Phase II
      i. Non-residential Duct Testing and Sealing
      ii. Non-residential Energy Audit
   c) DSM Phase III
      i. Non-residential Heating and Cooling Efficiency
      ii. Non-residential Window Film

7.1 Residential Lighting (DSM Phase I)

The Residential Lighting Program closed in Virginia and North Carolina as originally planned at the end of 2011. In Virginia, it began in May 2010 and concluded on December 31, 2011. The program in North Carolina began in mid-2011 and concluded on December 31, 2011. A summary of key program indicators from program inception through December 2012 is provided in Appendix A.29 (VA) and Appendix B.14 (NC). Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.12, and cumulative net savings are in Appendix D.14.

7.2 Residential Low-Income (DSM Phase I)

In Virginia, the Residential Low-Income program spanned from April 2010 through December 2014. It spanned from April 2010 through December 2015, in North Carolina.

A summary of key program indicators from program inception through December 2015 is provided in Appendix A.30 (VA) and Appendix B.15 (NC). Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.13, and cumulative net savings are in Appendix D.15.

7.3 Residential Heat Pump Upgrade (DSM Phase II)

In Virginia, the Residential Heat Pump Upgrade Program spanned from August 2012 through December 2017. In North Carolina, it spanned from January 2014 through December 2017.

A summary of key program indicators from program inception through December 2017 is provided in Appendix A.32 (VA) and Appendix B.17 (NC). Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.15, and cumulative net savings are in Appendix D.17.

7.4 Residential Heat Pump Tune-up (DSM Phase II)

In Virginia, the Residential Heat Pump Tune-up Program spanned from August 2012 to December 31, 2017. It spanned from January 2014 to December 31, 2017, in North Carolina.

A summary of key program indicators from program inception through December 2017 is provided in Appendix A.31 (VA) and Appendix B.16 (NC). Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.14, and cumulative net savings are in Appendix D.16.

7.5 Residential Duct Sealing (DSM Phase II)

In Virginia, the Residential Duct Sealing program spanned from August 2012 through December 31, 2017. It spanned from January 1, 2015 through December 31, 2017, in North Carolina.

A summary of key program indicators from program inception through December 2017 is provided in Appendix A.33 (VA) and Appendix B.18 (NC). Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.16, and cumulative net savings are in Appendix D.18.

7.6 Residential Home Energy Check-up (DSM Phase II)

In Virginia, the Residential Home Energy Check-up Program spanned from August 1, 2012 through December 31, 2017. It spanned from February 1, 2015 through December 31, 2017, in North Carolina.

A summary of key program indicators from program inception through December 2017 is provided in Appendix A.34 (VA) and Appendix B.19 (NC). Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.17, and cumulative net savings are in Appendix D.19.

7.7 Residential Appliance Recycling (DSM Phase IV)

The Residential Appliance Recycling Program was only available in Virginia. It spanned from July 2015 to December 2017, with program spending lagging through to 2018 for program wrap-up activities.

A summary of key program indicators from program inception through December 2017 is provided in Appendix A.35 (VA). Cumulative savings (kWh and kW) by year and month can be found in Appendix C.18, and cumulative net savings are in Appendix D.20.

7.8 Residential Retail LED (DSM Phase V)

In North Carolina, the Residential Retail LED Program spanned from 2017 through December 2019.

A summary of key program indicators from program inception through December 2019 is provided in Appendix B.20 (NC). Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.19, and cumulative net savings are in Appendix D.21.

7.9 Commercial Lighting (DSM Phase I)

In Virginia, the Commercial Lighting Program spanned from May 2010 through December 2012. It spanned from December 2011 through December 2012, in North Carolina.

A summary of key program indicators from program inception through December 2012 is provided in Appendix A.36 (VA) and Appendix B.21 (NC). Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.20, and cumulative net savings are in Appendix D.22.

7.10 Commercial HVAC Upgrade (DSM Phase I)

In Virginia, the Commercial HVAC Program spanned from July 2010 through December 2012. It spanned from January 2012 through December 2012, in North Carolina.

A summary of key program indicators from program inception through December 2012 is provided in Appendix A.37 (VA) and Appendix B.22 (NC). Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.21, and cumulative net savings are in Appendix D.23.

7.11 Non-residential Duct Testing and Sealing (DSM Phase II)

In Virginia, the Non-residential Duct Testing and Sealing Program spanned from July 1, 2012 through February 28, 2017. It spanned from April 1, 2014 through February 28, 2017, in North Carolina.

A summary of key program indicators from program inception through December 2017 is provided in Appendix A.38 (VA) and Appendix B.23 (NC). Cumulative savings (kWh and kW) by year and month can be found in Appendix C.22, and cumulative net savings are in Appendix D.24.

7.12 Non-residential Energy Audit (DSM Phase II)

In Virginia, the Non-residential Energy Audit Program spanned from July 1, 2012 through February 28, 2017. It spanned from January 1, 2014 through February 28, 2017, in North Carolina.

A summary of key program indicators from program inception through December 2017 is provided in Appendix A.39 (VA) and Appendix B.24 (NC). Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.23, and cumulative net savings are in Appendix D.25.

7.13 Non-residential Heating and Cooling Efficiency (DSM Phase III)

In Virginia, the Non-residential Heating and Cooling Efficiency Program spanned from 2014 through 2019. It spanned from December 2015 through December 2019, in North Carolina.

A summary of key program indicators from program inception through December 2019 is provided in Appendix A.40 (VA) and Appendix B.25 (NC). Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.24, and cumulative net savings are in Appendix D.26.

7.14 Non-residential Window Film (DSM Phase III)

In Virginia, the Non-residential Window Film Program spanned from 2014 through 2019. It spanned from December 2015 through December 2019, in North Carolina.

A summary of key program indicators from program inception through December 2019 is provided in Appendix A.42 (VA) and Appendix B.26 (NC). Cumulative gross savings (kWh and kW) by year and month can be found in Appendix C.25, and cumulative net savings are in Appendix D.27.

APPENDIX A. PROGRAM PERFORMANCE INDICATOR TABLES FOR VIRGINIA PROGRAMS 2010–2020

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PROGRAM PERFORMANCES INDICATOR TABLES FOR VIRGINIA

A.1 Virginia Residential Income and Age Qualifying Home Improvement Program 2015-2020

A.1.1 2015-2020 VA Residential Income and Age Qualifying Home Improvement Annual Indicator Tables

VA- Residential Income and Age Qualifying Home Improvement Program		2015	2016	2017	2018	2019	2020	2015-2020
Category	Indicator	Total	Total	Total[2]	Total	Total	Total	Program Total
O&M ($)	Direct Rebate							
O&M ($)	Direct Implementation							
O&M ($)	Direct EM&V							
O&M ($)	Indirect Other (Administrative)	$48,256	$191,950	$199,872	$80,889	$166,845	$89,410	$777,222
Costs ($)	Total	$2,069,822	$6,315,785	$5,079,529	$1,432,463	$4,050,714	$1,678,260	$20,626,572
Costs ($)	Planned	$3,056,782	$5,856,409	$4,648,601	$2,371,260	$4,192,450	$4,381,475	$24,506,977
Costs ($)	Variance	-$986,960	$459,376	$430,927	-$938,797	-$141,736	-$2,703,215	-$3,880,405
	Annual % of Planned	68%	108%	109%	60%	97%	38%	84%
Participants[1]	Total (Gross)	1,523	8,403	5,970	1,141	5,897	1,047	23,981
	Planned (Gross)	1,849	3,843	3,846	2,000	4,218	4,218	19,974
	Variance	-326	4,560	2,124	-859	1,679	-3,171	4,007
	Annual % of Planned (Gross)	82%	219%	155%	57%	140%	25%	120%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	984,230	3,575,492	2,431,737	447,775	1,453,805	223,320	9,116,360
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	984,230	3,575,492	2,431,737	447,775	1,453,805	223,320	9,116,360
80%	Net-To-Gross Adjustment (kWh/yr)	-196,846	-715,098	-486,347	-89,555	-290,761	-44,664	-1,823,272
	Net Adjusted Savings (kWh/yr)	787,384	2,860,394	1,945,390	358,220	1,163,044	178,656	7,293,088
	Planned Net Savings (kWh/yr)	1,810,380	998,136	765,945	175,247	728,300	2,120,348	6,598,356
	Annual % Toward Planned Net Savings (kWh)	43%	287%	254%	204%	160%	8%	111%
	Avg. Gross Savings Per Participant (kWh/yr)	646	426	407	392	247	213	380
	Avg. Net Savings Per Participant (kWh/yr)	517	340	326	314	197	171	304
Installed kW	Total Gross Demand Reduction (kW)	80.2	398.0	228.1	34.9	229.3	58.4	1,028.8
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	80.2	398.0	228.1	34.9	229.3	58.4	1,028.8
80%	Net-To-Gross Adjustment (kW)	-16.0	-79.6	-45.6	-7.0	-45.9	-11.7	-205.8
	Net Adjusted Demand Reduction (kW)	64.1	318.4	182.5	27.9	183.4	46.7	823.0
	Planned Net Demand Reduction (kW)	415.0	217.7	170.2	0.0	75.6	205.1	1,083.5
	Annual % Toward Planned Net Reduction (kW)	15%	146%	107%	N/A	243%	23%	76%
	Avg. Gross Demand Reduction Per Participant (kW)	0.05	0.05	0.04	0.03	0.04	0.06	0.04
	Avg. Net Demand Reduction Per Participant (kW)	0.04	0.04	0.03	0.02	0.03	0.04	0.03
Program Performance	Annual $Admin. per Participant (Gross)	$32	$23	$33	$71	$28	$85	$32
	Annual $Admin. per kWh/year (Gross)	$0.05	$0.05	$0.08	$0.18	$0.11	$0.40	$0.09
	Annual $Admin. per kW (Gross)	$602	$482	$876	$2,318	$728	$1,532	$755
	Annual $EM&V per $Total	0.6%	1.4%	2.3%	6.8%	2.4%	5.6%	2.5%
	Annual $Rebate per Participant (Gross)	$582	$612	$644	$626	$518	$948	$610

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

1. A participant is a unique account number.
2. The 2017 total gross deemed savings values reported in this table include adjustments of 12183 kWh/year and -1.1 kW made to the January 2017 reported savings. The adjustments accounts for corrections to STEP Manual version 7.0.0 issued on May 1, 2017. Specifically, the correction was in section 2.1.5 for “Low-Flow Showerhead” measures, to the “ΔT” variable, which is a measure of the change in temperature of the water used for shower and temperature entering the house (ΔT = Tshower – Tin house). STEP Manual 7.0.0 reported the value as 44.9°F, but has been corrected to 44.1°F. This correction is reflected in STEP Manual version 8.0.0 in this EM&V report.

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A.1.2 2020 VA Residential Income and Age Qualifying Home Improvement Monthly Indicator Tables

VA- Residential Income and Age Qualifying Home Improvement Program		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2015-2020
Category	Indicator	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Total	Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$1,139	$32,563	$10,479	$4,652	$2,297	$11,837	$4,466	$3,071	$3,820	$2,418	$7,704	$4,963	**$89,410**	**$777,222**
Costs ($)	Total	$19,950	$570,511	$183,587	$81,497	$40,245	$207,388	$78,248	$53,803	$89,524	$56,670	$180,537	$116,298	**$1,678,260**	**$20,626,572**
Costs ($)	Planned	$365,123	$365,123	$365,123	$365,123	$365,123	$365,123	$365,123	$365,123	$365,123	$365,123	$365,123	$365,123	**$4,381,475**	**$24,506,977**
Costs ($)	Variance	-$345,173	$205,388	-$181,536	-$283,626	-$324,878	-$157,735	-$286,875	-$311,320	-$275,599	-$308,453	-$184,586	-$248,825	**-$2,703,215**	**-$3,880,405**
	Annual % of Planned	0%	13%	18%	20%	20%	25%	27%	28%	30%	32%	36%	38%	**38%**	**84%**
Participants[1]	Total (Gross)	4	426	97	27	1	168	38	7	55	8	120	96	**1,047**	**23,981**
	Planned (Gross)	352	352	352	352	352	352	352	352	352	352	352	346	**4,218**	**19,974**
	Variance	-348	74	-255	-325	-351	-184	-314	-345	-297	-344	-232	-250	**-3,171**	**4,007**
	Annual % of Planned (Gross)	0%	10%	12%	13%	13%	17%	18%	18%	20%	20%	23%	25%	**25%**	**120%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	673	95,778	23,082	6,202	87	26,492	9,218	1,298	6,398	2,442	37,777	13,874	**223,320**	**9,116,360**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	673	95,778	23,082	6,202	87	26,492	9,218	1,298	6,398	2,442	37,777	13,874	**223,320**	**9,116,360**
80%	Net-To-Gross Adjustment (kWh/yr)	-135	-19,156	-4,616	-1,240	-17	-5,298	-1,844	-260	-1,280	-488	-7,555	-2,775	**-44,664**	**-1,823,272**
	Net Adjusted Savings (kWh/yr)	538	76,623	18,465	4,961	70	21,193	7,375	1,039	5,118	1,953	30,222	11,099	**178,656**	**7,293,088**
	Planned Net Savings (kWh/yr)	176,696	176,696	176,696	176,696	176,696	176,696	176,696	176,696	176,696	176,696	176,696	176,696	**2,120,348**	**6,598,356**
	Annual % Toward Planned Net Savings (kWh)	0%	4%	5%	5%	5%	6%	6%	6%	6%	6%	8%	8%	**8%**	**111%**
	Avg. Gross Savings Per Participant (kWh/yr)	168	225	238	230	87	158	243	185	116	305	315	145	**213**	**380**
	Avg. Net Savings Per Participant (kWh/yr)	135	180	190	184	70	126	194	148	93	244	252	116	**171**	**304**
Installed kW	Total Gross Demand Reduction (kW)	0.5	23.6	7.2	2.1	0.0	9.0	1.8	0.4	1.7	0.7	7.9	3.3	**58.4**	**1,028.8**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.5	23.6	7.2	2.1	0.0	9.0	1.8	0.4	1.7	0.7	7.9	3.3	**58.4**	**1,028.8**
80%	Net-To-Gross Adjustment (kW)	-0.1	-4.7	-1.4	-0.4	0.0	-1.8	-0.4	-0.1	-0.3	-0.1	-1.6	-0.7	**-11.7**	**-205.8**
	Net Adjusted Demand Reduction (kW)	0.4	18.8	5.8	1.7	0.0	7.2	1.5	0.4	1.4	0.6	6.3	2.7	**46.7**	**823.0**
	Planned Net Demand Reduction (kW)	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	**205.1**	**1,083.5**
	Annual % Toward Planned Net Reduction (kW)	0%	9%	12%	13%	13%	17%	17%	17%	18%	18%	21%	23%	**23%**	**76%**
	Avg. Gross Demand Reduction Per Participant (kW)	0.11	0.06	0.07	0.08	0.02	0.05	0.05	0.06	0.03	0.09	0.07	0.03	**0.06**	**0.04**
	Avg. Net Demand Reduction Per Participant (kW)	0.09	0.04	0.06	0.06	0.02	0.04	0.04	0.05	0.03	0.07	0.05	0.03	**0.04**	**0.03**
Program Performance	Annual $Admin. per Participant (Gross)	$285	$78	$84	$88	$92	$87	$89	$92	$90	$92	$89	$85	**$85**	**$32**
	Annual $Admin. per kWh/year (Gross)	$2	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0.40**	**$0.09**
	Annual $Admin. per kW (Gross)	$2,484	$1,403	$1,415	$1,464	$1,531	$1,485	$1,525	$1,579	$1,602	$1,630	$1,535	$1,532	**$1,532**	**$755**
	Annual $EM&V per $Total	0.0%	1.9%	1.9%	2.6%	3.2%	3.4%	4.0%	4.8%	5.4%	6.0%	5.3%	5.6%	**5.6%**	**2.5%**
	Annual $Rebate per Participant (Gross)	-$1,976	$992	$1,035	$1,047	$1,047	$994	$981	$981	$961	$966	$977	$948	**$948**	**$610**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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A.2 Virginia Residential Appliance Recycling Program (DSM Phase VII) 2019-2020

A.2.1 2019-2020 VA Residential Appliance Recycling Program (DSM Phase VII) Annual Indicator Tables

VA- Residential Appliance Recycling Program Category	Indicator	2019 Total	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate	[redacted]		
O&M ($)	Direct Implementation			
O&M ($)	Direct EM&V			
O&M ($)	Indirect Other (Administrative)	$13,009	$24,834	$37,843
Capital ($)	Direct Implementation	$0	$0	
Costs ($)	Total	$384,884	$473,111	$857,995
Costs ($)	Planned	$1,094,670	$1,828,534	$2,923,203
Costs ($)	Variance	-$709,785	-$1,355,423	-$2,065,208
	Annual % of Planned	35%	26%	29%
Participants[1]	Total (Gross)	1,579	972	2,551
	Planned (Gross)	5,225	8,927	14,152
	Variance	-3,646	-7,955	-11,601
	Annual % of Planned (Gross)	30%	11%	18%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	1,255,513	868,091	2,123,604
100%	Realization Rate Adjustment (kWh/yr)	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	1,255,513	868,091	2,123,604
60%	Net-To-Gross Adjustment (kWh/yr)	-502,205	-347,237	-849,442
	Net Adjusted Savings (kWh/yr)	753,308	520,855	1,274,163
	Planned Net Savings (kWh/yr)	644,850	6,269,479	6,914,329
	Annual % Toward Planned Net Savings (kWh)	116.82%	8%	18%
	Avg. Gross Savings Per Participant (kWh/yr)	795	893	832
	Avg. Net Savings Per Participant (kWh/yr)	477	536	499
Installed kW	Total Gross Demand Reduction (kW)	187.9	129.9	317.9
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	187.9	129.9	317.9
60%	Net-To-Gross Adjustment (kW)	-75.2	-52.0	-127.1
	Net Adjusted Demand Reduction (kW)	112.8	78.0	190.7
	Planned Net Demand Reduction (kW)	0.0	977.3	977.3
	Annual % Toward Planned Net Reduction (kW)	N/A	8.0%	19.5%
	Avg. Gross Demand Reduction Per Participant (kW)	0.1	0.1	0.1
	Avg. Net Demand Reduction Per Participant (kW)	0.1	0.1	0.1
Program Performance	Annual $Admin. per Participant (Gross)	$8	$26	$15
	Annual $Admin. per kWh/year (Gross)	$0	$0.03	$0
	Annual $Admin. per kW (Gross)	$69	$191	$119
	Annual $EM&V per $Total	7%	10.8%	9.2%
	Annual $Rebate per Participant (Gross)	$20	$20	$20

1. A participant is a recycled refrigerator or freezer. Up to two units may be recycled for each electric account number and each unit will be counted as a unique participant.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.2.2 2020 VA Residential Appliance Recycling Program (DSM Phase VII) Monthly Indicator Tables

VA- Residential Appliance Recycling Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$3,248	$2,325	$1,629	$1,981	$2,143	$2,242	$2,313	$2,525	$1,583	$1,388	$1,650	$1,808	**$24,834**	**$37,843**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	
Costs ($)	Total	$56,909	$40,727	$28,535	$34,704	$37,544	$39,280	$40,526	$44,234	$37,096	$32,522	$38,662	$42,371	**$473,111**	**$857,995**
Costs ($)	Planned	$152,378	$152,378	$152,378	$152,378	$152,378	$152,378	$152,378	$152,378	$152,378	$152,378	$152,378	$152,378	**$1,828,534**	**$2,923,203**
Costs ($)	Variance	-$95,468	-$111,651	-$123,843	-$117,674	-$114,834	-$113,098	-$111,852	-$108,144	-$115,282	-$119,856	-$113,716	-$110,006	**-$1,355,423**	**-$2,065,208**
	Annual % of Planned	3%	5%	7%	9%	11%	13%	15%	18%	20%	21%	24%	26%	**26%**	**29%**
Participants[1]	Total (Gross)	288	136	125	5	0	0	104	68	33	17	86	110	**972**	**2,551**
	Planned (Gross)	744	744	744	744	744	744	744	744	744	744	744	743	**8,927**	**14,152**
	Variance	-456	-608	-619	-739	-744	-744	-640	-676	-711	-727	-658	-633	**-7,955**	**-11,601**
	Annual % of Planned (Gross)	3%	5%	6%	6%	6%	6%	7%	8%	9%	9%	10%	11%	**11%**	**18%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	289,147	120,667	99,920	1,913	0	0	85,398	47,077	31,704	16,845	79,723	95,697	**868,091**	**2,123,604**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	289,147	120,667	99,920	1,913	0	0	85,398	47,077	31,704	16,845	79,723	95,697	**868,091**	**2,123,604**
60%	Net-To-Gross Adjustment (kWh/yr)	-115,659	-48,267	-39,968	-765	0	0	-34,159	-18,831	-12,682	-6,738	-31,889	-38,279	**-347,237**	**-849,442**
	Net Adjusted Savings (kWh/yr)	173,488	72,400	59,952	1,148	0	0	51,239	28,246	19,022	10,107	47,834	57,418	**520,855**	**1,274,163**
	Planned Net Savings (kWh/yr)	522,457	522,457	522,457	522,457	522,457	522,457	522,457	522,457	522,457	522,457	522,457	522,457	**6,269,479**	**6,914,329**
	Annual % Toward Planned Net Savings (kWh)	3%	4%	5%	5%	5%	5%	6%	6%	6%	7%	7%	8%	**8%**	**18%**
	Avg. Gross Savings Per Participant (kWh/yr)	1004	887	799	383	N/A	N/A	821	692	961	991	927	870	**893**	**832**
	Avg. Net Savings Per Participant (kWh/yr)	602	532	480	230	N/A	N/A	493	415	576	595	556	522	**536**	**499**
Installed kW	Total Gross Demand Reduction (kW)	43.3	18.1	15.0	0.3	0.0	0.0	12.8	7.0	4.7	2.5	11.9	14.3	**129.9**	**317.9**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	43.3	18.1	15.0	0.3	0.0	0.0	12.8	7.0	4.7	2.5	11.9	14.3	**129.9**	**317.9**
60%	Net-To-Gross Adjustment (kW)	-17.3	-7.2	-6.0	-0.1	0.0	0.0	-5.1	-2.8	-1.9	-1.0	-4.8	-5.7	**-52.0**	**-127.1**
	Net Adjusted Demand Reduction (kW)	26.0	10.8	9.0	0.2	0.0	0.0	7.7	4.2	2.8	1.5	7.2	8.6	**78.0**	**190.7**
	Planned Net Demand Reduction (kW)	81.4	81.4	81.4	81.4	81.4	81.4	81.4	81.4	81.4	81.4	81.4	81.4	**977.3**	**977.3**
	Annual % Toward Planned Net Reduction (kW)	2.7%	3.8%	4.7%	4.7%	4.7%	4.7%	5.5%	5.9%	6.2%	6.4%	7.1%	8.0%	**8.0%**	**19.5%**
	Avg. Gross Demand Reduction Per Participant (kW)	0.2	0.1	0.1	0.1	N/A	N/A	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**	**0.1**
	Avg. Net Demand Reduction Per Participant (kW)	0.1	0.1	0.1	0.0	N/A	N/A	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**	**0.1**
Program Performance	Annual $Admin. per Participant (Gross)	$11	$13	$13	$17	$20	$24	$24	$25	$26	$28	$27	$26	**$26**	**$15**
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.01	$0.01	$0.02	$0.02	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03	$0.03	**$0.03**	**$0**
	Annual $Admin. per kW (Gross)	$75	$91	$94	$120	$148	$177	$178	$191	$198	$206	$199	$191	**$191**	**$119**
	Annual $EM&V per $Total	0.0%	4.7%	7.1%	9.5%	9.2%	13.5%	12.7%	12.7%	12.3%	12.2%	11.1%	10.8%	**10.8%**	**9.2%**
	Annual $Rebate per Participant (Gross)	$20	$20	$20	$20	$20	$20	$20	$20	$20	$20	$20	$20	**$20**	**$20**

1. A participant is a recycled refrigerator or freezer. Up to two units may be recycled for each electric account number and each unit will be counted as a unique participant.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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A.3 Virginia Residential Efficiency Products Marketplace Program 2019-2020

A.3.1 2019-2020 VA Residential Efficiency Products Marketplace Annual Indicator Tables

VA- Residential Efficient Products Marketplace Category	Indicator	2019 Total	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate			
O&M ($)	Direct Implementation			
O&M ($)	Direct EM&V			
O&M ($)	Indirect Other (Administrative)	$156,691	$421,278	$577,969
Capital ($)	Direct Implementation	$0	$0	
Costs ($)	Total	$4,636,049	$8,063,058	$12,699,107
Costs ($)	Planned	$6,860,889	$6,694,699	$13,555,588
Costs ($)	Variance	-$2,224,840	$1,368,359	-$856,481
	Annual % of Planned	68%	120%	94%
Participants[1]	Total (Gross)	2,507,265	2,346,682	4,853,947
	Planned (Gross)	2,972,475	2,172,678	5,145,153
	Variance	-465,210	174,004	-291,206
	Annual % of Planned (Gross)	84%	108%	94%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	73,007,561	81,404,924	154,412,485
	Realization Rate Weighted by Measure	100%	100%	
	Realization Rate Adjustment (kWh/yr)	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	73,007,561	81,404,924	154,412,485
	Net-To-Gross Rate Weighted by Measure	70%	67%	
	Net-To-Gross Adjustment (kWh/yr)	-21,902,268	-27,068,797	-48,971,066
	Net Adjusted Savings (kWh/yr)	51,105,293	54,336,127	105,441,420
	Planned Net Savings (kWh/yr)	16,098,286	120,913,020	137,011,305
	Annual % Toward Planned Net Savings (kWh)	317.46%	45%	77%
	Avg. Gross Savings Per Participant (kWh/yr)	29	35	32
	Avg. Net Savings Per Participant (kWh/yr)	20	23	22
Installed kW	Total Gross Demand Reduction (kW)	6,679.1	7,519.5	14,198.7
	Realization Rate Weighted by Measure	100%	100%	
	Realization Rate Adjustment (kW)	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	6,679.1	7,519.5	14,198.7
	Net-To-Gross Rate Weighted by Measure	70%	67%	
	Net-To-Gross Adjustment (kW)	-2,003.7	-2,512.7	-4,516.5
	Net Adjusted Demand Reduction (kW)	4,675.4	5,006.8	9,682.2
	Planned Net Demand Reduction (kW)	0.0	1,571.8	1,571.8
	Annual % Toward Planned Net Reduction (kW)	N/A	318.5%	616.0%
	Avg. Gross Demand Reduction Per Participant (kW)	0.0	0.0	0.0
	Avg. Net Demand Reduction Per Participant (kW)	0.0	0.0	0.0
Program Performance	Annual $Admin. per Participant (Gross)	$0.06	$0	$0
	Annual $Admin. per kWh/year (Gross)	$0.00	$0.01	$0.00
	Annual $Admin. per kW (Gross)	$23	$56	$41
	Annual $EM&V per $Total	1.9%	2.4%	2.2%
	Annual $Rebate per Participant (Gross)	$1.24	$3	$2

1. A participant is a rebated lamp or appliance.

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A.3.2 2020 VA Residential Efficiency Products Marketplace Monthly Indicator Tables

VA- Residential Efficient Products Marketplace		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2019-2020
Category	Indicator	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Total	Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$85,144	$34,688	$23,928	$51,808	$31,145	$25,835	$20,764	$32,591	$29,236	$23,054	$29,991	$33,093	$421,278	$577,969
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Costs ($)	Total	$1,491,733	$607,739	$419,214	$907,690	$545,671	$452,628	$363,796	$570,993	$685,083	$540,241	$702,792	$775,479	$8,063,058	$12,699,107
Costs ($)	Planned	$557,892	$557,892	$557,892	$557,892	$557,892	$557,892	$557,892	$557,892	$557,892	$557,892	$557,892	$557,892	$6,694,699	$13,555,588
Costs ($)	Variance	$933,841	$49,847	-$138,678	$349,798	-$12,221	-$105,264	-$194,095	$13,101	$127,191	-$17,651	$144,900	$217,588	$1,368,359	-$856,481
	Annual % of Planned	22%	31%	38%	51%	59%	66%	72%	80%	90%	98%	109%	120%	120%	94%
Participants[1]	Total (Gross)	238,091	207,288	206,900	152,549	224,143	165,230	136,780	191,330	165,629	185,274	266,804	199,382	2,339,401	4,846,666
	Planned (Gross)	181,057	181,057	181,057	181,057	181,057	181,057	181,057	181,057	181,057	181,057	181,057	181,051	2,172,678	5,145,153
	Variance	57,034	26,231	25,843	-28,508	43,086	-15,827	-44,277	10,273	-15,428	4,217	85,747	18,331	166,723	-298,487
	Annual % of Planned (Gross)	11%	20%	30%	37%	47%	55%	61%	70%	78%	86%	98%	108%	108%	94%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	7,940,949	7,268,316	7,294,912	5,343,743	7,835,120	5,810,519	4,849,848	6,568,953	5,849,205	6,455,376	9,234,897	6,735,050	81,186,888	154,194,449
	Realization Rate Weighted by Measure	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	7,940,949	7,268,316	7,294,912	5,343,743	7,835,120	5,810,519	4,849,848	6,568,953	5,849,205	6,455,376	9,234,897	6,735,050	81,186,888	154,194,449
	Net-To-Gross Rate Weighted by Measure	68%	68%	67%	67%	67%	66%	66%	68%	66%	67%	66%	66%	67%	
	Net-To-Gross Adjustment (kWh/yr)	-2,562,853	-2,346,839	-2,395,142	-1,787,288	-2,586,909	-1,951,883	-1,639,228	-2,109,408	-1,966,343	-2,155,447	-3,159,278	-2,318,785	-26,979,403	-48,881,671
	Net Adjusted Savings (kWh/yr)	5,378,097	4,921,477	4,899,770	3,556,455	5,248,212	3,858,636	3,210,621	4,459,545	3,882,861	4,299,929	6,075,619	4,416,265	54,207,486	105,312,778
	Planned Net Savings (kWh/yr)	10,076,085	10,076,085	10,076,085	10,076,085	10,076,085	10,076,085	10,076,085	10,076,085	10,076,085	10,076,085	10,076,085	10,076,085	120,913,020	137,011,305
	Annual % Toward Planned Net Savings (kWh)	4%	9%	13%	16%	20%	23%	26%	29%	33%	36%	41%	45%	45%	77%
	Avg. Gross Savings Per Participant (kWh/yr)	33	35	35	35	35	35	35	34	35	35	35	34	35	32
	Avg. Net Savings Per Participant (kWh/yr)	23	24	24	23	23	23	23	23	23	23	23	22	23	22
Installed kW	Total Gross Demand Reduction (kW)	727.6	668.8	670.6	494.0	720.2	535.6	449.1	606.0	545.0	600.3	856.3	626.0	7,499.6	14,178.7
	Realization Rate Weighted by Measure	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
	Realization Rate Adjustment (kW)	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	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	727.6	668.8	670.6	494.0	720.2	535.6	449.1	606.0	545.0	600.3	856.3	626.0	7,499.6	14,178.7
	Net-To-Gross Rate Weighted by Measure	68%	68%	67%	66%	67%	66%	66%	68%	66%	66%	66%	65%	67%	
	Net-To-Gross Adjustment (kW)	-235.1	-216.7	-220.9	-166.2	-238.5	-180.6	-152.7	-195.5	-184.8	-202.0	-294.6	-217.1	-2,504.6	-4,508.3
	Net Adjusted Demand Reduction (kW)	492.5	452.0	449.7	327.9	481.7	355.0	296.4	410.5	360.3	398.3	561.7	409.0	4,995.0	9,670.4
	Planned Net Demand Reduction (kW)	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	1,571.8	1,571.8
	Annual % Toward Planned Net Reduction (kW)	31.3%	60.1%	88.7%	109.6%	140.2%	162.8%	181.7%	207.8%	230.7%	256.0%	291.8%	317.8%	317.8%	615.2%
	Avg. Gross Demand Reduction Per Participant (kW)	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	0.0
	Avg. Net Demand Reduction Per Participant (kW)	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	0.0
Program	Annual $Admin. per Participant (Gross)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Performance	Annual $Admin. per kWh/year (Gross)	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.00
	Annual $Admin. per kW (Gross)	$117	$86	$70	$76	$69	$66	$64	$63	$62	$60	$56	$56	$56	$41
	Annual $EM&V per $Total	0.0%	0.9%	1.4%	1.5%	1.8%	2.1%	2.2%	2.3%	2.4%	2.5%	2.3%	2.4%	2.4%	2.2%
	Annual $Rebate per Participant (Gross)	$5	$3	$2	$3	$3	$3	$3	$3	$3	$3	$2	$3	$3	$2

1. A participant is a rebated lamp or appliance.

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A.4 Virginia Residential Home Energy Assessment Program 2019-2020

A.4.1 2019-2020 VA Residential Home Energy Assessment Program Annual Indicator Tables

VA- Residential Home Assessment Category	Indicator	2019 Total	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate	[redacted]		
O&M ($)	Direct Implementation			
O&M ($)	Direct EM&V			
O&M ($)	Indirect Other (Administrative)	$24,171	$153,132	$177,302
Capital ($)	Direct Implementation	$0	$0	
Costs ($)	Total	$715,145	$2,981,049	$3,696,195
Costs ($)	Planned	$2,326,635	$4,257,214	$6,583,848
Costs ($)	Variance	-$1,611,489	-$1,276,164	-$2,887,654
	Annual % of Planned	31%	70%	56%
Participants[1]	Total (Gross)	0	2,738	2,738
	Planned (Gross)	11,030	28,526	39,556
	Variance	-11,030	-25,788	-36,818
	Annual % of Planned (Gross)	0%	10%	7%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	4,960,666	4,960,666
100%	Realization Rate Adjustment (kWh/yr)	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	0	4,960,666	4,960,666
80%	Net-To-Gross Adjustment (kWh/yr)	0	-992,133	-992,133
	Net Adjusted Savings (kWh/yr)	0	3,968,533	3,968,533
	Planned Net Savings (kWh/yr)	1,073,361	8,763,799	9,837,161
	Annual % Toward Planned Net Savings (kWh)	0.00%	45%	40%
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	1,812	1,812
	Avg. Net Savings Per Participant (kWh/yr)	N/A	1,449	1,449
Installed kW	Total Gross Demand Reduction (kW)	0.0	411.2	411.2
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	411.2	411.2
80%	Net-To-Gross Adjustment (kW)	0.0	-82.2	-82.2
	Net Adjusted Demand Reduction (kW)	0.0	328.9	328.9
	Planned Net Demand Reduction (kW)	0.0	1,658.4	1,658.4
	Annual % Toward Planned Net Reduction (kW)	N/A	19.8%	19.8%
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	0.2	0.2
	Avg. Net Demand Reduction Per Participant (kW)	N/A	0.1	0.1
Program Performance	Annual $Admin. per Participant (Gross)	N/A	$56	$65
	Annual $Admin. per kWh/year (Gross)	N/A	$0.03	$0.04
	Annual $Admin. per kW (Gross)	N/A	$372	$431
	Annual $EM&V per $Total	14%	5.8%	7.4%
	Annual $Rebate per Participant (Gross)	N/A	$473	$473

1. A participant is a unique account number.

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A.4.2 2020 VA Residential Home Energy Assessment Program Monthly Indicator Tables

VA- Residential Home Assessment Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate	[redacted]													
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$20,772	$12,619	$14,304	$12,709	$9,293	$8,879	$10,836	$13,295	$11,200	$12,096	$15,585	$11,543	**$153,132**	**$177,302**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	
Costs ($)	Total	$363,930	$221,086	$250,600	$222,670	$162,808	$155,559	$189,851	$232,934	$262,459	$283,445	$365,207	$270,500	**$2,981,049**	**$3,696,195**
Costs ($)	Planned	$354,768	$354,768	$354,768	$354,768	$354,768	$354,768	$354,768	$354,768	$354,768	$354,768	$354,768	$354,768	**$4,257,214**	**$6,583,848**
Costs ($)	Variance	$9,163	-$133,682	-$104,168	-$132,098	-$191,960	-$199,209	-$164,917	-$121,833	-$92,309	-$71,323	$10,440	-$84,268	**-$1,276,164**	**-$2,887,654**
	Annual % of Planned	9%	14%	20%	25%	29%	32%	37%	42%	48%	55%	64%	70%	**70%**	**56%**
Participants[1]	Total (Gross)	410	147	194	154	62	7	110	192	295	370	467	330	**2,738**	**2,738**
	Planned (Gross)	2,377	2,377	2,377	2,377	2,377	2,377	2,377	2,377	2,377	2,377	2,377	2,379	**28,526**	**39,556**
	Variance	-1,967	-2,230	-2,183	-2,223	-2,315	-2,370	-2,267	-2,185	-2,082	-2,007	-1,910	-2,049	**-25,788**	**-36,818**
	Annual % of Planned (Gross)	1%	2%	3%	3%	3%	3%	4%	4%	6%	7%	8%	10%	**10%**	**7%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	739,311	292,888	344,358	301,560	108,714	21,238	175,878	316,576	512,680	624,814	947,866	574,782	**4,960,666**	**4,960,666**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	739,311	292,888	344,358	301,560	108,714	21,238	175,878	316,576	512,680	624,814	947,866	574,782	**4,960,666**	**4,960,666**
80%	Net-To-Gross Adjustment (kWh/yr)	-147,862	-58,578	-68,872	-60,312	-21,743	-4,248	-35,176	-63,315	-102,536	-124,963	-189,573	-114,956	**-992,133**	**-992,133**
	Net Adjusted Savings (kWh/yr)	591,449	234,310	275,487	241,248	86,971	16,990	140,703	253,261	410,144	499,852	758,293	459,825	**3,968,533**	**3,968,533**
	Planned Net Savings (kWh/yr)	730,317	730,317	730,317	730,317	730,317	730,317	730,317	730,317	730,317	730,317	730,317	730,317	**8,763,799**	**9,837,161**
	Annual % Toward Planned Net Savings (kWh)	7%	9%	13%	15%	16%	17%	18%	21%	26%	31%	40%	45%	**45%**	**40%**
	Avg. Gross Savings Per Participant (kWh/yr)	1,803	1,992	1,775	1,958	1,753	3,034	1,599	1,649	1,738	1,689	2,030	1,742	**1,812**	**1,812**
	Avg. Net Savings Per Participant (kWh/yr)	1,443	1,594	1,420	1,567	1,403	2,427	1,279	1,319	1,390	1,351	1,624	1,393	**1,449**	**1,449**
Installed kW	Total Gross Demand Reduction (kW)	46.4	16.9	31.7	22.2	11.5	1.3	15.2	28.4	49.1	69.3	68.9	50.2	**411.2**	**411.2**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	46.4	16.9	31.7	22.2	11.5	1.3	15.2	28.4	49.1	69.3	68.9	50.2	**411.2**	**411.2**
80%	Net-To-Gross Adjustment (kW)	-9.3	-3.4	-6.3	-4.4	-2.3	-0.3	-3.0	-5.7	-9.8	-13.9	-13.8	-10.0	**-82.2**	**-82.2**
	Net Adjusted Demand Reduction (kW)	37.1	13.5	25.4	17.8	9.2	1.1	12.1	22.7	39.3	55.4	55.1	40.2	**328.9**	**328.9**
	Planned Net Demand Reduction (kW)	138.2	138.2	138.2	138.2	138.2	138.2	138.2	138.2	138.2	138.2	138.2	138.2	**1,658.4**	**1,658.4**
	Annual % Toward Planned Net Reduction (kW)	2.2%	3.1%	4.6%	5.7%	6.2%	6.3%	7.0%	8.4%	10.7%	14.1%	17.4%	19.8%	**19.8%**	**19.8%**
	Avg. Gross Demand Reduction Per Participant (kW)	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.2	**0.2**	**0.2**
	Avg. Net Demand Reduction Per Participant (kW)	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	**0.1**	**0.1**
Program Performance	Annual $Admin. per Participant (Gross)	$51	$60	$64	$67	$72	$81	$82	$80	$73	$65	$59	$56	**$56**	**$65**
	Annual $Admin. per kWh/year (Gross)	$0.03	$0.03	$0.03	$0.04	$0.04	$0.04	$0.05	$0.04	$0.04	$0.04	$0.03	$0.03	**$0.03**	**$0.04**
	Annual $Admin. per kW (Gross)	$448	$527	$502	$515	$541	$604	$615	$591	$511	$431	$392	$372	**$372**	**$431**
	Annual $EM&V per $Total	0.0%	3.1%	4.0%	4.6%	5.4%	7.4%	8.3%	8.7%	7.9%	7.2%	6.2%	5.8%	**5.8%**	**7.4%**
	Annual $Rebate per Participant (Gross)	$481	$500	$501	$509	$509	$511	$502	$494	$486	$473	$481	$473	**$473**	**$473**

1. A participant is a unique account number.

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A.5 Virginia Residential Customer Engagement Program 2020

A.5.1 2020 VA Residential Customer Engagement Monthly Indicator Tables

VA- Residential Customer Engagement Program		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020
Category	Indicator	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$743	$202	$4,491	$1,504	**$6,939**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$17,402	$4,735	$105,233	$35,244	**$162,614**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$17,402	$4,735	$105,233	$35,244	**$162,614**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	23,958	23,958	23,958	23,958	23,958	23,958	23,958	23,958	23,958	23,958	23,958	23,962	**287,500**
	Variance	-23,958	-23,958	-23,958	-23,958	-23,958	-23,958	-23,958	-23,958	-23,958	-23,958	-23,958	-23,962	**-287,500**
	Annual % of Planned (Gross)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	4,234,149	4,234,149	4,234,149	4,234,149	4,234,149	4,234,149	4,234,149	4,234,149	4,234,149	4,234,149	4,234,149	4,234,149	**50,809,784**
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
100%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Demand Reduction (kW)	1,269.7	1,269.7	1,269.7	1,269.7	1,269.7	1,269.7	1,269.7	1,269.7	1,269.7	1,269.7	1,269.7	1,269.7	**15,236.1**
	Annual % Toward Planned Net Reduction (kW)	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%**
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Performance	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5%	6.1%	1.1%	18.9%	**18.9%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

A.6 Virginia Residential Smart Thermostat Purchase and WeatherSmart Program 2020

A.6.1 2020 VA Residential Smart Thermostat Purchase and WeatherSmart Monthly Indicator Tables

VA - Residential Smart Thermostat (Energy Efficiency and Behavioral) Program		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020
Category	Indicator	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$563	$998	$525	$2,167	**$4,253**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$13,203	$23,397	$12,302	$50,769	**$99,671**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$13,203	$23,397	$12,302	$50,769	**$99,671**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Total (Gross) Purchase	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Total (Gross) System Optimization	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	756	756	756	756	756	756	756	756	756	756	756	755	**9,071**
	Variance	-756	-756	-756	-756	-756	-756	-756	-756	-756	-756	-756	-755	**-9,071**
	Annual % of Planned (Gross)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
85%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	132,800	132,800	132,800	132,800	132,800	132,800	132,800	132,800	132,800	132,800	132,800	132,800	**1,593,597**
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
85%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Demand Reduction (kW)	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	**286.5**
	Annual % Toward Planned Net Reduction (kW)	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%**
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Performance	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.3%	3.7%	2.8%	31.0%	**31.0%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

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A.7 Virginia Residential Electric Vehicle (Energy Efficiency) Program 2020

A.7.1 2020 VA Residential Electric Vehicle (Energy Efficiency) Monthly Indicator Tables

VA- Residential Electric Vehicle Energy Efficiency Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$112	$99	$76	$333	**$620**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$2,620	$2,316	$1,782	$7,799	**$14,517**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$2,620	$2,316	$1,782	$7,799	**$14,517**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	
	Variance	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
77%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Savings (kWh)													
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
77%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Reduction (kW)													
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17%	27%	20%	48%	**48%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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A.8 Virginia Residential Energy Efficiency Kits Program 2020

A.8.1 2020 VA Residential Energy Efficiency Kits Monthly Indicator Tables

VA- Residential Energy Efficiency Kits Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$51	$63	$0	$1,428	**$1,541**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$1,190	$1,469	$0	$33,459	**$36,118**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$1,190	$1,469	$0	$33,459	**$36,118**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	
	Variance	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
77%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Savings (kWh)													
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
77%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Reduction (kW)													
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	37%	51%	51%	92%	**92%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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A.9 Virginia Residential Home Retrofit Program 2020

A.9.1 2020 VA Residential Home Retrofit Monthly Indicator Tables

VA- Residential Home Retrofit Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$95	$94	$0	$2,239	**$2,428**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$2,217	$2,196	$0	$52,474	**$56,887**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$2,217	$2,196	$0	$52,474	**$56,887**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	
	Variance	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
77%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Savings (kWh)													
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
77%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Reduction (kW)													
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20%	31%	31%	91%	**91%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.10 Virginia Residential Manufactured Housing Program 2020

A.10.1 2020 VA Residential Manufactured Housing Monthly Indicator Tables

VA- Residential Manufactured Housing Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$47	$74	$0	$2,002	**$2,122**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$1,091	$1,723	$0	$46,902	**$49,716**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$1,091	$1,723	$0	$46,902	**$49,716**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	
	Variance	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
77%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Savings (kWh)													
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
77%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Reduction (kW)													
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40%	48%	48%	92%	**92%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.11 Virginia Residential New Construction Program 2020

A.11.1 2020 VA Residential New Construction Monthly Indicator Tables

VA- Residential New Construction Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$142	$132	$6	$1,003	**$1,284**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$3,338	$3,087	$148	$23,511	**$30,084**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$3,338	$3,087	$148	$23,511	**$30,084**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	
	Variance	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
77%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Savings (kWh)													
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
77%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Reduction (kW)													
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13%	21%	21%	75%	**75%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.12 Virginia Residential Multifamily Program 2020

A.12.1 2020 VA Residential Multifamily Monthly Indicator Tables

VA- Residential Multifamily Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$36	$57	$0	$1,142	**$1,235**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$836	$1,341	$0	$26,762	**$28,940**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$836	$1,341	$0	$26,762	**$28,940**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	
	Variance	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
77%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Savings (kWh)													
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
77%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Reduction (kW)													
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	52%	62%	62%	92%	**92%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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A.13 Virginia Residential and Non-residential Heating & Cooling, Health & Safety (HB 2789) Program 2020

A.13.1 2020 VA Residential and Non-residential Heating & Cooling, Health & Safety (HB 2789) Monthly Indicator Tables

VA- Residential HB 2789 Heating & Cooling, Health & Safety Program		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020
Category	Indicator	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$30	$68	$0	$2,023	**$2,122**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$709	$1,596	$0	$47,417	**$49,722**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$709	$1,596	$0	$47,417	**$49,722**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	
	Variance	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
77%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Savings (kWh)													
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
77%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Reduction (kW)													
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Performance	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	61%	59%	59%	93%	**93%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.14 Virginia Non-residential Lighting Systems & Controls Program (DSM Phase VII) 2019-2020

A.14.1 2019-2020 VA Non-residential Lighting Systems & Controls (DSM Phase VII) Annual Indicator Tables

VA- Non-Residential Lighting Systems & Controls Program		2019	2020	2019-2020
Category	Indicator	Total	Total	Program Total
O&M ($)	Direct Rebate			
O&M ($)	Direct Implementation			
O&M ($)	Direct EM&V			
O&M ($)	Indirect Other (Administrative)	$20,021	$203,084	$223,105
Capital ($)	Direct Implementation	$0	$0	
Costs ($)	Total	$592,373	$3,989,872	$4,582,245
Costs ($)	Planned	$1,633,867	$2,905,369	$4,539,237
Costs ($)	Variance	-$1,041,495	$1,084,503	$43,008
	Annual % of Planned	36%	137%	101%
Participants[1]	Total (Gross)	0	406	406
	Planned (Gross)	333	625	958
	Variance	-333	-219	-552
	Annual % of Planned (Gross)	0%	65%	42%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	29,189,250	29,189,250
100%	Realization Rate Adjustment (kWh/yr)	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	0	29,189,250	29,189,250
70%	Net-To-Gross Adjustment (kWh/yr)	0	-8,756,775	-8,756,775
	Net Adjusted Savings (kWh/yr)	0	20,432,475	20,432,475
	Planned Net Savings (kWh/yr)	1,445,890	13,361,527	14,807,417
	Annual % Toward Planned Net Savings (kWh)	0%	153%	138%
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	71,895	71,895
	Avg. Net Savings Per Participant (kWh/yr)	N/A	50,326	50,326
Installed kW	Total Gross Demand Reduction (kW)	0.0	4,019.8	4,019.8
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	4,019.8	4,019.8
70%	Net-To-Gross Adjustment (kW)	0.0	-1,205.9	-1,205.9
	Net Adjusted Demand Reduction (kW)	0.0	2,813.8	2,813.8
	Planned Net Demand Reduction (kW)	0.0	2,769.7	2,769.7
	Annual % Toward Planned Net Reduction (kW)	N/A	101.6%	101.6%
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	9.9	9.9
	Avg. Net Demand Reduction Per Participant (kW)	N/A	6.9	6.9
Program Performance	Annual $Admin. per Participant (Gross)	N/A	$500	$550
	Annual $Admin. per kWh/year (Gross)	N/A	$0.01	$0.01
	Annual $Admin. per kW (Gross)	N/A	$51	$56
	Annual $EM&V per $Total	8%	2.5%	3.2%
	Annual $Rebate per Participant (Gross)	N/A	$6,717	$6,717

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.14.2 2020 VA Non-residential Lighting Systems & Controls (DSM Phase VII) Monthly Indicator Tables

VA- Non-Residential Lighting Systems & Controls Program		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2019-2020
Category	Indicator	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Total	Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$4,495	$4,540	$26,406	$18,158	$24,192	$16,792	$13,030	$22,443	$22,133	$9,572	$18,846	$22,477	**$203,084**	**$223,105**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	
Costs ($)	Total	$78,751	$79,536	$462,638	$318,137	$423,845	$294,195	$228,284	$393,201	$518,641	$224,301	$441,628	$526,716	**$3,989,872**	**$4,582,245**
Costs ($)	Planned	$242,114	$242,114	$242,114	$242,114	$242,114	$242,114	$242,114	$242,114	$242,114	$242,114	$242,114	$242,114	**$2,905,369**	**$4,539,237**
Costs ($)	Variance	-$163,363	-$162,578	$220,523	$76,023	$181,731	$52,081	-$13,831	$151,087	$276,527	-$17,813	$199,514	$284,602	**$1,084,503**	**$43,008**
	Annual % of Planned	3%	5%	21%	32%	47%	57%	65%	78%	96%	104%	119%	137%	**137%**	**101%**
Participants[1]	Total (Gross)	0	0	83	41	30	31	16	41	42	34	33	55	**406**	**406**
	Planned (Gross)	52	52	52	52	52	52	52	52	52	52	52	53	**625**	**958**
	Variance	-52	-52	31	-11	-22	-21	-36	-11	-10	-18	-19	2	**-219**	**-552**
	Annual % of Planned (Gross)	0%	0%	13%	20%	25%	30%	32%	39%	45%	51%	56%	65%	**65%**	**42%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	2,932,790	1,644,754	3,017,035	3,354,095	1,359,087	4,284,733	5,056,256	1,092,515	3,268,693	3,179,291	**29,189,250**	**29,189,250**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	2,932,790	1,644,754	3,017,035	3,354,095	1,359,087	4,284,733	5,056,256	1,092,515	3,268,693	3,179,291	**29,189,250**	**29,189,250**
70%	Net-To-Gross Adjustment (kWh/yr)	0	0	-879,837	-493,426	-905,111	-1,006,229	-407,726	-1,285,420	-1,516,877	-327,754	-980,608	-953,787	**-8,756,775**	**-8,756,775**
	Net Adjusted Savings (kWh/yr)	0	0	2,052,953	1,151,327	2,111,925	2,347,867	951,361	2,999,313	3,539,379	764,760	2,288,085	2,225,504	**20,432,475**	**20,432,475**
	Planned Net Savings (kWh/yr)	1,113,461	1,113,461	1,113,461	1,113,461	1,113,461	1,113,461	1,113,461	1,113,461	1,113,461	1,113,461	1,113,461	1,113,461	**13,361,527**	**14,807,417**
	Annual % Toward Planned Net Savings (kWh)	0%	0%	15%	24%	40%	57%	64%	87%	113%	119%	136%	153%	**153%**	**138%**
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	35,335	40,116	100,568	108,197	84,943	104,506	120,387	32,133	99,051	57,805	**71,895**	**71,895**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	24,734	28,081	70,397	75,738	59,460	73,154	84,271	22,493	69,336	40,464	**50,326**	**50,326**
Installed kW	Total Gross Demand Reduction (kW)	0.0	0.0	343.4	193.4	471.5	447.6	147.1	641.6	666.6	120.1	539.5	448.9	**4,019.8**	**4,019.8**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	0.0	343.4	193.4	471.5	447.6	147.1	641.6	666.6	120.1	539.5	448.9	**4,019.8**	**4,019.8**
70%	Net-To-Gross Adjustment (kW)	0.0	0.0	-103.0	-58.0	-141.5	-134.3	-44.1	-192.5	-200.0	-36.0	-161.9	-134.7	**-1,205.9**	**-1,205.9**
	Net Adjusted Demand Reduction (kW)	0.0	0.0	240.4	135.4	330.1	313.3	103.0	449.1	466.6	84.1	377.7	314.3	**2,813.8**	**2,813.8**
	Planned Net Demand Reduction (kW)	230.8	230.8	230.8	230.8	230.8	230.8	230.8	230.8	230.8	230.8	230.8	230.8	**2,769.7**	**2,769.7**
	Annual % Toward Planned Net Reduction (kW)	0.0%	0.0%	8.7%	13.6%	25.5%	36.8%	40.5%	56.7%	73.6%	76.6%	90.2%	101.6%	**101.6%**	**101.6%**
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	4.1	4.7	15.7	14.4	9.2	15.6	15.9	3.5	16.3	8.2	**9.9**	**9.9**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	2.9	3.3	11.0	10.1	6.4	11.0	11.1	2.5	11.4	5.7	**6.9**	**6.9**
Program	Annual $Admin. per Participant (Gross)	N/A	N/A	$427	$432	$505	$511	$535	$537	$536	$509	$515	$500	**$500**	**$550**
Performance	Annual $Admin. per kWh/year (Gross)	N/A	N/A	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	**$0.01**	**$0.01**
	Annual $Admin. per kW (Gross)	N/A	N/A	$103	$100	$77	$65	$67	$58	$52	$53	$51	$51	**$51**	**$56**
	Annual $EM&V per $Total	0.0%	2.7%	2.0%	2.4%	2.3%	2.9%	3.0%	3.0%	2.6%	2.6%	2.3%	2.5%	**2.5%**	**3.2%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	$4,201	$4,486	$5,634	$5,657	$5,827	$6,004	$6,546	$6,242	$6,641	$6,717	**$6,717**	**$6,717**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.15 Virginia Non-residential Small Business Improvement Program 2016-2020

A.15.1 2016-2020 VA Non-residential Small Business Improvement Annual Indicator Tables

VA- Small Business Improvement Program		2016	2017	2018	2019	2020	2016-2020
Category	Indicator	Total[2]	Total	Total	Total	Total	Program Total
O&M ($)	Direct Rebate						
O&M ($)	Direct Implementation						
O&M ($)	Direct EM&V						
O&M ($)	Indirect Other (Administrative)	$21,431	$150,600	$190,612	$162,502	$146,422	$671,567
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	
Costs ($)	Total	$705,139	$3,827,332	$3,375,566	$3,446,135	$2,789,194	$14,143,366
Costs ($)	Planned	$2,306,687	$5,322,647	$6,548,890	$7,784,513	$8,769,684	$30,732,422
Costs ($)	Variance	-$1,601,548	-$1,495,315	-$3,173,324	-$4,338,378	-$5,980,489	-$16,589,056
	Annual % of Planned	30.6%	71.9%	51.5%	44.3%	31.8%	46.0%
Participants[1]	Total (Gross)	67	937	510	503	327	2,344
	Planned (Gross)	216.25	635	780	928	1075	3,634
	Variance	-149	302	-270	-425	-748	-1,290
	Annual % of Planned (Gross)	31.0%	147.6%	65.4%	54.2%	30.4%	64.5%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	656,801	14,699,005	15,998,914	11,648,664	8,097,820	51,101,204
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	656,801	14,699,005	15,998,914	11,648,664	8,097,820	51,101,204
93%	Net-To-Gross Adjustment (kWh/yr)	-45,976	-1,028,930	-1,119,924	-815,407	-566,847	-3,577,084
	Net Adjusted Savings (kWh/yr)	610,825	13,670,074	14,878,990	10,833,258	7,530,972	47,524,120
	Planned Net Savings (kWh/yr)	1,255,549	4,323,476	5,760,927	9,774,740	29,581,410	50,696,102
	Annual % Toward Planned Net Savings (kWh)	48.7%	316.2%	258.3%	110.8%	25.5%	93.7%
	Avg. Gross Savings Per Participant (kWh/yr)	9,803	15,687	31,370	23,158	24,764	21,801
	Avg. Net Savings Per Participant (kWh/yr)	9,117	14,589	29,174	21,537	23,030	20,275
Installed kW	Total Gross Demand Reduction (kW)	131.5	3,098.0	3,475.7	2,553.5	1,623.5	10,882.3
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	131.5	3,098.0	3,475.7	2,553.5	1,623.5	10,882.3
93%	Net-To-Gross Adjustment (kW)	-9.2	-216.9	-243.3	-178.7	-113.6	-761.8
	Net Adjusted Demand Reduction (kW)	122.3	2,881.2	3,232.4	2,374.8	1,509.8	10,120.5
	Planned Net Demand Reduction (kW)	308.0	660.7	1,135.0	1,930.3	5,545.5	9,579.6
	Annual % Toward Planned Net Reduction (kW)	39.7%	436.1%	284.8%	123.0%	27.2%	105.6%
	Avg. Gross Demand Reduction Per Participant (kW)	2.0	3.3	6.8	5.1	5.0	4.6
	Avg. Net Demand Reduction Per Participant (kW)	1.8	3.1	6.3	4.7	4.6	4.3
Program Performance	Annual $Admin. per Participant (Gross)	$320	$161	$374	$323	$448	$287
	Annual $Admin. per kWh/year (Gross)	$0.03	$0.01	$0.01	$0.01	$0.02	$0.01
	Annual $Admin. per kW (Gross)	$163	$49	$54.84	$63.64	$90.19	$62
	Annual $EM&V per $Total	6.5%	2.9%	3.3%	2.2%	4.1%	3.2%
	Annual $Rebate per Participant (Gross)	$1,364	$2,686	$4,180	$4,510	$4,813	$3,662

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

1. A participant is a unique account number.
2. The 2016 total gross deemed savings values reported in this table differs from values in the May 1, 2017 EM&V report, and have been refiled with the Commission. The adjustments totaled -171,768 kWh/year and 3 kW for 2016 reported savings. The adjustments accounts for corrections to STEP Manual version 7.0.0 issued on May 1, 2017, in section 15. The adjustment was to waste heat factors (WHFe and WHFd) applied to lighting fixtures installed in 2016, where the program participant building HVAC systems was assumed to be heat pump heating and cooling systems, rather than the previous assumption of AC cool and non-electric heat systems. This adjustment was made in response to requests by the North Carolina Public Staff Utilities Commission Re: Docket No. E-22, Sub 545, on October 23, 2017. It is reflected in STEP Manual version 8.0.0 in this EM&V report.

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A.15.2 2020 VA Non-residential Small Business Improvement Monthly Indicator Tables

VA- Small Business Improvement Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2016-2020 Program Total
O&M ($)	Direct Rebate	[redacted]													
O&M ($)	Direct Implementation	[redacted]													
O&M ($)	Direct EM&V	[redacted]													
O&M ($)	Indirect Other (Administrative)	$12,047	$16,530	$16,097	$15,278	$10,987	$14,386	$9,405	$13,836	$9,999	$5,592	$12,556	$9,712	**$146,422**	**$671,567**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	
Costs ($)	Total	$211,061	$289,600	$282,016	$267,668	$192,492	$252,036	$164,771	$242,416	$234,303	$131,029	$294,221	$227,582	**$2,789,194**	**$14,143,366**
Costs ($)	Planned	$730,807	$730,807	$730,807	$730,807	$730,807	$730,807	$730,807	$730,807	$730,807	$730,807	$730,807	$730,807	**$8,769,684**	**$30,732,422**
Costs ($)	Variance	-$519,746	-$441,207	-$448,791	-$463,139	-$538,315	-$478,771	-$566,036	-$488,391	-$496,504	-$599,778	-$436,586	-$503,225	**-$5,980,489**	**-$16,589,056**
	Annual % of Planned	2.4%	5.7%	8.9%	12.0%	14.2%	17.0%	18.9%	21.7%	24.4%	25.9%	29.2%	31.8%	**31.8%**	**46.0%**
Participants[1]	Total (Gross)	22	37	33	24	29	39	19	21	29	14	37	23	**327**	**2,344**
	Planned (Gross)	90	90	90	90	90	90	90	90	90	90	90	85	**1075**	**3,634**
	Variance	-68	-53	-57	-66	-61	-51	-71	-69	-61	-76	-53	-62	**-748**	**-1,290**
	Annual % of Planned (Gross)	2.0%	5.5%	8.6%	10.8%	13.5%	17.1%	18.9%	20.8%	23.5%	24.8%	28.3%	30.4%	**30.4%**	**64.5%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	520,281	908,686	1,041,946	844,244	425,186	635,714	309,962	719,900	635,759	118,350	1,010,284	927,510	**8,097,820**	**51,101,204**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	520,281	908,686	1,041,946	844,244	425,186	635,714	309,962	719,900	635,759	118,350	1,010,284	927,510	**8,097,820**	**51,101,204**
93%	Net-To-Gross Adjustment (kWh/yr)	-36,420	-63,608	-72,936	-59,097	-29,763	-44,500	-21,697	-50,393	-44,503	-8,285	-70,720	-64,926	**-566,847**	**-3,577,084**
	Net Adjusted Savings (kWh/yr)	483,861	845,078	969,010	785,146	395,423	591,214	288,264	669,507	591,256	110,066	939,564	862,584	**7,530,972**	**47,524,120**
	Planned Net Savings (kWh/yr)	2,465,118	2,465,118	2,465,118	2,465,118	2,465,118	2,465,118	2,465,118	2,465,118	2,465,118	2,465,118	2,465,118	2,465,118	**29,581,410**	**50,696,102**
	Annual % Toward Planned Net Savings (kWh)	1.6%	4.5%	7.8%	10.4%	11.8%	13.8%	14.7%	17.0%	19.0%	19.4%	22.5%	25.5%	**25.5%**	**93.7%**
	Avg. Gross Savings Per Participant (kWh/yr)	23,649	24,559	31,574	35,177	14,662	16,300	16,314	34,281	21,923	8,454	27,305	40,327	**24,764**	**21,801**
	Avg. Net Savings Per Participant (kWh/yr)	21,994	22,840	29,364	32,714	13,635	15,159	15,172	31,881	20,388	7,862	25,394	37,504	**23,030**	**20,275**
Installed kW	Total Gross Demand Reduction (kW)	110.6	188.6	230.6	128.4	77.1	137.4	67.2	149.6	151.0	33.9	217.2	131.9	**1,623.5**	**10,882.3**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	110.6	188.6	230.6	128.4	77.1	137.4	67.2	149.6	151.0	33.9	217.2	131.9	**1,623.5**	**10,882.3**
93%	Net-To-Gross Adjustment (kW)	-7.7	-13.2	-16.1	-9.0	-5.4	-9.6	-4.7	-10.5	-10.6	-2.4	-15.2	-9.2	**-113.6**	**-761.8**
	Net Adjusted Demand Reduction (kW)	102.9	175.4	214.5	119.4	71.7	127.8	62.5	139.2	140.5	31.6	202.0	122.7	**1,509.8**	**10,120.5**
	Planned Net Demand Reduction (kW)	462.1	462.1	462.1	462.1	462.1	462.1	462.1	462.1	462.1	462.1	462.1	462.1	**5,545.5**	**9,579.6**
	Annual % Toward Planned Net Reduction (kW)	1.9%	5.0%	8.9%	11.0%	12.3%	14.6%	15.8%	18.3%	20.8%	21.4%	25.0%	27.2%	**27.2%**	**105.6%**
	Avg. Gross Demand Reduction Per Participant (kW)	5.0	5.1	7.0	5.3	2.7	3.5	3.5	7.1	5.2	2.4	5.9	5.7	**5.0**	**4.6**
	Avg. Net Demand Reduction Per Participant (kW)	4.7	4.7	6.5	5.0	2.5	3.3	3.3	6.6	4.8	2.3	5.5	5.3	**4.6**	**4.3**
Program Performance	Annual $Admin. per Participant (Gross)	$548	$484	$486	$517	$489	$464	$467	$485	$469	$465	$450	$448	**$448**	**$287**
	Annual $Admin. per kWh/year (Gross)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0.02**	**$0.01**
	Annual $Admin. per kW (Gross)	$109	$96	$84	$91	$96	$98	$101	$100	$96	$97	$92	$90	**$90.19**	**$62**
	Annual $EM&V per $Total	0.0%	1.3%	2.4%	3.1%	3.5%	3.7%	3.9%	4.1%	4.3%	4.5%	4.0%	4.1%	**4.1%**	**3.2%**
	Annual $Rebate per Participant (Gross)	$5,565	$5,232	$5,201	$5,516	$5,044	$4,762	$4,651	$4,827	$4,794	$4,673	$4,771	$4,813	**$4,813**	**$3,662**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.16 Virginia Non-residential Small Business Improvement Enhanced Program 2020

A.16.1 2020 VA Non-residential Small Business Improvement Enhanced Monthly Indicator Tables

VA- Non-Residential Small Business Improvement Enhanced Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$138	$187	$21	$2,056	**$2,402**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$3,235	$4,376	$494	$48,186	**$56,290**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$3,235	$4,376	$494	$48,186	**$56,290**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	
	Variance	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
77%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Savings (kWh)													
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
77%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Reduction (kW)													
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.17 Virginia Non-residential Prescriptive Program 2017-2020

A.17.1 2017-2020 VA Prescriptive Program Annual Indicator Tables

VA- Nonresidential Prescriptive Program Category	Indicator	2017 Total	2018 Total	2019 Total	2020 Total	2017-2020 Program Total
O&M ($)	Direct Rebate					
O&M ($)	Direct Implementation					
O&M ($)	Direct EM&V					
O&M ($)	Indirect Other (Administrative)	$28,898	$381,096	$281,598	$579,427	$1,271,019
Capital ($)	Direct Implementation	$0		$0		
Costs ($)	Total	$734,410	$6,748,855	$5,887,581	$11,128,206	$24,499,052
Costs ($)	Planned	$3,735,349	$6,246,114	$6,354,082	$6,282,076	$22,617,621
Costs ($)	Variance	-$3,000,939	$502,740	-$466,501	$4,846,131	$1,881,431
	Annual % of Planned	20%	108%	93%	177%	108%
Participants[1]	Total (Gross)	4	865	666	577	2,112
	Planned (Gross)	266	427	427	427	1,547
	Variance	-262	438	239	150	565
	Annual % of Planned (Gross)	2%	203%	156%	135%	137%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	699	7,023,169	4,403,947	45,108,795	60,231,873
	Realization Rate weighted by Measure	100%	100%	100%	48%	
	Realization Rate Adjustment (kWh/yr)	0	0	0	-23,380,737	-23,380,737
	Realization Rate Adjusted Savings (kWh/yr)	699	7,023,169	4,403,947	21,728,058	33,155,873
	Net-To-Gross Rate Weighted by Measure	85%	85%	85%	89%	
	Net-To-Gross Adjustment (kWh/yr)	105	1,053,475	660,592	2,835,551	4,549,723
	Net Adjusted Savings (kWh/yr)	594	5,969,694	3,743,355	18,892,507	28,606,150
	Planned Net Savings (kWh/yr)	5,959,948	26,839,364	1,672,489	4,662,193	39,133,993
	Annual % Toward Planned Net Savings (kWh)	0.01%	22%	224%	405%	73%
	Avg. Gross Savings Per Participant (kWh/yr)	175	8,119	6,613	78,178	28,519
	Avg. Net Savings Per Participant (kWh/yr)	149	6,901	5,621	32,743	13,545
Installed kW	Total Gross Demand Reduction (kW)	0.1	3,366.4	3,382.3	5,921.1	12,669.9
	Realization Rate weighted by Measure	100%	100%	100%	79%	
	Realization Rate Adjustment (kW)	0.0	0.0	0.0	-1,272.2	-1272.2
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.1	3,366.4	3,385.2	4,648.9	11400.6
	Net-To-Gross Rate Weighted by Measure	85%	85%	85%	83%	
	Net-To-Gross Adjustment (kW)	0.0	505.0	9,851.3	11,265.8	21622.1
	Net Adjusted Demand Reduction (kW)	0.0	571.1	512.0	862.1	1945.2
	Planned Net Demand Reduction (kW)	0.0	4,296.0	684.7	1,858.4	6839.0
	Annual % Toward Planned Net Reduction (kW)	N/A	13.3%	75%	46%	0.3
	Avg. Gross Demand Reduction Per Participant (kW)	0.02	3.9	5.1	10.3	6.0
	Avg. Net Demand Reduction Per Participant (kW)	0.00	0.7	0.8	1.5	0.9
Program Performance	Annual $Admin. per Participant (Gross)	$7,225	$441	$423	$1,004	$602
	Annual $Admin. per kWh/year (Gross)	$41	$0.05	$0.06	$0.01	$0.02
	Annual $Admin. per kW (Gross)	$351,557	$113	$83	$98	$100
	Annual $EM&V per $Total	11%	2.0%	2%	1%	1.9%
	Annual $Rebate per Participant (Gross)	$157	$5,315	$6,099	$15,519	$8,340

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.17.2 2020 VA Prescriptive Program Monthly Indicator Tables

VA- Nonresidential Prescriptive Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2017-2020 Program Total
O&M ($)	Direct Rebate	[redacted]													
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$50,437	$32,328	$17,471	$60,180	$45,597	$60,074	$63,717	$84,469	$75,382	$20,278	$35,933	$33,560	**$579,427**	**$1,271,019**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Costs ($)	Total	$883,657	$566,384	$306,100	$1,054,361	$798,871	$1,052,510	$1,116,333	$1,479,906	$1,766,449	$475,178	$842,037	$786,420	**$11,128,206**	**$24,499,052**
Costs ($)	Planned	$523,506	$523,506	$523,506	$523,506	$523,506	$523,506	$523,506	$523,506	$523,506	$523,506	$523,506	$523,506	**$6,282,076**	**$22,617,621**
Costs ($)	Variance	$360,151	$42,878	-$217,407	$530,854	$275,364	$529,004	$592,827	$956,400	$1,242,943	-$48,328	$318,531	$262,913	**$4,846,131**	**$1,881,431**
	Annual % of Planned	14%	23%	28%	45%	57%	74%	92%	116%	144%	151%	165%	177%	**177%**	**108%**
Participants[1]	Total (Gross)	115	57	52	54	63	32	25	25	26	15	74	39	**577**	**2,112**
	Planned (Gross)	36	36	36	36	36	36	36	36	36	36	36	31	**427**	**1,547**
	Variance	79	21	16	18	27	-4	-11	-11	-10	-21	38	8	**150**	**565**
	Annual % of Planned (Gross)	27%	40%	52%	65%	80%	87%	93%	99%	105%	109%	126%	135%	**135%**	**137%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	1,007,170	1,093,006	328,097	5,924,372	3,457,803	5,462,136	4,525,882	3,781,864	10,736,935	1,357,575	3,834,566	3,599,390	**45,108,795**	**60,231,873**
	Realization Rate weighted by Measure	85%	57%	59%	45%	45%	45%	55%	50%	45%	51%	49%	46%	**48%**	
	Realization Rate Adjustment (kWh/yr)	-153,767	-466,272	-127,593	-3,270,607	-1,891,389	-3,028,203	-2,044,329	-1,883,095	-5,946,486	-659,187	-1,962,522	-1,947,286	**-23,380,737**	**-23,380,737**
	Realization Rate Adjusted Savings (kWh/yr)	853,403	626,734	200,504	2,653,765	1,566,414	2,433,933	2,481,553	1,898,768	4,790,448	698,387	1,872,044	1,652,104	**21,728,058**	**33,155,873**
	Net-To-Gross Rate Weighted by Measure	81%	88%	85%	89%	90%	90%	88%	89%	90%	88%	89%	90%	**89%**	
	Net-To-Gross Adjustment (kWh/yr)	185,365	87,858	34,086	415,720	163,845	252,059	369,893	262,580	520,850	98,901	249,837	194,558	**2,835,551**	**4,549,723**
	Net Adjusted Savings (kWh/yr)	668,038	538,876	166,419	2,238,045	1,402,569	2,181,873	2,111,660	1,636,189	4,269,599	599,486	1,622,207	1,457,546	**18,892,507**	**28,606,150**
	Planned Net Savings (kWh/yr)	388,516	388,516	388,516	388,516	388,516	388,516	388,516	388,516	388,516	388,516	388,516	388,516	**4,662,193**	**39,133,993**
	Annual % Toward Planned Net Savings (kWh)	14%	26%	29%	77%	108%	154%	200%	235%	326%	339%	374%	405%	**405%**	**73%**
	Avg. Gross Savings Per Participant (kWh/yr)	8,758	19,176	6,310	109,711	54,886	170,692	181,035	151,275	412,959	90,505	51,818	92,292	**78,178**	**28,519**
	Avg. Net Savings Per Participant (kWh/yr)	5,809	9,454	3,200	41,445	22,263	68,184	84,466	65,448	164,215	39,966	21,922	37,373	**32,743**	**13,545**
Installed kW	Total Gross Demand Reduction (kW)	565.3	226.3	85.1	571.2	366.4	605.1	650.1	604.5	1,126.5	222.4	476.6	421.7	**5,921.1**	**12,669.9**
	Realization Rate weighted by Measure	95%	83%	85%	70%	73%	74%	82%	81%	74%	83%	79%	76%	**79%**	
	Realization Rate Adjustment (kW)	-30.4	-37.4	-12.9	-173.8	-100.6	-154.3	-119.6	-114.8	-290.2	-37.2	-101.1	-99.7	**-1,272.2**	**-1272.2**
	Realization Rate Adjusted Gross Demand Reduction (kW)	534.9	188.8	72.3	397.4	265.7	450.8	530.4	489.7	836.3	185.2	375.5	322.0	**4,648.9**	**11400.6**
	Net-To-Gross Rate Weighted by Measure	77%	80%	78%	84%	86%	85%	82%	82%	86%	81%	84%	84%	**83%**	
	Net-To-Gross Adjustment (kW)	10,530.2	40.2	16.2	72.1	41.5	73.3	103.1	96.9	131.9	37.0	68.2	55.3	**11,265.8**	**21622.1**
	Net Adjusted Demand Reduction (kW)	126.5	40.2	16.2	72.1	41.5	73.3	103.1	96.9	131.9	37.0	68.2	55.3	**862.1**	**1945.2**
	Planned Net Demand Reduction (kW)	154.9	154.9	154.9	154.9	154.9	154.9	154.9	154.9	154.9	154.9	154.9	154.9	**1,858.4**	**6839.0**
	Annual % Toward Planned Net Reduction (kW)	7%	9%	10%	14%	16%	20%	25%	31%	38%	40%	43%	46%	**46%**	**0.3**
	Avg. Gross Demand Reduction Per Participant (kW)	4.9	4.0	1.6	10.6	5.8	18.9	26.0	24.2	43.3	14.8	6.4	10.8	**10.3**	**6.0**
	Avg. Net Demand Reduction Per Participant (kW)	1.1	0.7	0.3	1.3	0.7	2.3	4.1	3.9	5.1	2.5	0.9	1.4	**1.5**	**0.9**
Program Performance	Annual $Admin. per Participant (Gross)	$439	$481	$447	$577	$604	$713	$829	$979	$1,091	$1,099	$1,015	$1,004	**$1,004**	**$602**
	Annual $Admin. per kWh/year (Gross)	$0.05	$0.04	$0.04	$0.02	$0.02	$0.02	$0.02	$0.02	$0.01	$0.01	$0.01	$0.01	**$0.01**	**$0.02**
	Annual $Admin. per kW (Gross)	$89	$105	$114	$111	$114	$110	$107	$113	$102	$102	$99	$98	**$98**	**$100**
	Annual $EM&V per $Total	0%	1%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%	**1%**	**1.9%**
	Annual $Rebate per Participant (Gross)	$7,973	$7,840	$6,800	$8,758	$8,974	$10,569	$12,269	$13,749	$16,363	$16,534	$15,523	$15,519	**$15,519**	**$8,340**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.18 Virginia Non-Residential Heating and Cooling Efficiency Program (DSM Phase VII) 2019-2020

A.18.1 2019-2020 VA Non-Residential Heating and Cooling Efficiency (DSM Phase VII) Annual Indicator Tables

VA- Non-Residential Heating and Cooling Efficiency Program Category	Indicator	2019 Total	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate			
O&M ($)	Direct Implementation			
O&M ($)	Direct EM&V			
O&M ($)	Indirect Other (Administrative)	$11,566	$38,539	$50,105
Capital ($)	Direct Implementation	$0	$0	
Costs ($)	Total	$342,194	$723,971	$1,066,165
Costs ($)	Planned	$1,130,793	$1,921,705	$3,052,499
Costs ($)	Variance	-$788,599	-$1,197,735	-$1,986,334
	Annual % of Planned	30%	38%	35%
Participants[1]	Total (Gross)	0	30	30
	Planned (Gross)	350	658	1,008
	Variance	-350	-628	-978
	Annual % of Planned (Gross)	0%	5%	3%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	2,352,639	2,352,639
100%	Realization Rate Adjustment (kWh/yr)	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	0	2,352,639	2,352,639
70%	Net-To-Gross Adjustment (kWh/yr)	0	-705,792	-705,792
	Net Adjusted Savings (kWh/yr)	0	1,646,848	1,646,848
	Planned Net Savings (kWh/yr)	1,014,615	8,549,281	9,563,896
	Annual % Toward Planned Net Savings (kWh)	0.00%	19%	17%
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	78421	78421
	Avg. Net Savings Per Participant (kWh/yr)	N/A	54895	54895
Installed kW	Total Gross Demand Reduction (kW)	0.0	407.9	407.9
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	407.9	407.9
70%	Net-To-Gross Adjustment (kW)	0.0	-122.4	-122.4
	Net Adjusted Demand Reduction (kW)	0.0	285.5	285.5
	Planned Net Demand Reduction (kW)	0.0	1,917.3	1,917.3
	Annual % Toward Planned Net Reduction (kW)	N/A	14.9%	14.9%
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	13.6	13.6
	Avg. Net Demand Reduction Per Participant (kW)	N/A	9.5	9.5
Program Performance	Annual $Admin. per Participant (Gross)	N/A	$1,285	$1,670
	Annual $Admin. per kWh/year (Gross)	N/A	$0.02	$0.02
	Annual $Admin. per kW (Gross)	N/A	$94	$123
	Annual $EM&V per $Total	11%	12.7%	12.2%
	Annual $Rebate per Participant (Gross)	N/A	$6,662	$6,662

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.18.2 2020 VA Non-Residential Heating and Cooling Efficiency (DSM Phase VII) Monthly Indicator Tables

VA- Non-Residential Heating and Cooling Efficiency Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$2,105	$2,340	$2,743	$2,233	$2,382	$3,598	$7,639	$7,254	$1,917	$1,756	$2,400	$2,174	$38,539	$50,105
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Costs ($)	Total	$36,878	$40,994	$48,061	$39,121	$41,728	$63,031	$133,838	$127,083	$44,918	$41,138	$56,239	$50,941	$723,971	$1,066,165
Costs ($)	Planned	$160,142	$160,142	$160,142	$160,142	$160,142	$160,142	$160,142	$160,142	$160,142	$160,142	$160,142	$160,142	$1,921,705	$3,052,499
Costs ($)	Variance	-$123,264	-$119,148	-$112,081	-$121,021	-$118,414	-$97,111	-$26,304	-$33,059	-$115,224	-$119,004	-$103,903	-$109,202	-$1,197,735	-$1,986,334
	Annual % of Planned	2%	4%	7%	9%	11%	14%	21%	28%	30%	32%	35%	38%	38%	35%
Participants[1]	Total (Gross)	0	0	0	0	1	5	4	3	1	0	10	6	30	30
	Planned (Gross)	55	55	55	55	55	55	55	55	55	55	55	53	658	1,008
	Variance	-55	-55	-55	-55	-54	-50	-51	-52	-54	-55	-45	-47	-628	-978
	Annual % of Planned (Gross)	0%	0%	0%	0%	0%	1%	2%	2%	2%	2%	4%	5%	5%	3%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	7,669	31,848	1,075,347	1,007,150	19,636	0	204,650	6,339	2,352,639	2,352,639
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	7,669	31,848	1,075,347	1,007,150	19,636	0	204,650	6,339	2,352,639	2,352,639
70%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	-2,301	-9,554	-322,604	-302,145	-5,891	0	-61,395	-1,902	-705,792	-705,792
	Net Adjusted Savings (kWh/yr)	0	0	0	0	5,368	22,293	752,743	705,005	13,745	0	143,255	4,437	1,646,848	1,646,848
	Planned Net Savings (kWh/yr)	712,440	712,440	712,440	712,440	712,440	712,440	712,440	712,440	712,440	712,440	712,440	712,440	8,549,281	9,563,896
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	0%	0%	0%	9%	17%	18%	18%	19%	19%	19%	17%
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	7669	6370	268837	335717	19636	N/A	20465	1057	78421	78421
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	5368	4459	188186	235002	13745	N/A	14325	740	54895	54895
Installed kW	Total Gross Demand Reduction (kW)	0.0	0.0	0.0	0.0	0.0	69.0	211.2	93.1	0.0	0.0	32.1	2.6	407.9	407.9
100%	Realization Rate Adjustment (kW)	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	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	0.0	0.0	0.0	0.0	69.0	211.2	93.1	0.0	0.0	32.1	2.6	407.9	407.9
70%	Net-To-Gross Adjustment (kW)	0.0	0.0	0.0	0.0	0.0	-20.7	-63.3	-27.9	0.0	0.0	-9.6	-0.8	-122.4	-122.4
	Net Adjusted Demand Reduction (kW)	0.0	0.0	0.0	0.0	0.0	48.3	147.8	65.2	0.0	0.0	22.5	1.8	285.5	285.5
	Planned Net Demand Reduction (kW)	159.8	159.8	159.8	159.8	159.8	159.8	159.8	159.8	159.8	159.8	159.8	159.8	1,917.3	1,917.3
	Annual % Toward Planned Net Reduction (kW)	0.0%	0.0%	0.0%	0.0%	0.0%	2.5%	10.2%	13.6%	13.6%	13.6%	14.8%	14.9%	14.9%	14.9%
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	0.0	13.8	52.8	31.0	0.0	N/A	3.2	0.4	13.6	13.6
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	0.0	9.7	37.0	21.7	0.0	N/A	2.2	0.3	9.5	9.5
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	$11,803	$2,567	$2,304	$2,330	$2,301	$2,426	$1,515	$1,285	$1,285	$1,670
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	$1.54	$0.39	$0.02	$0.01	$0.02	$0.02	$0.02	$0.02	$0.02	$0.02
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	$223	$82	$81	$86	$91	$90	$94	$94	$123
	Annual $EM&V per $Total	0.0%	7.9%	14.7%	14.0%	14.1%	16.4%	11.9%	11.5%	12.3%	12.6%	11.6%	12.7%	12.7%	12.2%
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	$607	$2,054	$10,159	$13,555	$12,627	$12,627	$8,243	$6,662	$6,662	$6,662

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.19 Virginia Non-Residential Office Program 2019-2020

A.19.1 2019-2020 VA Non-Residential Office Annual Indicator Tables

VA- Non-residential Office Category	Indicator	2019 Total	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate			
O&M ($)	Direct Implementation			
O&M ($)	Direct EM&V			
O&M ($)	Indirect Other (Administrative)	$13,706	$21,271	$34,977
Capital ($)	Direct Implementation	$0	$0	
Costs ($)	Total	$405,507	$408,837	$814,344
Costs ($)	Planned	$832,726	$1,140,867	$1,973,592
Costs ($)	Variance	-$427,218	-$732,030	-$1,159,248
	Annual % of Planned	49%	36%	41%
Participants[1]	Total (Gross)	0	6	6
	Planned (Gross)	42	79	121
	Variance	-42	-73	-115
	Annual % of Planned (Gross)	0%	8%	5%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	131,417	131,417
100%	Realization Rate Adjustment (kWh/yr)	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	0	131,417	131,417
90%	Net-To-Gross Adjustment (kWh/yr)	0	-13,142	-13,142
	Net Adjusted Savings (kWh/yr)	0	118,275	118,275
	Planned Net Savings (kWh/yr)	594,427	4,901,797	5,496,225
	Annual % Toward Planned Net Savings (kWh)	0%	2%	2%
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	21,903	21,903
	Avg. Net Savings Per Participant (kWh/yr)	N/A	19,713	19,713
Installed kW	Total Gross Demand Reduction (kW)	0.0	0.0	0.0
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	0.0	0.0
90%	Net-To-Gross Adjustment (kW)	0.0	0.0	0.0
	Net Adjusted Demand Reduction (kW)	0.0	0.0	0.0
	Planned Net Demand Reduction (kW)	0.0	427.4	427.4
	Annual % Toward Planned Net Reduction (kW)	N/A	0.0%	0.0%
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	0.0	0.0
	Avg. Net Demand Reduction Per Participant (kW)	N/A	0.0	0.0
Program Performance	Annual $Admin. per Participant (Gross)	N/A	$3,545	$5,829
	Annual $Admin. per kWh/year (Gross)	N/A	$0.16	$0.27
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A
	Annual $EM&V per $Total	26%	35.9%	30.9%
	Annual $Rebate per Participant (Gross)	N/A	$2,944	$2,944

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.19.2 2020 VA Non-Residential Office Monthly Indicator Tables

VA- Non-residential Office Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$1,065	$1,412	$1,576	$1,839	$2,337	$3,280	$1,372	$2,275	$1,136	$1,220	$2,177	$1,583	**$21,271**	**$34,977**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	
Costs ($)	Total	$18,662	$24,743	$27,615	$32,218	$40,948	$57,469	$24,031	$39,854	$26,613	$28,578	$51,012	$37,095	**$408,837**	**$814,344**
Costs ($)	Planned	$95,072	$95,072	$95,072	$95,072	$95,072	$95,072	$95,072	$95,072	$95,072	$95,072	$95,072	$95,072	**$1,140,867**	**$1,973,592**
Costs ($)	Variance	-$76,411	-$70,329	-$67,457	-$62,854	-$54,124	-$37,603	-$71,041	-$55,218	-$68,459	-$66,494	-$44,060	-$57,977	**-$732,030**	**-$1,159,248**
	Annual % of Planned	2%	4%	6%	9%	13%	18%	20%	23%	26%	28%	33%	36%	**36%**	**41%**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	5	1	**6**	**6**
	Planned (Gross)	7	7	7	7	7	7	7	7	7	7	7	2	**79**	**121**
	Variance	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7	-2	-1	**-73**	**-115**
	Annual % of Planned (Gross)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	8%	**8%**	**5%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	116,090	15,327	**131,417**	**131,417**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	116,090	15,327	**131,417**	**131,417**
90%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	-11,609	-1,533	**-13,142**	**-13,142**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	104,481	13,794	**118,275**	**118,275**
	Planned Net Savings (kWh/yr)	408,483	408,483	408,483	408,483	408,483	408,483	408,483	408,483	408,483	408,483	408,483	408,483	**4,901,797**	**5,496,225**
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	**2%**	**2%**
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23217.99	15326.85	**21,903**	**21,903**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20896.19	13794.17	**19,713**	**19,713**
Installed kW	Total Gross Demand Reduction (kW)	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**	**0.0**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**	**0.0**
90%	Net-To-Gross Adjustment (kW)	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**	**0.0**
	Net Adjusted Demand Reduction (kW)	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**	**0.0**
	Planned Net Demand Reduction (kW)	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	**427.4**	**427.4**
	Annual % Toward Planned Net Reduction (kW)	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%**	**0.0%**
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	0.0	**0.0**	**0.0**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	0.0	**0.0**	**0.0**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$3,938	$3,545	**$3,545**	**$5,829**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$0.17	$0.16	**$0.16**	**$0.27**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Annual $EM&V per $Total	0.0%	15.0%	18.5%	25.7%	33.1%	42.4%	40.6%	42.4%	41.6%	41.2%	35.6%	35.9%	**35.9%**	**30.9%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$3,257	$2,944	**$2,944**	**$2,944**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.20 Virginia Non-Residential Small Manufacturing Program 2019-2020

A.20.1 2019-2020 VA Non-Residential Small Manufacturing Annual Indicator Tables

VA- Non-residential Small Manufacturing Category	Indicator	2019 Total	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate	[redacted]		
O&M ($)	Direct Implementation			
O&M ($)	Direct EM&V			
O&M ($)	Indirect Other (Administrative)	$12,414	$17,681	$30,095
Capital ($)	Direct Implementation	$0	$0	
Costs ($)	Total	$367,297	$331,721	$699,018
Costs ($)	Planned	$862,936	$1,226,932	$2,089,868
Costs ($)	Variance	-$495,639	-$895,211	-$1,390,850
	Annual % of Planned	43%	27%	33%
Participants[1]	Total (Gross)	0	0	0
	Planned (Gross)	35	66	101
	Variance	-35	-66	-101
	Annual % of Planned (Gross)	0%	0%	0%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	0	0	0
100%	Realization Rate Adjustment (kWh/yr)	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0
90%	Net-To-Gross Adjustment (kWh/yr)	0	0	0
	Net Adjusted Savings (kWh/yr)	0	0	0
	Planned Net Savings (kWh/yr)	351,539	3,320,243	3,671,782
	Annual % Toward Planned Net Savings (kWh)	0.00%	0%	0%
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A
Installed kW	Total Gross Demand Reduction (kW)	0.0	0.0	0.0
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	0.0	0.0
90%	Net-To-Gross Adjustment (kW)	0.0	0.0	0.0
	Net Adjusted Demand Reduction (kW)	0.0	0.0	0.0
	Planned Net Demand Reduction (kW)	0.0	711.6	711.6
	Annual % Toward Planned Net Reduction (kW)	N/A	0.0%	0.0%
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A
	Annual $EM&V per $Total	21%	30.0%	25.1%
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.20.2 2020 VA Non-Residential Small Manufacturing Monthly Indicator Tables

VA- Non-residential Small Manufacturing Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$1,184	$1,828	$2,041	$1,775	$1,633	$1,769	$1,561	$2,178	$987	$903	$771	$1,050	**$17,681**	**$30,095**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	
Costs ($)	Total	$20,750	$32,028	$35,764	$31,098	$28,609	$30,994	$27,354	$38,165	$23,128	$21,159	$18,068	$24,603	**$331,721**	**$699,018**
Costs ($)	Planned	$102,244	$102,244	$102,244	$102,244	$102,244	$102,244	$102,244	$102,244	$102,244	$102,244	$102,244	$102,244	**$1,226,932**	**$2,089,868**
Costs ($)	Variance	-$81,494	-$70,217	-$66,481	-$71,146	-$73,635	-$71,250	-$74,890	-$64,079	-$79,116	-$81,085	-$84,176	-$77,641	**-$895,211**	**-$1,390,850**
	Annual % of Planned	2%	4%	7%	10%	12%	15%	17%	20%	22%	24%	25%	27%	**27%**	**33%**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Planned (Gross)	6	6	6	6	6	6	6	6	6	6	6	0	**66**	**101**
	Variance	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	-6	0	**-66**	**-101**
	Annual % of Planned (Gross)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**	**0%**
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
90%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Planned Net Savings (kWh/yr)	276,687	276,687	276,687	276,687	276,687	276,687	276,687	276,687	276,687	276,687	276,687	276,687	**3,320,243**	**3,671,782**
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**	**0%**
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**	**0.0**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**	**0.0**
90%	Net-To-Gross Adjustment (kW)	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**	**0.0**
	Net Adjusted Demand Reduction (kW)	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**	**0.0**
	Planned Net Demand Reduction (kW)	59.3	59.3	59.3	59.3	59.3	59.3	59.3	59.3	59.3	59.3	59.3	59.3	**711.6**	**711.6**
	Annual % Toward Planned Net Reduction (kW)	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%**	**0.0%**
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Annual $EM&V per $Total	0.0%	23.8%	29.2%	31.3%	31.2%	32.4%	32.3%	34.9%	33.7%	32.2%	30.3%	30.0%	**30.0%**	**25.1%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.21 Virginia Non-Residential Window Film Program (DSM Phase VII) 2019-2020

A.21.1 2019-2020 VA Non-Residential Window Film (DSM Phase VII) Annual Indicator Tables

VA- Non-Residential Window Film Program		2019	2020	2019-2020
Category	Indicator	Total	Total	Program Total
O&M ($)	Direct Rebate	[redacted]	[redacted]	[redacted]
O&M ($)	Direct Implementation	[redacted]	[redacted]	[redacted]
O&M ($)	Direct EM&V	[redacted]	[redacted]	[redacted]
O&M ($)	Indirect Other (Administrative)	$6,494	$19,045	$25,539
Capital ($)	Direct Implementation	$0	$0	
Costs ($)	Total	$192,146	$356,882	$549,029
Costs ($)	Planned	$317,588	$445,263	$762,851
Costs ($)	Variance	-$125,441	-$88,381	-$213,822
	Annual % of Planned	61%	80%	72%
Participants[1]	Total (Gross)	0	22	22
	Total Square Feet	0	62,925	62,925
	Planned Square Feet	68,400	125,871	194,271
	Variance	-68,400	-62,946	-131,346
	Annual % of Planned (Gross)	0%	50%	32%
Square Feet	Total Square Feet	0	62,925	62,925
	North Facing	0	23,874	23,874
	East Facing	0	11,852	11,852
	West Facing	0	3,002	3,002
	South Facing	0	24,197	24,197
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	250,377	250,377
100%	Realization Rate Adjustment (kWh/yr)	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	0	250,377	250,377
80%	Net-To-Gross Adjustment (kWh/yr)	0	-50,075	-50,075
	Net Adjusted Savings (kWh/yr)	0	200,302	200,302
	Planned Net Savings (kWh/yr)	170,812	1,910,351	2,081,164
	Annual % Toward Planned Net Savings (kWh)	0.00%	10%	10%
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	11,380.8	11,380.8
	Avg. Gross Savings Per Square Foot (kWh/yr)		4	4
	Avg. Net Savings Per Participant (kWh/yr)	N/A	9,104.6	9,104.6
	Avg. Net Savings Per Square Foot (kwh/yr)		3	3
Installed kW	Total Gross Demand Reduction (kW)	0.0	78.1	78.1
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	78.1	78.1
80%	Net-To-Gross Adjustment (kW)	0.0	-15.6	-15.6
	Net Adjusted Demand Reduction (kW)	0.0	62.5	62.5
	Planned Net Demand Reduction (kW)	0.0	465.7	465.7
	Annual % Toward Planned Net Reduction (kW)	N/A	13.4%	13.4%
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	3.5	3.5
	Avg. Gross Demand Reduction Per Square Foot (kW)	N/A	0.0	0.0
	Avg. Net Demand Reduction Per Participant (kW)	N/A	2.8	2.8
	Avg. Net Demand Reduction Per Square Foot (kW)	N/A	0.0	0.0
Program Performance	Annual $Admin. per Participant (Gross)	N/A	$866	$1,161
	Annual $Admin. per kWh/year (Gross)	N/A	$0.08	$0.10
	Annual $Admin. per kW (Gross)	N/A	$244	$327
	Annual $EM&V per $Total	15%	16.8%	16.3%
	Annual $Rebate per Participant (Gross)	N/A	$2,465	$2,465

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.21.2 2020 VA Non-Residential Window Film (DSM Phase VII) Monthly Indicator Tables

VA- Non-Residential Window Film Program		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2019-2020
Category	Indicator	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Total	Program Total
O&M ($)	Direct Rebate	[redacted]													
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$1,034	$1,671	$1,282	$4,048	$1,724	$1,393	$1,768	$2,201	$1,027	$1,004	$800	$1,093	**$19,045**	**$25,539**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	
Costs ($)	Total	$18,113	$29,269	$22,464	$70,913	$30,203	$24,409	$30,975	$38,560	$24,076	$23,527	$18,756	$25,619	**$356,882**	**$549,029**
Costs ($)	Planned	$37,105	$37,105	$37,105	$37,105	$37,105	$37,105	$37,105	$37,105	$37,105	$37,105	$37,105	$37,105	**$445,263**	**$762,851**
Costs ($)	Variance	-$18,993	-$7,836	-$14,641	$33,808	-$6,902	-$12,696	-$6,131	$1,455	-$13,030	-$13,578	-$18,350	-$11,487	**-$88,381**	**-$213,822**
	Annual % of Planned	4%	11%	16%	32%	38%	44%	51%	59%	65%	70%	74%	80%	**80%**	**72%**
Participants[1]	Total (Gross)	0	0	0	2	5	2	5	6	0	1	1	0	**22**	**22**
	Total Square Feet				55,910	709	122	4,791	999	0	290	104	0	**62,925**	**62,925**
	Planned Square Feet	10,489	10,489	10,489	10,489	10,489	10,489	10,489	10,489	10,489	10,489	10,489	10,492	**125,871**	**194,271**
	Variance	-10,489	-10,489	-10,489	45,421	-9,780	-10,367	-5,698	-9,490	-10,489	-10,199	-10,385	-10,492	**-62,946**	**-131,346**
	Annual % of Planned (Gross)	0%	0%	0%	44%	45%	45%	49%	50%	50%	50%	50%	50%	**50%**	**32%**
Square Feet	Total Square Feet	0	0	0	55,910	709	122	4,791	999	0	290	104	0	**62,925**	**62,925**
	North Facing	0	0	0	22,502	278	0	865	0	0	125	104	0	**23,874**	**23,874**
	East Facing	0	0	0	10,136	57	122	1,310	62	0	165	0	0	**11,852**	**11,852**
	West Facing	0	0	0	1,000	0	0	1,818	184	0	0	0	0	**3,002**	**3,002**
	South Facing	0	0	0	22,272	374	0	798	753	0	0	0	0	**24,197**	**24,197**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	124,298	2,596	468	123,688	-3,172	0	292	2,207	0	**250,377**	**250,377**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	124,298	2,596	468	123,688	-3,172	0	292	2,207	0	**250,377**	**250,377**
80%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	-24,860	-519	-94	-24,738	634	0	-58	-441	0	**-50,075**	**-50,075**
	Net Adjusted Savings (kWh/yr)	0	0	0	99,438	2,077	375	98,951	-2,538	0	234	1,765	0	**200,302**	**200,302**
	Planned Net Savings (kWh/yr)	159,196	159,196	159,196	159,196	159,196	159,196	159,196	159,196	159,196	159,196	159,196	159,196	**1,910,351**	**2,081,164**
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	5%	5%	5%	11%	10%	10%	10%	10%	10%	**10%**	**10%**
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	62,148.8	519.2	234.2	24,737.7	-528.6	N/A	292.2	2,206.6	N/A	**11,380.8**	**11,380.8**
	Avg. Gross Savings Per Square Foot (kWh/yr)	N/A	N/A	N/A	2	4	4	26	-3	N/A	1	21	N/A	**4**	**4**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	49,719.0	415.3	187.4	19,790.1	-422.9	N/A	233.8	1,765.2	N/A	**9,104.6**	**9,104.6**
	Avg. Net Savings Per Square Foot (kwh/yr)	N/A	N/A	N/A	2	3	3	21	-3	N/A	1	17	N/A	**3**	**3**
Installed kW	Total Gross Demand Reduction (kW)	0.0	0.0	0.0	32.9	1.0	0.2	43.5	-0.2	0.0	0.1	0.5	0.0	**78.1**	**78.1**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	0.0	0.0	32.9	1.0	0.2	43.5	-0.2	0.0	0.1	0.5	0.0	**78.1**	**78.1**
80%	Net-To-Gross Adjustment (kW)	0.0	0.0	0.0	-6.6	-0.2	0.0	-8.7	0.0	0.0	0.0	-0.1	0.0	**-15.6**	**-15.6**
	Net Adjusted Demand Reduction (kW)	0.0	0.0	0.0	26.3	0.8	0.2	34.8	-0.1	0.0	0.1	0.4	0.0	**62.5**	**62.5**
	Planned Net Demand Reduction (kW)	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	**465.7**	**465.7**
	Annual % Toward Planned Net Reduction (kW)	0.0%	0.0%	0.0%	5.7%	5.8%	5.9%	13.3%	13.3%	13.3%	13.3%	13.4%	13.4%	**13.4%**	**13.4%**
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	16.5	0.2	0.1	8.7	0.0	N/A	0.1	0.5	N/A	**3.5**	**3.5**
	Avg. Gross Demand Reduction Per Square Foot (kW)	N/A	N/A	N/A	0.0	0.0	0.0	0.0	0.0	N/A	0.0	0.0	N/A	**0.0**	**0.0**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	13.2	0.2	0.1	7.0	0.0	N/A	0.1	0.4	N/A	**2.8**	**2.8**
	Avg. Net Demand Reduction Per Square Foot (kW)	N/A	N/A	N/A	0.0	0.0	0.0	0.0	0.0	N/A	0.0	0.0	N/A	**0.0**	**0.0**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	$4,017	$1,394	$1,239	$923	$756	$807	$817	$816	$866	**$866**	**$1,161**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	$0.06	$0.08	$0.09	$0.05	$0.06	$0.07	$0.07	$0.07	$0.08	**$0.08**	**$0.10**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	$244	$288	$327	$167	$195	$209	$221	$230	$244	**$244**	**$327**
	Annual $EM&V per $Total	0.0%	21.4%	20.2%	11.6%	12.1%	12.7%	13.9%	16.3%	16.7%	17.0%	16.1%	16.8%	**16.8%**	**16.3%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	$23,779	$6,894	$5,376	$3,788	$2,697	$2,697	$2,578	$2,465	$2,465	**$2,465**	**$2,465**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.22 Virginia Non-residential Midstream Energy Efficiency Products Program 2020

A.22.1 2020 VA Non-residential Midstream Energy Efficiency Products Monthly Indicator Tables

VA- Non-Residential Midstream Energy Efficient Products Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$32	$101	$19	$1,817	**$1,969**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$751	$2,373	$444	$42,577	**$46,145**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$751	$2,373	$444	$42,577	**$46,145**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	
	Variance	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
77%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Savings (kWh)													
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
77%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Reduction (kW)													
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	58%	43%	38%	91%	**91%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.23 Virginia Non-residential New Construction Program 2020

A.23.1 2020 VA Non-residential New Construction Monthly Indicator Tables

VA- Non-Residential New Construction Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$56	$108	$17	$999	**$1,179**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$1,301	$2,526	$395	$23,401	**$27,624**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$1,301	$2,526	$395	$23,401	**$27,624**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	
	Variance	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
77%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Savings (kWh)													
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
77%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Reduction (kW)													
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	33%	35%	32%	85%	**85%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.24 Virginia Non-residential Multifamily Program 2020

A.24.1 2020 VA Non-residential Multifamily Monthly Indicator Tables

VA- Non-Residential Multifamily Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total
O&M ($)	Direct Rebate	[redacted]												
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$30	$52	$0	$1,131	**$1,213**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$709	$1,214	$0	$26,508	**$28,431**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$709	$1,214	$0	$26,508	**$28,431**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	
	Variance	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
77%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Savings (kWh)													
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
77%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Reduction (kW)													
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	61%	70%	70%	94%	**94%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.25 Virginia Residential Air Conditioner Cycling Program 2010-2020

A.25.1 2010-2020 VA Residential Air Conditioner Cycling Program Annual Indicator Tables

VA - Residential AC Cycling Program		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2010-2020
Category	Indicator	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Program Total
O&M ($)	Direct Rebate												
O&M ($)	Direct Implementation												
O&M ($)	Direct EM&V												
O&M ($)	Indirect Other (Administrative)	$872,470	$763,964	$681,876	$668,850	$301,103	$196,693	$186,752	$238,408	$333,382	$244,347	$278,528	$4,766,371
Capital ($)	Direct Implementation												
Costs ($)	Total	$3,700,433	$9,446,533	$11,124,610	$9,178,194	$9,576,619	$9,577,752	$6,700,360	$6,159,956	$6,034,693	$5,781,716	$5,287,678	$82,568,545
Costs ($)	Planned	$4,817,708	$9,883,136	$17,373,951	$12,543,660	$11,497,670	$11,449,561	$9,764,999	$9,506,708	$8,648,373	$8,463,554	$8,070,360	$112,019,680
Costs ($)	Variance	-$1,117,275	-$436,603	-$6,249,341	-$3,365,466	-$1,921,050	-$1,871,809	-$3,064,639	-$3,346,752	-$2,613,680	-$2,681,838	-$2,782,682	-$29,451,136
	Cum. % toward planned total	77%	96%	64%	73%	83%	84%	69%	65%	70%	68%	66%	74%
Participants	Total (Cumulative @ End of Month)	10,900	36,545	66,890	91,280	115,083	140,022	147,723	149,219	151,798	154,787	155,586	155,586
	Removals (Uninstalled) / Deactivations	-90	-2,606	-5,516	-12,370	-23,145	-36,769	-49,635	-59,937	-71,171	-79,401	-87,123	-87,123
	Opt-outs	98	309	18	16	18	93	353	30	27	26	23	546
	Adjusted Participants (Cum.)	10,712	33,630	61,356	78,894	91,920	103,160	98,088	89,282	80,627	75,386	68,463	67,917
0%	Net to gross adjustment (Cum.)	0	0	0	0	0	0	0	0	0	0	0	0
96%	In Service Rate Adjustment (Cum.)	-436	-1,462	-2,454	-3,156	-3,677	0	0	0	0	0	0	0
	Net Participation (Cum.)	10,276	32,168	58,901	75,738	88,243	103,160	98,088	89,282	80,627	75,386	68,463	67,917
	Planned (Cum.)	9,244	33,996	73,598	96,706	115,702	103,915	103,253	97,037	90,267	80,765	80,765	80,765
	Variance (Cum.)	1,032	-1,828	-14,695	-20,968	-27,459	-755	-5,165	-7,755	-9,640	-5,379	-12,302	-12,849
	Cum % toward planned total (Net basis)	111%	95%	80%	78%	76%	99%	95%	92%	89%	93%	85%	84%
	Removal (Uninstalled) / Deactivation Rate	-0.22%	-0.82%	-0.48%	-0.81%	-1.02%	-1.15%	-1.05%	-0.92%	-1.11%	-1.47%	-1.73%	-1.01%
	Average % Opt-outs (rate)	0.91%	0.91%	0.03%	0.02%	0.02%	0.09%	0.36%	0.03%	0.03%	0.03%	0.03%	0.23%
	Realization Rate	96%	111%	99%	78%	93%	100%	100%	100%	100%	100%	100%	98%
	Connected Load kW	17,841	92,798	208,834	264,998	296,859	304,177	291,199	267,857	247,443	234,736	221,077	230,120
	Ex-Ante Estimated kW	0.94	0.96	1.09	0.95	0.78	0.71	0.97	0.68	0.63	0.63	0.63	0.81
	Connected Load Per Participant (kW)	1.74	2.88	3.55	3.50	3.36	2.95	2.97	3.00	3.07	3.11	3.23	3.03
kW Potential	Peak Shaving Potential kW - Gross Participants	11,990.0	40,199.5	73,579.0	100,408.0	80,558.1	99,415.6	143,291.3	101,468.9	95,236.4	96,895.3	98,623.2	98,623.2
	Removed (Uninstalled) / Deactivated Peak Shaving Potential kW	-99.0	-2,866.6	-6,067.6	-13,607.0	-16,201.5	-26,106.0	-48,146.0	-40,757.2	-44,651.9	-49,704.3	-55,225.7	-55,225.7
	Less Opt-outs (kW)	108.2	339.7	20.3	17.4	12.9	66.0	342.5	20.6	17.2	16.0	14.8	346.3
	Dispatchable Peak Shaving Potential - Total kW	11,782.8	36,993.2	67,491.1	86,783.6	64,343.7	73,243.7	94,802.8	60,691.1	50,567.3	47,174.9	43,382.7	43,051.2
0%	Less Free Ridership Factor (Cum.)	0	0	0	0	0	0	0	0	0	0	0	0
96%	In Service Rate Adjustment (Cum.)	-471	-1,480	-2,700	-3,471	-2,574	0	0	0	0	0	0	0
	Adjustment for Realization Rate	-430	3,906	-389	-18,195	-4,633	0	0	0	0	0	0	0
	Net Demand (Cum.)	10,880	39,420	64,403	65,117	57,137	73,244	94,803	60,691	50,567	47,175	43,383	43,051
	Planned Demand (Cum.)	8,782	32,293	69,786	91,774	110,390	103,915	73,838	95,027	61,419	50,817	50,817	50,817
	Cum. % toward planned total (Net basis)	124%	122%	92%	71%	52%	69%	128%	64%	82%	93%	85%	85%
	Dispatchable Peak Shaving Potential kW per Participant	1.06	1.23	1.09	0.86	0.65	0.71	0.97	0.68	0.63	0.63	0.63	0.63
Program Performance	Cum. $Admin. per Cum. Participant	$80	$45	$22	$33	$29	$25	$25	$26	$28	$29	$31	$31
	Cum. $Admin. per Cum. Gross kW	$73	$41	$20	$30	$41	$40	$26	$39	$45	$46	$48	$46
	Cum. $EM&V per Cum. $Total	1%	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%
	Cum. $Rebate per Cum. Participant	$16	$37	$52	$70	$86	$99	$118	$141	$159	$176	$193	$193

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.25.2 2020 VA Residential Air Conditioner Cycling Program Monthly Indicator Tables

VA - Residential AC Cycling Program		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2010-2020
Category	Indicator	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$9,938	$10,514	$7,498	$12,226	$11,902	$55,011	$55,499	$55,033	$40,655	$8,422	$3,500	$8,328	**$278,528**	**$4,766,371**
Capital ($)	Direct Implementation														
Costs ($)	Total	$183,871	$197,630	$136,172	$214,282	$208,528	$967,928	$975,882	$968,756	$956,951	$198,261	$82,992	$196,426	**$5,287,678**	**$82,568,545**
Costs ($)	Planned	$363,632	$363,632	$363,632	$363,632	$363,632	$1,290,325	$1,290,325	$1,290,325	$1,290,325	$363,632	$363,632	$363,632	**$8,070,360**	**$112,019,680**
Costs ($)	Variance	-$179,762	-$166,003	-$227,460	-$149,351	-$155,105	-$322,398	-$314,443	-$321,569	-$333,374	-$165,372	-$280,640	-$167,206	**-$2,782,682**	**-$29,451,136**
	Cum. % toward planned total	2%	5%	6%	9%	12%	24%	36%	48%	60%	62%	63%	66%	**66%**	**74%**
Participants	Total (Cumulative @ End of Month)	154,941	155,081	155,159	155,176	155,191	155,289	155,393	155,480	155,524	155,550	155,568	155,586	**155,586**	**155,586**
	Removals (Uninstalled) / Deactivations	-79,933	-80,375	-80,824	-81,401	-81,811	-82,245	-83,180	-84,325	-85,144	-85,808	-86,497	-87,123	**-87,123**	**-87,123**
	Opt-outs	26	25	25	25	25	25	25	24	24	24	23	23	**23**	**546**
	Adjusted Participants (Cum.)	75,008	74,706	74,335	73,775	73,380	73,044	72,213	71,155	70,380	69,742	69,071	68,463	**68,463**	**67,917**
0%	Net to gross adjustment (Cum.)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
96%	In Service Rate Adjustment (Cum.)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Net Participation (Cum.)	75,008	74,706	74,335	73,775	73,380	73,044	72,213	71,155	70,380	69,742	69,071	68,463	**68,463**	**67,917**
	Planned (Cum.)	80,765	80,765	80,765	80,765	80,765	80,765	80,765	80,765	80,765	80,765	80,765	80,765	**80,765**	**80,765**
	Variance (Cum.)	-5,757	-6,059	-6,430	-6,990	-7,385	-7,721	-8,552	-9,610	-10,385	-11,023	-11,694	-12,302	**-12,302**	**-12,849**
	Cum % toward planned total (Net basis)	93%	92%	92%	91%	91%	90%	89%	88%	87%	86%	86%	85%	**85%**	**84%**
	Removal (Uninstalled) / Deactivation Rate	-0.71%	-1.30%	-1.20%	-1.39%	-1.35%	-1.16%	-1.90%	-2.92%	-2.79%	-2.13%	-1.96%	-1.92%	**-1.73%**	**-1.01%**
	Average % Opt-outs (rate)	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	**0.03%**	**0.23%**
	Realization Rate	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	**100%**	**98%**
	Connected Load kW	229,395	228,842	227,805	226,628	225,241	223,138	219,926	217,888	216,192	214,282	212,718	210,864	**221,077**	**230,120**
	Ex-Ante Estimated kW	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	**0.63**	**0.81**
	Connected Load Per Participant (kW)	3.06	3.06	3.06	3.07	3.07	3.05	3.05	3.06	3.07	3.07	3.07	3.07	**3.23**	**3.03**
kW Potential	Peak Shaving Potential kW - Gross Participants	98,214.3	98,303.1	98,352.5	98,363.3	98,372.8	98,434.9	98,500.8	98,556.0	98,583.9	98,600.3	98,611.8	98,623.2	**98,623.2**	**98,623.2**
	Removed (Uninstalled) / Deactivated Peak Shaving Potential kW	-50,668.1	-50,948.3	-51,232.9	-51,598.6	-51,858.5	-52,133.6	-52,726.3	-53,452.1	-53,971.2	-54,392.1	-54,828.9	-55,225.7	**-55,225.7**	**-55,225.7**
	Less Opt-outs (kW)	16.2	16.1	16.0	15.9	15.8	15.7	15.6	15.3	15.2	15.0	14.9	14.8	**14.8**	**346.3**
	Dispatchable Peak Shaving Potential - Total kW	47,530.1	47,338.7	47,103.6	46,748.7	46,498.4	46,285.5	45,759.0	45,088.5	44,597.4	44,193.2	43,768.0	43,382.7	**43,382.7**	**43,051.2**
0%	Less Free Ridership Factor (Cum.)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
96%	In Service Rate Adjustment (Cum.)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Adjustment for Realization Rate	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Net Demand (Cum.)	47,530	47,339	47,104	46,749	46,498	46,286	45,759	45,089	44,597	44,193	43,768	43,383	**43,383**	**43,051**
	Planned Demand (Cum.)	50,817	50,817	50,817	50,817	50,817	50,817	50,817	50,817	50,817	50,817	50,817	50,817	**50,817**	**50,817**
	Cum. % toward planned total (Net basis)	94%	93%	93%	92%	92%	91%	90%	89%	88%	87%	86%	85%	**85%**	**85%**
	Dispatchable Peak Shaving Potential kW per Participant	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	**0.63**	**0.63**
Program Performance	Cum. $Admin. per Cum. Participant	$29	$29	$29	$29	$29	$30	$30	$30	$31	$31	$31	$31	**$31**	**$31**
	Cum. $Admin. per Cum. Gross kW	$46	$46	$46	$46	$46	$47	$47	$48	$48	$48	$48	$48	**$48**	**$46**
	Cum. $EM&V per Cum. $Total	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	**2%**	**2%**
	Cum. $Rebate per Cum. Participant	$176	$176	$175	$175	$175	$180	$184	$189	$194	$193	$193	$193	**$193**	**$193**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.26 Virginia Residential Electric Vehicle (Demand Response) Program 2020

A.26.1 2020 VA Residential Electric Vehicle (Demand Response) Monthly Indicator Tables

VA- Residential Electric Vehicle Demand Response Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$108	$75	$77	$339	**$599**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$2,519	$1,757	$1,803	$7,955	**$14,035**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$2,519	$1,757	$1,803	$7,955	**$14,035**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	
	Variance	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
77%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Savings (kWh)													
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
77%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	
	Annual % Toward Planned Net Reduction (kW)													
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17%	32%	22%	45%	**45%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

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A.27 Virginia Residential Smart Thermostat (Demand Response) Program 2020

A.27.1 2020 VA Residential Smart Thermostat (Demand Response) Monthly Indicator Tables

VA - Residential Smart Thermostat Demand Response		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020
Category	Indicator	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
O&M ($)	Direct Rebate	[redacted]												
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$567	$1,015	$486	$2,061	**$4,128**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$0	$0	$0	$0	$0	$0	$0	$0	$13,281	$23,779	$11,392	$48,291	**$96,743**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Variance	$0	$0	$0	$0	$0	$0	$0	$0	$13,281	$23,779	$11,392	$48,291	**$96,743**
	Cum. % toward planned total	0%	0%	0%	0%	0%	0%	0%	0%	14%	38%	50%	100%	**N/A**
Participants	Total (Cumulative @ End of Month)													
	Removals (Uninstalled) / Deactivations													
	Opt-outs													
	Adjusted Participants (Cum.)													
0%	Net to gross adjustment (Cum.)													
96%	In Service Rate Adjustment (Cum.)													
	Net Participation (Cum.)													
	Planned (Cum.)													
	Variance (Cum.)													
	Cum % toward planned total (Net basis)													
	Removal (Uninstalled) / Deactivation Rate													
	Average % Opt-outs (rate)													
	Realization Rate													
	Connected Load kW													
	Ex-Ante Estimated kW													
	Connected Load Per Participant (kW)													
kW Potential	Peak Shaving Potential kW - Gross Participants													
	Removed (Uninstalled) / Deactivated Peak Shaving Potential kW													
	Less Opt-outs (kW)													
	Dispatchable Peak Shaving Potential - Total kW													
0%	Less Free Ridership Factor (Cum.)													
96%	In Service Rate Adjustment (Cum.)													
	Adjustment for Realization Rate													
	Net Demand (Cum.)													
	Planned Demand (Cum.)													
	Cum. % toward planned total (Net basis)													
	Dispatchable Peak Shaving Potential kW per Participant													
Program	Cum. $Admin. per Cum. Participant													
Performance	Cum. $Admin. per Cum. Gross kW													
	Cum. $EM&V per Cum. $Total	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3%	4%	3%	27%	**27%**
	Cum. $Rebate per Cum. Participant													

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.28 Virginia Non-residential Distributed Generation Program 2012-2020

A.28.1 2012-2020 VA Non-residential Distributed Generation Program Annual Indicator Tables

VA - Non-Residential Distributed Generation Program Category	Indicator	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total	2017 Total	2018 Total	2019 Total	2020 Total	2012 - 2020 Program Total
O&M ($)	Direct Rebate										
O&M ($)	Direct Implementation										
O&M ($)	Direct EM&V										
O&M ($)	Indirect Other (Administrative)	$45,196	$70,742	$55,136	$14,914	$17,395	$20,476	$31,507	$26,331	$30,369	$312,066
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Costs ($)	Total	$474,517	$704,695	$1,107,382	$538,023	$572,348	$561,690	$557,961	$589,631	$570,747	$5,676,993
Costs ($)	Planned	$2,261,356	$2,464,188	$2,011,074	$947,030	$851,134	$730,107	$874,549	$909,830	$1,014,629	$12,063,897
Costs ($)	Variance	-$1,786,840	-$1,759,493	-$903,692	-$409,007	-$278,787	-$168,417	-$316,588	-$320,199	-$443,882	-$6,386,905
	Cum. % toward planned total	21%	29%	55%	57%	67%	77%	64%	65%	56%	47%
Participants[1]	Total (Cumulative @ End of Month)	19.0	19.4	18.6	5.9	6.5	6.1	6.1	6.1	6.1	6.1
	Planned (Cum.)	23.0	28.0	35.0	13.0	7.0	7.4	8.1	7.6	9.0	9.0
	Variance (Cum.)	-4.0	-8.6	-16.4	-7.1	-0.5	-1.3	-2.0	-1.5	-2.9	-2.9
	Cum % Toward Planned Total (Net basis)	83%	69%	53%	45%	93%	82%	75%	81%	68%	68%
kW Potential	Total (Cumulative @ End of Month)	19,040	19,410	18,580	5,875	5,740	5,548	6,130	6,130	6,130	6,130
	Realization Rate	70%	77%	78%	93%	106%	108%	97%	113%	106%	106%
	Adjustment for Realization Rate	-2,989	-3,300	-4,088	-411	344	444	-184	797	368	368
	Net kW (Cum.)	16,051	16,110	14,492	5,457	4,348	5,992	5,946	6,927	6,498	6,498
	Planned (Cum.)	23,000	28,000	35,000	13,000	7,000	7,394	8,149	7,592	9,025	9,025
	Cum % Toward Planned Total (Net basis)	70%	58%	41%	42%	62%	86%	73%	91%	72%	72%
	Avg. per Net Participant (Net kW)	843	830	780	929	669	982	970	1,130	1,060	910
Program Performance	Annual Cum. $Admin. per Cum. Participant	$2,374	$5,973	$9,207	$9,294	$9,589	$3,357	$5,140	$4,295	$4,954	$4,954
	Annual Cum. $Admin. per Cum. Gross kW	$2	$6	$9	$9	$10	$3	$5	$4	$5	$5
	Cum. $EM&V per Cum. $Total	3.3%	7.5%	8.8%	9.5%	11.6%	12.5%	13.3%	13.4%	13.2%	13.2%
	Cum. $Rebate per Cum. Participant	$21,366	$47,494	$99,549	$376,393	$418,435	$513,179	$577,089	$651,772	$728,973	$728,973

1. A participant is equal to one megawatt (MW) available to Dominion for dispatch through the Commercial Distributed Generation program.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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A.28.2 2020 VA Non-residential Distributed Generation Program Monthly Indicator Tables

VA - Non-Residential Distributed Generation Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 Jun	2020 Jul	2020 Aug	2020 Sep	2020 Oct	2020 Nov	2020 Dec	2020 Total	2012 - 2020 Program Total
O&M ($)	Direct Rebate	[redacted]													
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$1,678	$2,247	$1,591	$2,625	$3,046	$4,924	$4,164	$3,555	$1,682	$1,681	$1,492	$1,685	$30,369	$312,066
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Costs ($)	Total	$29,404	$39,366	$27,870	$45,998	$53,368	$86,263	$72,949	$62,280	$39,420	$39,380	$34,964	$39,486	$570,747	$5,676,993
Costs ($)	Planned	$131,902	$50,731	$10,146	$50,731	$152,194	$111,609	$101,463	$71,024	$121,756	$50,731	$71,024	$91,317	$1,014,629	$12,063,897
Costs ($)	Variance	-$102,498	-$11,365	$17,723	-$4,733	-$98,826	-$25,346	-$28,514	-$8,744	-$82,336	-$11,351	-$36,060	-$51,831	-$443,882	-$6,386,905
	Cum. % toward planned total	3%	7%	10%	14%	19%	28%	35%	41%	45%	49%	52%	56%	56%	47%
Participants[1]	Total (Cumulative @ End of Month)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
	Planned (Cum.)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Variance (Cum.)	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9	-2.9
	Cum % Toward Planned Total (Net basis)	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%	68%
kW Potential	Total (Cumulative @ End of Month)	6,130	6,130	6,130	6,130	6,130	6,130	6,130	6,130	6,130	6,130	6,130	6,130	6,130	6,130
	Realization Rate	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%
	Adjustment for Realization Rate	368	368	368	368	368	368	368	368	368	368	368	368	368	368
	Net kW (Cum.)	6,498	6,498	6,498	6,498	6,498	6,498	6,498	6,498	6,498	6,498	6,498	6,498	6,498	6,498
	Planned (Cum.)	9,025	9,025	9,025	9,025	9,025	9,025	9,025	9,025	9,025	9,025	9,025	9,025	9,025	9,025
	Cum % Toward Planned Total (Net basis)	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%	72%
	Avg. per Net Participant (Net kW)	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060	910
Program Performance	Annual Cum. $Admin. per Cum. Participant	$274	$640	$900	$1,328	$1,825	$2,628	$3,307	$3,887	$4,162	$4,436	$4,679	$4,954	$4,954	$4,954
	Annual Cum. $Admin. per Cum. Gross kW	$0	$1	$1	$1	$2	$3	$3	$4	$4	$4	$5	$5	$5	$5
	Cum. $EM&V per Cum. $Total	13.4%	13.3%	13.3%	13.3%	13.5%	13.4%	13.3%	13.2%	13.2%	13.2%	13.1%	13.2%	13.2%	13.2%
	Cum. $Rebate per Cum. Participant	$656,255	$661,826	$658,192	$671,272	$677,083	$689,162	$699,535	$708,436	$713,993	$718,997	$724,418	$728,973	$728,973	$728,973

1. A participant is equal to one megawatt (MW) available to Dominion for dispatch through the Commercial Distributed Generation program.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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A.29 Virginia Residential Lighting Program 2010-2012

VA- Residential Lighting Program Category	Indicator	2010 Total	2011 Total	2012 Total	2010-2012 Program Total
O&M ($)	Direct Rebate				
O&M ($)	Direct Implementation				
O&M ($)	Direct EM&V				
O&M ($)	Indirect Other (Administrative)	$857,229	$297,373	$3,259	$1,157,861
Costs ($)	Total	$3,572,757	$3,608,825	$41,017	$7,222,598
Costs ($)	Planned	$5,343,451	$4,151,099	$64,063	$9,558,613
Costs ($)	Variance	-$1,770,694	-$542,275	-$23,046	-$2,336,015
	Cum. % toward planned total	66.9%	86.9%	64.0%	75.6%
Participants	Total bulbs (Gross)	2,016,479	2,206,030	0	4,222,509
	Planned (Gross)	2,013,600	2,001,784	0	4,015,384
	Variance	2,879	204,246	0	207,125
	Cum % toward planned total (Gross)	100.1%	110.2%	0.0%	105.2%
kWh	Total Gross Deemed Savings	101,640,578	116,730,747	0	218,371,325
84%	Realization Rate Adjustment	-16,262,492	-18,676,920	0	-34,939,412
	Adjusted Gross Savings	85,378,086	98,053,827	0	183,431,913
65%	Net-To-Gross Adjustment	-29,882,330	-34,318,840	0	-64,201,170
	Net Adjusted Savings	55,495,756	63,734,988	0	119,230,743
	Planned Savings (Net)	53,544,280	53,229,979	0	106,774,259
	Cum. % Toward Planned Savings (Net)	103.6%	119.7%	0.0%	111.7%
	Avg. Savings Per Participant (Net)	28	29	0	28
kW	Total Gross Deemed Demand	11,056	12,700	0	23,756
84%	Realization Rate Adjustment	-1,769	-2,032	0	-3,801
	Adjusted Gross Demand	9,287	10,668	0	19,955
65%	Net-To-Gross Adjustment	-3,250	-3,734	0	-6,984
	Net Adjusted Demand	6,037	6,934	0	12,971
	Planned Demand (Net)	4,685	4,657	0	9,342
	Cum. % Toward Planned Demand (Net)	128.8%	148.9%	0.0%	138.8%
	Avg. Demand Per Participant (Net)	0.003	0.003	0.000	0.003
Program Performance	Cum. $Admin. per Cum. Bulb (Gross)	$0.4	$0.1		$0.3
	Cum. $Admin. per Cum. kWh (Gross)	$0.008	$0.00		$0.005
	Cum. $Admin. per Cum. kW (Gross)	$78	$23		$49
	Cum. $EM&V per Cum Total Costs ($)	0.7%	3.5%	89.1%	2.6%
	Cum. $Rebate per Cum. Bulb (Gross)	$0.78	$1.00		$0.90

1. Program closed end of 2012.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.30 Virginia Residential Low-income Program 2010-2014

VA- Residential Low-income Program Category	Indicator	2010* Total	2011* Total	2012 Total	2013 Total	2014 Total	2010-2014 Program Total
O&M ($)	Direct Rebate						
O&M ($)	Direct Implementation						
O&M ($)	Direct EM&V						
O&M ($)	Indirect Other (Administrative)	$825,883	$386,039	$388,331	$273,011	$126,173	$1,999,436
Capital ($)		$0	$0	$0	$0	$0	$0
Costs ($)	Total	$2,698,543	$4,799,288	$3,363,405	$2,600,289	$2,432,463	$15,893,988
Costs ($)	Planned	$3,409,892	$6,679,625	$10,513,733	$3,566,022	$2,975,592	$27,144,863
Costs ($)	Variance	-$711,349	-$1,880,337	-$7,150,328	-$965,733	-$543,128	-$11,250,875
	Cum. % toward planned total	79.1%	71.8%	32.0%	72.9%	81.7%	58.6%
Participants	Total (Gross)	1,431	3,913	2,380	1,883	1,880	11,487
	Planned (Gross)	1,414	3,789	6,062	2,467	1,872	15,604
	Variance	17	124	-3,682	-584	8	-4,117
	Cum % toward planned total (Gross)	101.2%	103.3%	39.3%	76.3%	100.4%	73.6%
Installed kWh/year	Total Gross Deemed Savings	1,743,349	4,490,516	2,596,580	1,668,643	1,740,993	12,240,081
62%	Realization Rate Adjustment	-923,975	-2,379,974	-1,376,187	-417,161	-661,577	-5,758,874
	Adjusted Gross Savings	819,374	2,110,543	1,220,392	1,251,482	1,079,416	6,481,207
93.6%	Net-To-Gross Adjustment	-52,440	-135,075	-78,105	-80,095	-69,083	-414,797
	Net Adjusted Savings	766,934	1,975,468	1,142,287	1,171,388	1,010,333	6,066,410
	Planned Savings (Net)	554,704	554,704	554,704	554,704	1,560,401	3,779,217
	Cum. % Toward Planned Savings (Net)	138.3%	356.1%	205.9%	211.2%	64.7%	160.5%
	Avg. Savings Per Participant (Net)	536	505	480	622	537	528
Installed kW	Total Gross Deemed Demand	691	1,443	508	346	336	3,323
62%	Realization Rate Adjustment	-366.4	-764.7	-269.3	-86.4	-127.6	-1,614
	Adjusted Gross Demand	325	678	239	259	208	1,709
93.6%	Net-To-Gross Adjustment	-21	-43	-15	-17	-13	-109
	Net Adjusted Demand	304	635	223	243	195	1,600
	Planned (Net)	102	274	436	396	246	1,454
	Cum. % toward planned total (Net)	298.1%	231.6%	51.3%	61.3%	79.3%	110.1%
	Avg. per Participant (Net)	0.0	0.2	0.1	0.1	0.1	0.1
Program Performance	Cum. $Admin. per Cum. Participant (Gross)	$577	$99	$163	$145	$67	$174
	Cum. $Admin. per Cum. kWh (Gross)	$0.5	$0.1	$0.1	$0.2	$0.1	$0.2
	Cum. $Admin. per Cum. kW (Gross)	$1,195	$268	$764	$790	$376	$602
	Cum. $EM&V per Cum Total Costs ($)	1.0%	3.2%	3.2%	4.0%	3.4%	3.0%
	Cum. $Rebate per Cum. Participant (Gross)	$1,086	$1,019	$1,065	$1,016	$951	$1,025.22

1. Program closed end of 2014.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.31 Virginia Residential Heat Pump Tune-Up Program 2012-2017

VA - Residential Heat Pump Upgrade Program Category	Indicator	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total	2017 Total	2012 - 2017 Program Total
O&M ($)	Direct Rebate							
O&M ($)	Direct Implementation							
O&M ($)	Direct EM&V							
O&M ($)	Indirect Other (Administrative)	$126,049	$202,451	$101,388	$76,038	$78,750	$29,454	$614,131
Costs ($)	Total	$1,146,122	$2,046,264	$1,894,946	$2,465,610	$2,591,140	$748,544	$10,892,625
Costs ($)	Planned	$2,219,762	$4,060,927	$5,335,095	$5,744,102	$6,313,961	$526,099	$24,199,946
Costs ($)	Variance	-$1,073,640	-$2,014,663	-$3,440,149	-$3,278,493	-$3,722,821	$222,445	-$13,307,321
	Annual % of Planned	52%	50%	36%	43%	41%	142%	45%
Participants[1]	Total (Gross)	86	3,295	3,649	4,210	5,395	1,149	17,784
	Planned (Gross)	4,396	11,992	18,221	18,221	3,748	0	56,578
	Variance	-4,310	-8,697	-14,572	-14,011	1,647	1,149	-38,794
	Annual % of Planned (Gross)	2%	27%	20%	23%	144%		31%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	199,447	6,665,695	5,667,002	2,405,953	3,072,240	553,935	18,564,272
78%	Realization Rate Adjustment (kWh/yr)	13,363	446,602	379,689	-538,933	-688,182	-124,081	-511,543
	Realization Rate Adjusted Savings (kWh/yr)	212,810	7,112,296	6,046,691	1,867,020	2,384,058	429,854	18,052,729
45%	Net-To-Gross Adjustment (kWh/yr)	-31,922	-1,066,844	-907,004	-1,024,994	-1,308,848	-235,990	-4,575,601
	Net Adjusted Savings (kWh/yr)	180,889	6,045,452	5,139,687	842,026	1,075,210	193,864	13,477,128
	Planned Net Savings (kWh/yr)	3,207,000	8,724,528	15,761,165	15,761,165	742,316	0	44,196,174
	Annual % Toward Planned Net Savings (kWh)	6%	69%	33%	5%	145%		30%
	Avg. Gross Savings Per Participant (kWh/yr)	2,319	2,023	1,553	571	569	482	1,044
	Avg. Net Savings Per Participant (kWh/yr)	2,103	1,835	1,409	200	199	169	758
Installed kW	Total Gross Demand Reduction (kW)	59	2,394	2,169	472	624	130	5,848
89%	Realization Rate Adjustment (kW)	-10	-405	-367	-53	-70	-15	-918
	Realization Rate Adjusted Gross Demand Reduction(kW)	49	1,989	1,802	419	554	115	4,930
45%	Net-To-Gross Adjustment (kW)	-7	-298	-270	-230	-304	-63	-1,174
	Net Adjusted Demand Reduction (kW)	42	1,691	1,532	189	250	52	3,756
	Planned Net Demand Reduction (kW)	1,068	2,904	5,284	5,284	267	0	14,807
	Annual % Toward Planned Net Reduction (kW)	4%	58%	29%	4%	94%		25%
	Avg. Gross Demand Reduction Per Participant (kW)	0.69	0.73	0.59	0.11	0.12	0.11	0.33
	Avg. Net Demand Reduction Per Participant (kW)	0.49	0.51	0.42	0.04	0.05	0.05	0.21
Program Performance	Annual $Admin. per Participant (Gross)	$1,466	$61	$28	$18	$15	$26	$35
	Annual $Admin. per kWh/year (Gross)	$0.63	$0.03	$0.02	$0.03	$0.03	$0.05	$0.03
	Annual $Admin. per kW (Gross)	$2,125	$85	$47	$161	$126	$227	$105
	Annual $EM&V per $Total	1.6%	15.1%	13.5%	18.5%	11.0%	18.8%	13.4%
	Annual $Rebate per Participant (Gross)	$219	$218	$217	$219	$218	$218	$218

1. Program closed end of 2017.
2. A participant is a single unit that has been installed and rebated. A unique account number may represent multiple participants if that account had multiple units installed and rebated.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.32 Virginia Residential Heat Pump Upgrade Program 2012-2017

VA - Residential Heat Pump Upgrade Program Category	Indicator	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total	2017 Total	2012 - 2017 Program Total
O&M ($)	Direct Rebate							
O&M ($)	Direct Implementation							
O&M ($)	Direct EM&V							
O&M ($)	Indirect Other (Administrative)	$126,049	$202,451	$101,388	$76,038	$78,750	$29,454	$614,131
Costs ($)	Total	$1,146,122	$2,046,264	$1,894,946	$2,465,610	$2,591,140	$748,544	$10,892,625
Costs ($)	Planned	$2,219,762	$4,060,927	$5,335,095	$5,744,102	$6,313,961	$526,099	$24,199,946
Costs ($)	Variance	-$1,073,640	-$2,014,663	-$3,440,149	-$3,278,493	-$3,722,821	$222,445	-$13,307,321
	Annual % of Planned	52%	50%	36%	43%	41%	142%	45%
Participants[1]	Total (Gross)	86	3,295	3,649	4,210	5,395	1,149	17,784
	Planned (Gross)	4,396	11,992	18,221	18,221	3,748	0	56,578
	Variance	-4,310	-8,697	-14,572	-14,011	1,647	1,149	-38,794
	Annual % of Planned (Gross)	2%	27%	20%	23%	144%		31%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	199,447	6,665,695	5,667,002	2,405,953	3,072,240	553,935	18,564,272
78%	Realization Rate Adjustment (kWh/yr)	13,363	446,602	379,689	-538,933	-688,182	-124,081	-511,543
	Realization Rate Adjusted Savings (kWh/yr)	212,810	7,112,296	6,046,691	1,867,020	2,384,058	429,854	18,052,729
45%	Net-To-Gross Adjustment (kWh/yr)	-31,922	-1,066,844	-907,004	-1,024,994	-1,308,848	-235,990	-4,575,601
	Net Adjusted Savings (kWh/yr)	180,889	6,045,452	5,139,687	842,026	1,075,210	193,864	13,477,128
	Planned Net Savings (kWh/yr)	3,207,000	8,724,528	15,761,165	15,761,165	742,316	0	44,196,174
	Annual % Toward Planned Net Savings (kWh)	6%	69%	33%	5%	145%		30%
	Avg. Gross Savings Per Participant (kWh/yr)	2,319	2,023	1,553	571	569	482	1,044
	Avg. Net Savings Per Participant (kWh/yr)	2,103	1,835	1,409	200	199	169	758
Installed kW	Total Gross Demand Reduction (kW)	59	2,394	2,169	472	624	130	5,848
89%	Realization Rate Adjustment (kW)	-10	-405	-367	-53	-70	-15	-918
	Realization Rate Adjusted Gross Demand Reduction(kW)	49	1,989	1,802	419	554	115	4,930
45%	Net-To-Gross Adjustment (kW)	-7	-298	-270	-230	-304	-63	-1,174
	Net Adjusted Demand Reduction (kW)	42	1,691	1,532	189	250	52	3,756
	Planned Net Demand Reduction (kW)	1,068	2,904	5,284	5,284	267	0	14,807
	Annual % Toward Planned Net Reduction (kW)	4%	58%	29%	4%	94%		25%
	Avg. Gross Demand Reduction Per Participant (kW)	0.69	0.73	0.59	0.11	0.12	0.11	0.33
	Avg. Net Demand Reduction Per Participant (kW)	0.49	0.51	0.42	0.04	0.05	0.05	0.21
Program Performance	Annual $Admin. per Participant (Gross)	$1,466	$61	$28	$18	$15	$26	$35
	Annual $Admin. per kWh/year (Gross)	$0.63	$0.03	$0.02	$0.03	$0.03	$0.05	$0.03
	Annual $Admin. per kW (Gross)	$2,125	$85	$47	$161	$126	$227	$105
	Annual $EM&V per $Total	1.6%	15.1%	13.5%	18.5%	11.0%	18.8%	13.4%
	Annual $Rebate per Participant (Gross)	$219	$218	$217	$219	$218	$218	$218

1. Program closed end of 2017.

2. A participant is a single unit that has been installed and rebated. A unique account number may represent multiple participants if that account had multiple units installed and rebated.

3. Realization Rate Adjustment occurred in 2015. Prior to 2012-2014 kWh realization rate was 106.7%, kW realization rate was 83.1%, and Net to Gross rate was 85%. From the start of 2015 forward kWh realization rate was 78%, kW realization rate was 89%, and Net to Gross rate was 45%.

DNV

A.33 Virginia Residential Duct Sealing Program 2012-2017

VA - Residential Duct Sealing Program Category	Indicator	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total	2017 Total	2012 - 2017 Program Total
O&M ($)	Direct Rebate							
O&M ($)	Direct Implementation							
O&M ($)	Direct EM&V							
O&M ($)	Indirect Other (Administrative)	$107,619	$88,535	$47,393	$29,028	$21,206	$12,428	$306,208
Costs ($)	Total	$898,451	$868,778	$995,573	$932,972	$697,755	$315,834	$4,709,363
Costs ($)	Planned	$1,078,863	$1,517,606	$1,760,434	$1,656,434	$1,765,492	$287,296	$8,066,125
Costs ($)	Variance	-$180,412	-$648,828	-$764,861	-$723,462	-$1,067,737	$28,538	-$3,356,761
	Annual % of Planned	83%	57%	57%	56%	40%	109.9%	58.4%
Participants[1]	Total (Gross)	8	108	401	1,860	658	264	3,299
	Planned (Gross)	1,267	3,456	5,249	5,249	1,499	0	16,720
	Variance	-1,259	-3,348	-4,848	-3,389	-841	264	-13,421
	Annual % of Planned (Gross)	1%	3%	8%	35%	44%		19.7%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	10,093	120,772	264,570	1,024,299	369,325	145,638	1,934,698
49%	Realization Rate Adjustment (kWh/yr)	-5,107	-61,111	-133,872	-518,295	-186,879	-73,693	-978,957
	Realization Rate Adjusted Savings (kWh/yr)	4,986	59,661	130,697	506,004	182,447	71,945	955,741
80%	Net-To-Gross Adjustment (kWh/yr)	-997	-11,932	-26,139	-101,201	-36,489	-14,389	-191,148
	Net Adjusted Savings (kWh/yr)	3,989	47,729	104,558	404,803	145,957	57,556	764,592
	Planned Net Savings (kWh/yr)	533,000	1,449,268	2,750,476	2,750,476	178,861	0	7,662,081
	Annual % Toward Planned Net Savings (kWh)	1%	3%	4%	15%	82%		10%
	Avg. Gross Savings Per Participant (kWh/yr)	1,262	1,118	660	551	561	552	586
	Avg. Net Savings Per Participant (kWh/yr)	499	442	261	218	222	218	232
Installed kW	Total Gross Demand Reduction (kW)	12	138	217	839	302	119	1,627
43%	Realization Rate Adjustment (kW)	-7	-79	-125	-483	-174	-69	-936
	Realization Rate Adjusted Gross Demand Reduction(kW)	5	59	92	357	129	51	692
80%	Net-To-Gross Adjustment (kW)	-1	-12	-18	-71	-26	-10	-138
	Net Adjusted Demand Reduction (kW)	4	47	74	285	103	41	553
	Planned Net Demand Reduction (kW)	330	898	1,732	1,732	60	0	4,752
	Annual % Toward Planned Net Reduction (kW)	1%	5%	4%	16%	172%		12%
	Avg. Gross Demand Reduction Per Participant (kW)	1.45	1.28	0.54	0.45	0.46	0.45	0.49
	Avg. Net Demand Reduction Per Participant (kW)	0.49	0.43	0.18	0.15	0.16	0.15	0.17
Program Performance	Annual $Admin. per Participant (Gross)	$13,452	$820	$118	$16	$32	$47	$93
	Annual $Admin. per kWh/year (Gross)	$10.66	$0.7	$0.2	$0.03	$0.06	$0.09	$0.16
	Annual $Admin. per kW (Gross)	$9,287	$642	$219	$97	$70	$104	$188
	Annual $EM&V per $Total	2.1%	13.5%	18.6%	15.0%	15.4%	21.1%	12.0%
	Annual $Rebate per Participant (Gross)	$125	$125	$133	$126	$125	$125	$125

1. Program closed end of 2017.
2. A participant is a single unit that has been installed and rebated. A unique account number may represent multiple participants if that account had multiple units installed and rebated.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.34 Virginia Residential Home Energy Check-Up Program 2012-2017

VA - Residential Home Energy Check-Up Program		2012	2013	2014	2015	2016	2017	2012 - 2017
Category	Indicator	Total	Total	Total	Total	Total	Total[2]	Program Total
O&M ($)	Direct Rebate							
O&M ($)	Direct Implementation							
O&M ($)	Direct EM&V							
O&M ($)	Indirect Other (Administrative)	$45,900	$107,979	$302,076	$142,892	$152,251	$27,969	$779,066
Costs ($)	Total	$388,827	$1,139,455	$6,664,393	$4,530,926	$5,009,540	$710,794	$18,443,934
Costs ($)	Planned	$579,767	$1,147,655	$1,316,844	$1,390,384	$1,461,234	$948,379	$6,844,262
Costs ($)	Variance	-$190,940	-$8,200	$5,347,549	$3,140,542	$3,548,306	-$237,585	$11,599,672
	Annual % of Planned	67%	99%	506%	326%	343%	75%	269%
Participants[1]	Total (Gross)	31	1,569	19,702	13,860	15,252	1,500	51,914
	Planned (Gross)	602	1,605	2,427	2,427	2,427	0	9,488
	Variance	-571	-36	17,275	11,433	12,825	1,500	42,426
	Annual % of Planned (Gross)	5%	98%	812%	571%	628%		547%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	24,484	1,156,888	10,573,042	6,834,001	6,803,477	827,576	26,219,469
154%	Realization Rate Adjustment (kWh/yr)	13,099	618,935	5,656,578	3,656,191	3,639,860	442,753	14,027,416
	Realization Rate Adjusted Savings (kWh/yr)	37,583	1,775,823	16,229,620	10,490,192	10,443,338	1,270,330	40,246,885
82%	Net-To-Gross Adjustment (kWh/yr)	-7,517	-355,165	-3,245,924	-1,898,725	-1,890,244	-229,930	-7,627,504
	Net Adjusted Savings (kWh/yr)	30,066	1,420,658	12,983,696	8,591,467	8,553,094	1,040,400	32,619,381
	Planned Net Savings (kWh/yr)	492,000	1,306,356	2,468,259	2,468,259	4,593,678	0	11,328,552
	Annual % Toward Planned Net Savings (kWh)	6%	109%	526%	348%	186%		288%
	Avg. Gross Savings Per Participant (kWh/yr)	790	737	537	493	446	552	505
	Avg. Net Savings Per Participant (kWh/yr)	970	905	659	620	561	694	628
Installed kW	Total Gross Demand Reduction (kW)	3	140	1,106	695	693	76	2,713
154%	Realization Rate Adjustment (kW)	2	75	592	372	371	41	1,452
	Realization Rate Adjusted Gross Demand Reduction(kW)	5	215	1,698	1,066	1,064	117	4,165
82%	Net-To-Gross Adjustment (kW)	-1	-43	-340	-193	-193	-21	-790
	Net Adjusted Demand Reduction (kW)	4	172	1,358	873	871	96	3,374
	Planned Net Demand Reduction (kW)	85	225	437	437	1,002	0	2,186
	Annual % Toward Planned Net Reduction (kW)	4%	76%	311%	200%	87%		154%
	Avg. Gross Demand Reduction Per Participant (kW)	0.1	0.1	0.1	0.05	0.05	0.05	0.05
	Avg. Net Demand Reduction Per Participant (kW)	0.1	0.1	0.1	0.06	0.06	0.06	0.07
Program Performance	Annual $Admin. per Participant (Gross)	$1,481	$69	$15	$10	$10	$19	$15
	Annual $Admin. per kWh/year (Gross)	$2	$0	$0.03	$0.02	$0	$0	$0.03
	Annual $Admin. per kW (Gross)	$14,840	$771	$273	$206	$220	$366	$287
	Annual $EM&V per $Total	4.9%	9.7%	0.8%	2.6%	3.2%	12.1%	3.0%
	Annual $Rebate per Participant (Gross)	$220	$226	$226	$206	$208	$217	$215

1. Program closed end of 2017.
2. A participant is a single unit that has been installed and rebated. A unique account number may represent multiple participants if that account had multiple units installed and rebated.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

3. The 2017 total gross deemed savings values reported in this table include adjustments of -2.1 kWh/year and -0.00044 kW made to the January 2017 reported savings. The adjustments accounts for corrections to STEP Manual version 7.0.0 issued on May 1, 2017. Specifically, the correction was in section 2.1.5 for “Low-Flow Showerhead” measures, to the “ΔT” variable, which is a measure of the change in temperature of the water used for shower and temperature entering the house (ΔT = Tshower – Tin house). STEP Manual 7.0.0 reported the value as 44.9°F, but has been corrected to 44.1°F. This correction is reflected in STEP Manual version 8.0.0 in this EM&V report.
4. Realization Rate Adjustment occurred in 2015. 2012-2014 Net to Gross Adjustment was 80.0%. From 2015 forward Net to Gross Adjustment was 82% and Realization Rate as adjusted to 154%.

DNV

A.35 Virginia Residential Appliance Recycling Program (DSM Phase IV) 2015-2018

VA- Residential Appliance Recycling Program Category	Indicator	2015 Total	2016 Total	2017 Total	2018 Total	2015-2018 Program Total
O&M ($)	Direct Rebate					
O&M ($)	Direct Implementation					
O&M ($)	Direct EM&V					
O&M ($)	Indirect Other (Administrative)	$21,660	$65,648	$38,635	$3,094	$129,037
Costs ($)	Total	$929,051	$2,160,027	$981,865	$54,790	$4,125,733
Costs ($)	Planned	$1,102,158	$2,072,738	$1,086,648	$10,474	$4,272,019
Costs ($)	Variance	-$173,107	$87,289	-$104,783	$44,316	-$146,286
	Annual % of Planned	84%	104%	90%	523%	97%
Participants[1]	Total (Gross)	3,206	7,735	3,131	0	14,072
	Planned (Gross)	3,750	7,500	3,000	0	14,250
	Variance	-544	235	131	0	-178
	Annual % of Planned (Gross)	85%	103%	104%		99%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	3,618,359	7,552,110	3,016,432	0	14,186,901
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	3,618,359	7,552,110	3,016,432	0	14,186,901
77%	Net-To-Gross Adjustment (kWh/yr)	-832,223	-1,736,985	-693,779	0	-3,262,987
	Net Adjusted Savings (kWh/yr)	2,786,136	5,815,125	2,322,653	0	10,923,914
	Planned Net Savings (kWh/yr)	6,564,000	3,736,801	1,346,206	0	11,647,008
	Annual % Toward Planned Net Savings (kWh)	42%	156%	173%		94%
	Avg. Gross Savings Per Participant (kWh/yr)	1,129	976	963		1,008
	Avg. Net Savings Per Participant (kWh/yr)	869	752	742		776
Installed kW	Total Gross Demand Reduction (kW)	541.6	1,130.4	451.5	0.0	2,123.5
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	541.6	1,130.4	451.5	0.0	2,123.5
77%	Net-To-Gross Adjustment (kW)	-124.6	-260.0	-103.8	0.0	-488.4
	Net Adjusted Demand Reduction (kW)	417.0	870.4	347.7	0.0	1,635.1
	Planned Net Demand Reduction (kW)	1,220.7	559.4	201.5	0.0	1,981.6
	Annual % Toward Planned Net Reduction (kW)	34%	156%	173%		83%
	Avg. Gross Demand Reduction Per Participant (kW)	0.17	0.15	0.14		0.15
	Avg. Net Demand Reduction Per Participant (kW)	0.13	0.11	0.11		0.12
Program Performance	Annual $Admin. per Participant (Gross)	$7	$8	$12		$9
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.01	$0.01		$0.01
	Annual $Admin. per kW (Gross)	$40	$58	$86		$61
	Annual $EM&V per $Total	1.1%	4.5%	7.3%	93.6%	5.6%
	Annual $Rebate per Participant (Gross)	$51	$50	$50		$50

1. Program closed end of 2017.
2. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.36 Virginia Commercial Lighting Program 2010-2012

VA- Commercial Lighting Program Category	Indicator	2010 Total	2011 Total	2012 Total	2010-2012 Program Total
O&M ($)	Direct Rebate				
O&M ($)	Direct Implementation				
O&M ($)	Direct EM&V				
O&M ($)	Indirect Other (Administrative)	$574,965	$419,642	$310,152	$1,304,759
Costs ($)	Total	$1,896,257	$5,239,777	$2,682,806	$9,818,840
Costs ($)	Planned	$1,683,194	$6,018,217	$9,231,456	$16,932,868
Costs ($)	Variance	$213,062	-$778,440	-$6,548,651	-$7,114,028
	Cum. % toward planned total	112.7%	87.1%	29.1%	58.0%
Participants	Total (Gross)	399	1,307	703	2,409
	Planned (Gross)	26	146	32	204
	Variance	373	1,161	671	2,205
	Cum % toward planned total (Gross)	1534.6%	895.2%	2196.9%	1180.9%
kWh	Total Gross Deemed Savings	13,533,989	42,212,316	23,709,597	79,455,902
178.0%	Realization Rate Adjustment [1]	10,581,378	32,807,324	18,502,140	61,890,842
	Adjusted Gross Savings	24,115,366	75,019,641	42,211,737	141,346,744
50.0%	Net-To-Gross Adjustment	-12,057,683	-37,509,820	-21,105,869	-70,673,372
	Net Adjusted Savings	12,057,683	37,509,820	21,105,869	70,673,372
	Planned Savings (Net)	6,364,934	35,764,075	7,716,991	49,846,000
	Cum. % Toward Planned Savings (Net)	189.4%	104.9%	273.5%	141.8%
	Avg. Savings Per Participant (Net)	30,220	28,699	30,023	29,337
kW	Total Gross Deemed Demand	3,049	9,553	5,450	18,052
98.0%	Realization Rate Adjustment	-61.0	-191.1	-109.0	
	Adjusted Gross Demand	2,988	9,362	5,341	
50.0%	Net-To-Gross Adjustment	-1,494	-4,681	-2,670	-8,845
	Net Adjusted Demand	1,494	4,681	2,670	8,845
	Planned Demand (Net)	798	4,490	969	6,257
	Cum. % Toward Planned Demand (Net)	187.2%	104.3%	275.6%	141.4%
	Avg. Demand Per Participant (Net)	4	4	4	6,257
Program Performance	Cum. $Admin. per Cum. Participant (Gross)	$1,441	$321	$441	$542
	Cum. $Admin. per Cum. KWh (Gross)	$0.04	$0.01	$0.01	$0.02
	Cum. $Admin. per Cum. KW (Gross)	$189	$44	$57	$72
	Cum. $EM&V per Cum Total Costs ($)	1.3%	5.9%	1.8%	3.9%
	Cum. $Rebate per Cum. Participant (Gross)	$2,445	$2,829	$2,681	$2,722

1. Program closed July 31, 2012.
2. Realization rate is 177% January 1st through May 30th, 179% June 1st through September 30th, and 177% October 1st through December 31st.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.37 Virginia Commercial HVAC Program 2010-2012

VA- Commerical HVAC Program Category	Indicator	2010 Total	2011 Total	2012 Total	2010-2012 Program Total
O&M ($)	Direct Rebate				
O&M ($)	Direct Implementation				
O&M ($)	Direct EM&V				
O&M ($)	Indirect Other (Administrative)	$109,504	$109,822	$68,630	$287,956
Costs ($)	Total	$396,225	$1,375,897	$641,660	$2,413,782
Costs ($)	Planned	$355,499	$1,149,943	$1,719,050	$3,224,492
Costs ($)	Variance	$40,726	$225,954	-$1,077,390	-$810,710
	Cum. % toward planned total	111.5%	119.6%	37.3%	74.9%
Participants	Total (Gross)	28	59	36	123
	Planned (Gross)	36	199	44	279
	Variance	-8	-140	-8	-156
	Cum % toward planned total (Gross)	77.8%	29.6%	81.8%	44.1%
kWh	Total Gross Deemed Savings	2,125,025	17,330,556	4,489,128	23,944,709
63.3%	Realization Rate Adjustment 1	-1,057,231	-7,280,807	-2,661,321	-10,999,359
	Adjusted Gross Savings	1,067,795	10,049,749	1,827,807	12,945,351
45.0%	Net-To-Gross Adjustment	-587,287	-5,527,362	-1,005,294	-7,119,943
	Net Adjusted Savings	480,508	4,522,387	822,513	5,825,408
	Planned Savings (Net)	993,361	5,481,166	1,209,473	7,684,000
	Cum. % Toward Planned Savings (Net)	48.4%	82.5%	68.0%	75.8%
	Avg. Savings Per Participant (Net)	17,161	76,651	22,848	47,361
kW	Total Gross Deemed Demand	281	1,629	568	2,477
97.0%	Realization Rate Adjustment	110	555	316	981
	Adjusted Gross Demand	390	2,184	884	3,458
45.0%	Net-To-Gross Adjustment	-215	-1,201	-486	-1,902
	Net Adjusted Demand	176	983	398	1,556
	Planned Demand (Net)	401	2,210	488	3,099
	Cum. % Toward Planned Demand (Net)	43.8%	44.5%	81.5%	50.2%
	Avg. Demand Per Participant (Net)	6	17	11	13
Program Performance	Cum. $Admin. per Cum. Participant (Gross)	$3,911	$1,861	$1,906	$2,341
	Cum. $Admin. per Cum. KWh (Gross)	$0.05	$0.01	$0.02	$0.01
	Cum. $Admin. per Cum. KW (Gross)	$390	$67	$121	$116
	Cum. $EM&V per Cum Total Costs ($)	6.3%	19.0%	19.1%	16.9%
	Cum. $Rebate per Cum. Participant (Gross)	$5,120	$11,274	$3,946	$8,883

1. Program closed July 31, 2012.
2. Realization rate is 63% January 1st through May 30th, 35% June 1st through September 30th, and 63% October 1st through December 31st.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

A.38 Virginia Non-residential Duct Testing and Sealing Program 2012-2017

VA - Non-Residential Duct Sealing and Testing Program Category	Indicator	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total[2]	2017 Total	2012-2017 Program Total
O&M ($)	Direct Rebate	[redacted]						
O&M ($)	Direct Implementation							
O&M ($)	Direct EM&V							
O&M ($)	Indirect Other (Administrative)	$71,464	$202,348	$393,299	$219,936	$171,043	$69,478	$1,127,568
Costs ($)	Total	$608,554	$2,267,525	$8,935,038	$7,280,638	$5,627,877	$1,765,692	$26,485,324
Costs ($)	Planned	$1,799,295	$4,387,635	$5,595,842	$5,700,026	$5,960,859	$1,122,254	$24,565,911
Costs ($)	Variance	-$1,190,740	-$2,120,110	$3,339,197	$1,580,612	-$332,983	$643,437	$1,919,413
	Annual % of Planned	34%	52%	160%	128%	94%	157%	108%
Participants[1]	Total (Gross)	11	357	1,700	1,655	640	81	4,444
	Planned (Gross)	112	299	472	472	578	0	1,933
	Variance	-101	58	1,228	1,183	62	81	-2,511
	Annual % of Planned (Gross)	10%	119%	360%	351%	111%		230%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	77,742	1,765,683	28,470,361	20,488,106	26,352,640	4,251,334	81,405,866
87%	Realization Rate Adjustment (kWh/yr)	-10,106	-229,539	-3,701,147	-2,663,454	-3,425,843	-552,673	-10,582,763
	Realization Rate Adjusted Savings (kWh/yr)	67,635	1,536,144	24,769,214	17,824,652	22,926,796	3,698,661	70,823,104
97%	Net-To-Gross Adjustment (kWh/yr)	-1,894	-43,012	-693,538	-499,090	-641,950	-103,563	-1,983,047
	Net Adjusted Savings (kWh/yr)	65,742	1,493,132	24,075,676	17,325,562	22,284,846	3,595,098	68,840,057
	Planned Net Savings (kWh/yr)	3,324,000	8,826,223	15,569,864	15,569,864	3,432,339	0	46,722,290
	Annual % Toward Planned Net Savings (kWh)	2%	17%	155%	111%	649%		147%
	Avg. Gross Savings Per Participant (kWh/yr)	7,067	4,946	16,747	12,380	41,176	52,486	18,318
	Avg. Net Savings Per Participant (kWh/yr)	5,977	4,182	14,162	10,469	34,820	44,384	15,491
Installed kW	Total Gross Demand Reduction (kW)	8	508	2,051	2,514	2,594	695	8,370
94%	Realization Rate Adjustment (kW)	0	-29	-119	-146	-150	-40	-485
	Realization Rate Adjusted Gross Demand Reduction(kW)	8	478	1,932	2,368	2,444	655	7,884
97%	Net-To-Gross Adjustment (kW)	0	-13	-54	-66	-68	-18	-221
	Net Adjusted Demand Reduction (kW)	7	465	1,878	2,301	2,375	637	7,663
	Planned Net Demand Reduction (kW)	737	1,963	3,479	3,479	1,409	0	11,066
	Annual % Toward Planned Net Reduction (kW)	1%	24%	54%	66%	169%		69%
	Avg. Gross Demand Reduction Per Participant (kW)	0.73	1.42	1.21	1.52	4.05	8.58	1.88
	Avg. Net Demand Reduction Per Participant (kW)	0.67	1.30	1.10	1.39	3.71	7.86	1.72
Program Performance	Annual $Admin. per Participant (Gross)	$6,497	$567	$231	$133	$267	$858	$254
	Annual $Admin. per kWh/year (Gross)	$0.92	$0.11	$0.01	$0.01	$0.01	$0.02	$0.01
	Annual $Admin. per kW (Gross)	$8,904	$398	$192	$88	$66	$100	$135
	Annual $EM&V per $Total	11.8%	2.8%	4.1%	1.1%	2.0%	4.5%	2.9%
	Annual $Rebate per Participant (Gross)	$1,203	$4,313	$4,388	$3,846	$7,622	$18,095	$4,888

1. Program ended in 2017.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

2. A participant is a single unit that has been installed and rebated. A unique account number may represent multiple participants if that account had multiple units installed and rebated.
3. The 2016 total gross deemed savings values reported in this table differs from values in the May 1, 2017 EM&V report, and have been refiled with the Commission. An adjustment totaled -30,849,970 kWh/year and 0 kW for 2016 reported savings. The adjustments accounts for corrections to STEP Manual version 7.0.0 issued on May 1, 2017, in section 12. The adjustment was made to full load heating hours (FLHheat) in Tables 90 and 91 to be consistent with those in the Mid-Atlantic TRM v 6, in response to requests by the North Carolina Public Staff Utilities Commission Re: Docket No. E-22, Sub 545, on October 23, 2017. This affected multiple non-residential HVAC measures (e.g. heat pumps, variable refrigerant flow, mini split systems) that reference Table 90 and 91, in multiple non-residential programs. This adjustment is reflected in STEP Manual version 8.0.0 in this EM&V report.

DNV

A.39 Virginia Non-residential Energy Audit Program 2012-2017

VA - Non-Residential Energy Audit Program Category	Indicator	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total	2017 Total	2012-2017 Program Total
O&M ($)	Direct Rebate							
O&M ($)	Direct Implementation							
O&M ($)	Direct EM&V							
O&M ($)	Indirect Other (Administrative)	$67,698	$151,749	$309,322	$15,730	$74,888	$10,321	$629,710
Costs ($)	Total	$565,256	$1,714,452	$5,649,367	$453,753	$2,464,067	$262,302	$11,109,197
Costs ($)	Planned	$841,286	$1,848,339	$2,175,831	$1,868,401	$1,936,926	$304,034	$8,974,818
Costs ($)	Variance	-$276,030	-$133,887	$3,473,536	-$1,414,648	$527,140	-$41,732	$2,134,379
	Annual % of Planned	67%	93%	260%	24%	127%	86%	124%
Audits	Total (Gross)	8	514	22	69	118	4	735
Participants[1]	Total (Gross)	1	302	1,116	73	125	15	1,632
	Planned (Gross)	138	373	589	589	721	0	2,410
	Variance	-137	-71	527	-516	-596	15	-778
	Annual % of Planned (Gross)	1%	81%	189%	12%	17%		68%
Installed kWh/year	Total (Gross)	35,433	4,498,061	31,588,249	667,407	6,765,468	196,549	43,751,165
	Attribution Rate weighted by Measure	100%	98%	99%	84%	99%	95%	93%
	Realization Rate weighted by Measure	97%	72%	93%	97%	92%	86%	91%
	Adjusted (Net) by Realization Rate and Attribution Rate	34,538	3,168,993	29,013,666	546,608	6,211,917	162,456	39,138,178
	Planned (Net)	3,401,000	9,140,494	17,399,649	17,399,649	4,818,529	0	52,159,321
	Annual % Toward Planned Net Savings (kWh)	1.0%	35%	167%	3%	129%		75%
	Avg. Gross Savings Per Participant (kWh/yr)	35,433	14,894	28,305	9,143	54,124	13,103	26,808
	Avg. Net Savings Per Participant (kWh/yr)	34,538	10,493	25,998	7,488	49,695	10,830	23,982
Installed kW	Total (Gross)	10	956	2,104	9	765	24	3,868
	Attribution Rate weighted by Measure	100%	98%	99%	94%	99%	93%	99%
	Realization Rate weighted by Measure	97%	78%	83%	66%	92%	86%	84%
	Adjusted (Net) by Realization Rate and Attribution Rate	10	733	1,724	7	701	19	3,195
	Planned (Net)	600	1,614	15,040	6,390	740	0	24,384
	Annual % Toward Planned Net Reduction (kW)	2%	45%	11%	0%	95%		13%
	Avg. Gross Demand Reduction Per Participant (kW)	10.0	3.2	1.9	0.1	6.1	1.6	2.4
	Avg. Net Demand Reduction Per Participant (kW)	9.8	2.4	1.5	0.1	5.6	1.3	2.0
Program Performance	Annual $Admin. per Participant (Gross)	$67,698	$502	$277	$215	$599	$688	$386
	Annual $Admin. per kWh/year (Gross)	$1.91	$0.03	$0.01	$0.02	$0.01	$0.05	$0.01
	Annual $Admin. per kW (Gross)	$6,737	$159	$147	$1,846	$98	$422	$0.01
	Annual $EM&V per $Total	17.6%	4.9%	6.7%	19.5%	4.5%	41.1%	7.8%
	Annual $Rebate per Participant (Gross)	$7,413	$3,605	$3,953	$564	$15,359	$4,456	$4,617

1. Program closed end of 2017.
2. A participant is a single unit that has been installed and rebated. A unique account number may represent multiple participants if that account had multiple units installed and rebated.

DNV

A.40 Virginia Non-residential Heating and Cooling Efficiency Program (DSM Phase III) 2014-2020

VA- Non-Residential Heating & Cooling Efficiency Program Category	Indicator	2014 Total	2015 Total	2016 Total[2]	2017 Total	2018 Total	2019 Total	2020 Total	2014-2020 Program Total
O&M ($)	Direct Rebate								
O&M ($)	Direct Implementation								
O&M ($)	Direct EM&V								
O&M ($)	Indirect Other (Administrative)	$14,267	$38,982	$41,094	$69,115	$98,564	$37,916	$2,765	$302,703
Costs ($)	Total	$460,689	$1,347,317	$1,352,118	$1,756,467	$1,745,485	$645,966	$47,468	$7,355,509
Costs ($)	Planned	$1,530,331	$1,859,694	$1,807,707	$1,858,262	$1,977,851	$100,294	$0	$9,134,139
Costs ($)	Variance	-$1,069,642	-$512,377	-$455,589	-$101,796	-$232,365	$545,672	$47,468	-$1,778,630
	Annual % of Planned	30%	72%	75%	95%	88%	644%	N/A	81%
Participants[1]	Total (Gross)	6	114	89	103	77	17	0	406
	Planned (Gross)	261	746	782	797	807	0	0	3,393
	Variance	-255	-632	-693	-694	-730	17	0	-2,987
	Annual % of Planned (Gross)	2%	15%	11%	13%	10%	N/A	N/A	12%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	1,456,991	11,129,837	13,647,306	7,526,876	9,818,796	3,328,123	0	46,907,929
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	1,456,991	11,129,837	13,647,306	7,526,876	9,818,796	3,328,123	0	46,907,929
70%	Net-To-Gross Adjustment (kWh/yr)	-437,097	-3,338,951	-4,094,192	-2,258,063	-2,945,639	-998,437	0	-14,072,379
	Net Adjusted Savings (kWh/yr)	1,019,894	7,790,886	9,553,114	5,268,813	6,873,157	2,329,686	0	32,835,550
	Planned Net Savings (kWh/yr)	3,299,301	9,430,186	24,119,220	38,355,947	31,003,178	0	0	106,207,832
	Annual % Toward Planned Net Savings (kWh)	31%	83%	40%	14%	22%	N/A	N/A	31%
	Avg. Gross Savings Per Participant (kWh/yr)	242,832	97,630	153,341	73,076	127,517	195,772	N/A	115,537
	Avg. Net Savings Per Participant (kWh/yr)	169,982	68,341	107,338	51,154	89,262	137,040	N/A	80,876
Installed kW	Total Gross Demand Reduction (kW)	510.1	2,777.0	2,084.3	1,946.7	568.8	198.8	0.0	8,085.6
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction(kW)	510.1	2,777.0	2,084.3	1,946.7	568.8	198.8	0.0	8,085.6
70%	Net-To-Gross Adjustment (kW)	-153.0	-833.1	-625.3	-584.0	-170.6	-59.6	0.0	-2,425.7
	Net Adjusted Demand Reduction (kW)	357.1	1,943.9	1,459.0	1,362.7	398.1	139.2	0.0	5,660.0
	Planned Net Demand Reduction (kW)	835.2	2,387.2	4,089.6	15,592.6	7,536.0	0.0	0.0	30,440.6
	Annual % Toward Planned Net Reduction (kW)	43%	81%	36%	9%	5%	N/A	N/A	19%
	Avg. Gross Demand Reduction Per Participant (kW)	85.0	24.4	23.4	18.9	7.4	11.7	N/A	19.9
	Avg. Net Demand Reduction Per Participant (kW)	59.5	17.1	16.4	13.2	5.2	8.2	N/A	13.9
Program Performance	Annual $Admin. per Participant (Gross)	$2,378	$342	$462	$671	$1,280	$2,230	N/A	$746
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.00	$0.00	$0.01	$0.01	$0.01	N/A	$0.01
	Annual $Admin. per kW (Gross)	$28	$14	$20	$36	$173	$191	N/A	$37
	Annual $EM&V per $Total	5.6%	6.1%	8.6%	7.6%	7.3%	11.0%	94.2%	8.2%
	Annual $Rebate per Participant (Gross)	$19,834	$7,909	$10,729	$11,629	$15,058	$24,826	N/A	$11,711

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

1. Program closed end of 2019.
2. A participant is a unique account number.
3. The 2016 total gross deemed savings values reported in this table differs from values in the May 1, 2017 EM&V report, and have been refiled with the Commission. The adjustments totalled -154,576 kWh/year and 0 kW for 2016 reported savings. The adjustments accounts for corrections to STEP Manual version 7.0.0 issued on May 1, 2017, in section 10. The adjustment was made to full load heating hours (FLHheat) in Tables 90 and 91 to be consistent with those in the Mid-Atlantic TRM v 6, in response to requests by the North Carolina Public Staff Utilities Commission Re: Docket No. E-22, Sub 545, on October 23, 2017. This affected multiple non-residential HVAC measures (e.g. heat pumps, variable refrigerant flow, mini split systems) that reference Table 90 and 91, in multiple non-residential programs. This adjustment is reflected in STEP Manual version 8.0.0 in this EM&V report.

DNV

A.41 Virginia Non-residential Lighting Systems & Controls Program (DSM Phase III) 2014-2020

VA- Non-Residential Lighting Systems & Controls Program		2014	2015	2016	2017	2018	2019	2020	2014-2020
Category	Indicator	Total	Total	Total[2]	Total	Total	Total	Total	Program Total
O&M ($)	Direct Rebate	[redacted]							
O&M ($)	Direct Implementation								
O&M ($)	Direct EM&V								
O&M ($)	Indirect Other (Administrative)	$39,157	$191,137	$214,891	$351,449	$351,760	$289,158	$2,081	$1,439,634
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	
Costs ($)	Total	$1,295,925	$6,608,836	$7,070,615	$8,931,669	$6,229,352	$4,806,213	$36,137	$34,978,746
Costs ($)	Planned	$3,048,223	$5,355,067	$5,349,167	$5,268,411	$6,289,779	$100,294	$0	$25,410,941
Costs ($)	Variance	-$1,752,298	$1,253,769	$1,721,448	$3,663,258	-$60,427	$4,705,918	$36,137	$9,567,805
	Annual % of Planned	43%	123%	132%	170%	99%	4792%	N/A	138%
Participants[1]	Total (Gross)	118	1,241	1,203	868	649	422	0	4,501
	Planned (Gross)	688	1,504	1,531	1,553	1,807	0	0	7,083
	Variance	-570	-263	-328	-685	-1,158	422	0	-2,582
	Annual % of Planned (Gross)	17%	83%	79%	56%	36%	N/A	N/A	64%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	4,749,693	50,828,062	65,876,985	71,024,607	45,157,541	41,988,907	0	279,625,795
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	4,749,693	50,828,062	65,876,985	71,024,607	45,157,541	41,988,907	0	279,625,795
70%	Net-To-Gross Adjustment (kWh/yr)	-1,424,908	-15,248,419	-19,763,096	-21,307,382	-13,547,262	-12,596,672	0	-83,887,739
	Net Adjusted Savings (kWh/yr)	3,324,785	35,579,643	46,113,890	49,717,225	31,610,279	29,392,235	0	195,738,057
	Planned Net Savings (kWh/yr)	12,317,239	27,461,536	24,119,220	33,214,031	40,368,376	0	0	137,480,402
	Annual % Toward Planned Net Savings (kWh)	27%	130%	191%	150%	78%	N/A	N/A	142%
	Avg. Gross Savings Per Participant (kWh/yr)	40,252	40,957	54,761	81,826	69,580	99,500	N/A	62,125
	Avg. Net Savings Per Participant (kWh/yr)	28,176	28,670	38,332	57,278	48,706	69,650	N/A	43,488
Installed kW	Total Gross Demand Reduction (kW)	998.5	10,674.2	15,380.0	11,958.2	7,222.3	5,637.5	0.0	51,870.7
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	998.5	10,674.2	15,380.0	11,958.2	7,222.3	5,637.5	0.0	51,870.7
70%	Net-To-Gross Adjustment (kW)	-299.5	-3,202.3	-4,614.0	-3,587.5	-2,166.7	-1,691.3	0.0	-15,561.2
	Net Adjusted Demand Reduction (kW)	698.9	7,472.0	10,766.0	8,370.8	5,055.6	3,946.3	0.0	36,309.5
	Planned Net Demand Reduction (kW)	3,228.9	7,670.4	4,089.4	5,486.3	7,269.0	0.0	0.0	27,744.0
	Annual % Toward Planned Net Reduction (kW)	22%	97%	263%	153%	70%	N/A	N/A	131%
	Avg. Gross Demand Reduction Per Participant (kW)	8.5	8.6	12.8	13.8	11.1	13.4	N/A	11.5
	Avg. Net Demand Reduction Per Participant (kW)	5.9	6.0	8.9	9.6	7.8	9.4	N/A	8.1
Program Performance	Annual $Admin. per Participant (Gross)	$332	$154	$179	$405	$542	$685	N/A	$320
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.00	$0.00	$0.00	$0.01	$0.01	N/A	$0.01
	Annual $Admin. per kW (Gross)	$39	$18	$14	$29	$49	$51	N/A	$28
	Annual $EM&V per $Total	5.1%	1.8%	1.5%	1.1%	1.6%	1.3%	94.2%	1.7%
	Annual $Rebate per Participant (Gross)	$4,355	$4,487	$5,025	$8,725	$7,668	$9,892	N/A	$6,410

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

1. Program closed end of 2019.
2. A participant is a unique account number.
3. The 2016 total gross deemed savings values reported in this table differs from values in the May 1, 2017 EM&V report and have been refiled with the Commission. The adjustments totaled -14,862,478 kWh/year and 168 kW for 2016 reported savings. The adjustments accounts for corrections to STEP Manual version 7.0.0 issued on May 1, 2017, in section 9.1.1. The adjustment was to waste heat factors (WHFe and WHFd) applied to lighting fixtures installed in 2016, where the program participant building HVAC systems was assumed to be heat pump heating and cooling systems, rather than the previous assumption of AC cool and non-electric heat systems. This adjustment was made in response to requests by the North Carolina Public Staff Utilities Commission Re: Docket No. E-22, Sub 545, on October 23, 2017. It is reflected in STEP Manual version 8.0.0 in this EM&V report.

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A.42 Virginia Non-residential Window Film Program (DSM Phase III) 2014-2020

VA- Non-Residential Window Film Program Category	Indicator	2014 Total	2015 Total	2016 Total	2017 Total	2018 Total	2019 Total	2020 Total	2014-2020 Program Total
O&M ($)	Direct Rebate	[redacted]							
O&M ($)	Direct Implementation								
O&M ($)	Direct EM&V								
O&M ($)	Indirect Other (Administrative)	$11,980	$12,457	$13,085	$21,659	$20,852	$5,421	$1,448	$86,903
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0
Costs ($)	Total	$382,712	$400,634	$430,529	$550,444	$369,265	$103,090	$25,376	$2,262,051
Costs ($)	Planned	$705,718	$1,240,249	$1,712,877	$1,921,714	$2,237,336	$60,177	$0	$7,878,071
Costs ($)	Variance	-$323,005	-$839,615	-$1,282,348	-$1,371,270	-$1,868,072	$42,913	$25,376	-$5,616,020
	Annual % of Planned	54%	32%	25%	29%	17%	171%	N/A	29%
Participants[1]	Total Participants	3	22	70	59	91	8	0	253
	Total Square Feet	53,021	97,121	57,228	231,634	33,461	3,913	0	476,378
	Planned Square Feet	133,086	681,000	1,148,077	1,371,237	1,454,781	0	0	4,788,181
	Variance	-80,065	-583,879	-1,090,849	-1,139,603	-1,421,320	3,913	0	-4,311,803
	Annual % of Planned (Gross)	40%	14%	5%	17%	2%	N/A	N/A	10%
Square feet	Total Square Feet	53,021	97,121	57,228	231,634	33,461	3,913	0	476,378
	North Facing	11,663	23,535	13,931	48,150	2,090	1,104	0	100,473
	East Facing	14,597	24,260	8,105	61,663	7,387	424	0	116,436
	West Facing	15,090	22,836	15,826	62,196	12,254	713	0	128,915
	South Facing	11,671	26,490	19,366	59,625	11,730	1,672	0	130,554
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	1,152,476	3,077,815	464,794	1,734,665	170,954	8,956	0	6,609,660
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	1,152,476	3,077,815	464,794	1,734,665	170,954	8,956	0	6,609,660
80%	Net-To-Gross Adjustment (kWh/yr)	-230,495	-615,563	-92,959	-346,933	-34,191	-1,791	0	-1,321,932
	Net Adjusted Savings (kWh/yr)	921,980	2,462,252	371,835	1,387,732	136,764	7,165	0	5,287,728
	Planned Net Savings (kWh/yr)	2,395,548	12,258	15,842,639	15,209,376	10,484,938	0	0	43,944,759
	Annual % Toward Planned Net Savings (kWh)	38%	20087%	2%	9%	1%	N/A	N/A	12%
	Avg. Gross Savings Per Participant (kWh/yr)	384,159	139,901	6,640	29,401	1,879	1,119	N/A	26,125
	Avg. Gross Savings Per Square Foot (kWh/yr)	22	32	8	7	5	2	N/A	14
	Avg. Net Savings Per Participant (kWh/yr)	307,327	111,921	5,312	23,521	1,503	896	N/A	20,900
	Avg. Net Savings Per Square Foot (kWh/yr)	17	25	6	6	4	2	N/A	11
Installed kW	Total Gross Demand Reduction (kW)	233.1	626.6	139.7	471.5	57.6	2.5	0.0	1,531.0
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	233.1	626.6	139.7	471.5	57.6	2.5	0.0	1,531.0
80%	Net-To-Gross Adjustment (kW)	-46.6	-125.3	-27.9	-94.3	-11.5	-0.5	0.0	-306.2
	Net Adjusted Demand Reduction (kW)	186.5	501.2	111.8	377.2	46.1	2.0	0.0	1,224.8
	Planned Net Demand Reduction (kW)	532.3	2.4	14,497.4	13,692.8	9,627.0	0.0	0.0	38,351.9
	Annual % Toward Planned Net Reduction (kW)	35%	20885%	1%	3%	0.5%	N/A	N/A	3%
	Avg. Gross Demand Reduction Per Participant (kW)	78	28	2	8	0.6	0	N/A	6
	Avg. Gross Demand Reduction Per Square Foot (kW)	0.004	0.006	0.002	0.002	0.002	0.001	N/A	0.003
	Avg. Net Demand Reduction Per Participant (kW)	62	23	2	6	0.5	0	N/A	5
	Avg. Net Demand Reduction Per Square Foot (kW)	0.004	0.005	0.002	0.002	0.00	0.00	N/A	0
Program Performance	Annual $Admin. per Participant (Gross)	$3,993	$566	$187	$367	$229	$678	N/A	$343
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.00	$0.03	$0.01	$0.12	$0.61	N/A	$0.01
	Annual $Admin. per kW (Gross)	$51	$20	$94	$46	$362.0	$2,182.7	N/A	$57
	Annual $EM&V per $Total	22%	17%	26%	16%	22%	54%	94%	23%
	Annual $Rebate per Participant (Gross)	$6,090	$512	$667	$3,284	$285	$406	N/A	$1,182

1. Program closed end of 2019.
2. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

APPENDIX B. PROGRAM PERFORMANCE INDICATOR TABLES FOR NORTH CAROLINA PROGRAMS 2011–2020

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B.1 North Carolina Residential Income and Age Qualifying Home Improvement Program 2014-2020

B.1.1 2016-2020 NC Residential Income and Age Qualifying Home Improvement Annual Indicator Tables

NC- Residential Income and Age Qualifying Home Improvement Program		2016	2017	2018	2019	2020	2016-2020
Category	Indicator	Total	Total[2]	Total	Total	Total	Program Total
O&M ($)	Direct Rebate						
O&M ($)	Direct Implementation						
O&M ($)	Direct EM&V						
O&M ($)	Indirect Other (Administrative)	$8,999	$12,899	$1,949	$8,131	$2,550	$34,528
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	
Costs ($)	Total	$296,086	$327,806	$34,521	$205,018	$47,525	$910,957
Costs ($)	Planned	$393,347	$306,440	$152,200	$268,230	$278,271	$1,398,487
Costs ($)	Variance	-$97,261	$21,366	-$117,679	-$63,211	-$230,745	-$487,530
	Annual % of Planned	75%	107%	23%	76%	17%	65%
Participants[1]	Total (Gross)	157	130	1	132	19	439
	Planned (Gross)	257	254	0	282	282	1,075
	Variance	-100	-124	1	-150	-263	-636
	Annual % of Planned (Gross)	61%	51%	N/A	47%	7%	41%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	106,379	109,794	723	64,879	8,237	290,013
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	106,379	109,794	723	64,879	8,237	290,013
80%	Net-To-Gross Adjustment (kWh/yr)	-21,276	-21,959	-145	-12,976	-1,647	-58,003
	Net Adjusted Savings (kWh/yr)	85,103	87,835	579	51,903	6,590	232,011
	Planned Net Savings (kWh/yr)	67,040	51,199	0	48,691	141,759	308,689
	Annual % Toward Planned Net Savings (kWh)	127%	172%	N/A	107%	5%	75%
	Avg. Gross Savings Per Participant (kWh/yr)	678	845	723	492	434	661
	Avg. Net Savings Per Participant (kWh/yr)	542	676	579	393	347	528
Installed kW	Total Gross Demand Reduction (kW)	10.6	9.1	0.1	18.9	2.9	41.6
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	10.6	9.1	0.1	18.9	2.9	41.6
80%	Net-To-Gross Adjustment (kW)	-2.1	-1.8	0.0	-3.8	-0.6	-8.3
	Net Adjusted Demand Reduction (kW)	8.5	7.3	0.0	15.1	2.3	33.3
	Planned Net Demand Reduction (kW)	15.0	11.4	0.0	5.1	13.7	45.1
	Annual % Toward Planned Net Reduction (kW)	57%	64%	N/A	299%	17%	74%
	Avg. Gross Demand Reduction Per Participant (kW)	0.07	0.07	0.06	0.14	0.15	0.09
	Avg. Net Demand Reduction Per Participant (kW)	0.05	0.06	0.05	0.11	0.12	0.08
Program Performance	Annual $Admin. per Participant (Gross)	$57	$99	$1,949	$62	$134	$79
	Annual $Admin. per kWh/year (Gross)	$0.08	$0.12	$2.70	$0.13	$0.31	$0.12
	Annual $Admin. per kW (Gross)	$847	$1,415	$31,929	$430	$888	$831
	Annual $EM&V per $Total	2.0%	2.3%	18.2%	3.0%	12.4%	3.5%
	Annual $Rebate per Participant (Gross)	$1,442	$1,939	$1,763	$1,161	$1,019	$1,487

1. A participant is a unique account number.
2. The 2017 total gross deemed savings values reported in this table include adjustments of -307 kWh/year and -0.026 kW made to the January 2017 reported savings. The adjustments accounts for corrections to STEP Manual version 7.0.0 issued on May 1, 2017. Specifically, the correction was in section 2.1.5 for "Low-Flow Showerhead" measures, to the "ΔT" variable, which is a measure of the change in temperature of the water used for shower and temperature entering the house (ΔT = Tshower – Tin house). STEP Manual 7.0.0 reported the value as 44.9°F, but has been corrected to 44.1°F. This correction is reflected in STEP Manual version 8.0.0 in this EM&V report.

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B.1.2 2020 NC Residential Income and Age Qualifying Home Improvement Monthly Indicator Tables

NC- Residential Income and Age Qualifying Home Improvement Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2016-2020 Program Total
O&M ($)	Direct Rebate	[redacted]													
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$85	$213	$381	$600	$270	$88	$344	$87	$145	$143	$65	$129	$2,550	$34,528
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Costs ($)	Total	$1,490	$3,737	$6,679	$10,506	$4,724	$1,540	$6,023	$1,531	$3,390	$3,356	$1,528	$3,021	$47,525	$910,957
Costs ($)	Planned	$23,189	$23,189	$23,189	$23,189	$23,189	$23,189	$23,189	$23,189	$23,189	$23,189	$23,189	$23,189	$278,271	$1,398,487
Costs ($)	Variance	-$21,699	-$19,452	-$16,510	-$12,683	-$18,465	-$21,649	-$17,166	-$21,658	-$19,799	-$19,833	-$21,661	-$20,168	-$230,745	-$487,530
	Annual % of Planned	1%	2%	4%	8%	10%	10%	12%	13%	14%	15%	16%	17%	17%	65%
Participants[1]	Total (Gross)	1	1	3	7	1	0	3	0	1	2	0	0	19	439
	Planned (Gross)	24	24	24	24	24	24	24	24	24	24	24	18	282	1,075
	Variance	-23	-23	-21	-17	-23	-24	-21	-24	-23	-22	-24	-18	-263	-636
	Annual % of Planned (Gross)	0%	1%	2%	4%	5%	5%	6%	6%	6%	7%	7%	7%	7%	41%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	23	649	1,200	3,616	764	0	686	0	255	1,044	0	0	8,237	290,013
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	23	649	1,200	3,616	764	0	686	0	255	1,044	0	0	8,237	290,013
80%	Net-To-Gross Adjustment (kWh/yr)	-5	-130	-240	-723	-153	0	-137	0	-51	-209	0	0	-1,647	-58,003
	Net Adjusted Savings (kWh/yr)	18	519	960	2,893	611	0	549	0	204	835	0	0	6,590	232,011
	Planned Net Savings (kWh/yr)	11,813	11,813	11,813	11,813	11,813	11,813	11,813	11,813	11,813	11,813	11,813	11,813	141,759	308,689
	Annual % Toward Planned Net Savings (kWh)	0%	0%	1%	3%	4%	4%	4%	4%	4%	5%	5%	5%	5%	75%
	Avg. Gross Savings Per Participant (kWh/yr)	23	649	400	517	764	N/A	229	N/A	255	522	N/A	N/A	434	661
	Avg. Net Savings Per Participant (kWh/yr)	18	519	320	413	611	N/A	183	N/A	204	418	N/A	N/A	347	528
Installed kW	Total Gross Demand Reduction (kW)	0.0	0.2	0.3	1.3	0.3	0.0	0.4	0.0	0.0	0.4	0.0	0.0	2.9	41.6
100%	Realization Rate Adjustment (kW)	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	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	0.2	0.3	1.3	0.3	0.0	0.4	0.0	0.0	0.4	0.0	0.0	2.9	41.6
80%	Net-To-Gross Adjustment (kW)	0.0	0.0	-0.1	-0.3	-0.1	0.0	-0.1	0.0	0.0	-0.1	0.0	0.0	-0.6	-8.3
	Net Adjusted Demand Reduction (kW)	0.0	0.1	0.2	1.1	0.2	0.0	0.3	0.0	0.0	0.3	0.0	0.0	2.3	33.3
	Planned Net Demand Reduction (kW)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	13.7	45.1
	Annual % Toward Planned Net Reduction (kW)	0%	1%	3%	10%	12%	12%	15%	15%	15%	17%	17%	17%	17%	74%
	Avg. Gross Demand Reduction Per Participant (kW)	0.00	0.17	0.09	0.19	0.30	N/A	0.14	N/A	0.02	0.18	N/A	N/A	0.15	0.09
	Avg. Net Demand Reduction Per Participant (kW)	0.00	0.14	0.07	0.15	0.24	N/A	0.11	N/A	0.02	0.14	N/A	N/A	0.12	0.08
Program Performance	Annual $Admin. per Participant (Gross)	$85	$149	$136	$107	$119	$126	$124	$129	$130	$124	$127	$134	$134	$79
	Annual $Admin. per kWh/year (Gross)	$3.77	$0.44	$0.36	$0.23	$0.25	$0.26	$0.29	$0.30	$0.31	$0.29	$0.29	$0.31	$0.31	$0.12
	Annual $Admin. per kW (Gross)	$41,258	$1,696	$1,549	$720	$745	$787	$794	$829	$879	$820	$843	$888	$888	$831
	Annual $EM&V per $Total	0.0%	0.0%	7.8%	4.1%	6.8%	6.4%	8.8%	8.4%	11.4%	10.5%	10.2%	12.4%	12.4%	3.5%
	Annual $Rebate per Participant (Gross)	$20	$1,057	$1,152	$1,098	$1,148	$1,148	$1,101	$1,101	$1,048	$1,019	$1,019	$1,019	$1,019	$1,487

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

B.2 North Carolina Residential Appliance Recycling Program (DSM Phase VII) 2020

B.2.1 2020 NC Residential Appliance Recycling Program (DSM Phase VII) Monthly Indicator Tables

NC- Residential Appliance Recycling Program		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2019-2020
Category	Indicator	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Total	Program Total
O&M ($)	Direct Rebate	[redacted]													
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$0	$0	$68	$23	$158	$87	$147	$86	$101	$70	$60	$81	**$881**	**$881**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	
Costs ($)	Total	$0	$0	$1,184	$405	$2,773	$1,516	$2,580	$1,514	$2,363	$1,638	$1,409	$1,889	**$17,270**	**$17,270**
Costs ($)	Planned	$9,678	$9,678	$9,678	$9,678	$9,678	$9,678	$9,678	$9,678	$9,678	$9,678	$9,678	$9,678	**$116,132**	**$116,132**
Costs ($)	Variance	-$9,678	-$9,678	-$8,494	-$9,272	-$6,905	-$8,161	-$7,098	-$8,164	-$7,314	-$8,040	-$8,269	-$7,789	**-$98,861**	**-$98,861**
	Annual % of Planned	0%	0%	1%	1%	4%	5%	7%	9%	11%	12%	13%	15%	**15%**	**15%**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Planned (Gross)	48	48	48	48	48	48	48	48	48	48	48	45	**573**	**573**
	Variance	-48	-48	-48	-48	-48	-48	-48	-48	-48	-48	-48	-45	**-573**	**-573**
	Annual % of Planned (Gross)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**	**0%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
60%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Planned Net Savings (kWh/yr)	33,535	33,535	33,535	33,535	33,535	33,535	33,535	33,535	33,535	33,535	33,535	33,535	**402,421**	**402,421**
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**	**0%**
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**	**0.0**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**	**0.0**
60%	Net-To-Gross Adjustment (kW)	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**	**0.0**
	Net Adjusted Demand Reduction (kW)	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**	**0.0**
	Planned Net Demand Reduction (kW)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	**66.1**	**66.1**
	Annual % Toward Planned Net Reduction (kW)	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%**	**0.0%**
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
Program	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
Performance	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Annual $EM&V per $Total	N/A	N/A	0.0%	0.0%	13.6%	10.1%	19.8%	16.8%	18.1%	16.0%	14.5%	15.3%	**15.3%**	**15.3%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**

1. A participant is a recycled refrigerator or freezer. Up to two units may be recycled for each electric account number and each unit will be counted as a unique participant.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

B.3 North Carolina Residential Efficiency Products Marketplace Program 2020

B.3.1 2020 NC Residential Efficiency Products Marketplace Monthly Indicator Tables

NC- Residential Efficient Products Marketplace Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate	[redacted]													
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$0	$0	$21	$2,556	$1,412	$1,362	$1,140	$1,076	$853	$1,333	$969	$1,352	$12,075	$12,075
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Costs ($)	Total	$0	$0	$371	$44,776	$24,745	$23,863	$19,974	$18,860	$19,984	$31,237	$22,712	$31,679	$238,201	$238,201
Costs ($)	Planned	$35,432	$35,432	$35,432	$35,432	$35,432	$35,432	$35,432	$35,432	$35,432	$35,432	$35,432	$35,432	$425,185	$425,185
Costs ($)	Variance	-$35,432	-$35,432	-$35,061	$9,344	-$10,687	-$11,569	-$15,458	-$16,572	-$15,448	-$4,195	-$12,720	-$3,753	-$186,984	-$186,984
	Annual % of Planned	0%	0%	0%	11%	16%	22%	27%	31%	36%	43%	49%	56%	56%	56%
Participants[1]	Total (Gross)	3,238	4,429	8,236	6,213	10,920	7,010	5,845	8,549	6,680	7,555	9,577	8,725	86,976	86,976
	Planned (Gross)	11,621	11,621	11,621	11,621	11,621	11,621	11,621	11,621	11,621	11,621	11,621	11,623	139,454	139,454
	Variance	-8,383	-7,192	-3,386	-5,408	-701	-4,612	-5,776	-3,072	-4,941	-4,066	-2,044	-2,898	-52,478	-52,478
	Annual % of Planned (Gross)	2%	5%	11%	16%	24%	29%	33%	39%	44%	49%	56%	62%	62%	62%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	110,702	148,313	270,150	192,651	340,272	215,333	173,068	261,350	207,610	237,994	297,723	264,819	2,719,985	2,719,985
	Realization Rate Weighted by Measure	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	110,702	148,313	270,150	192,651	340,272	215,333	173,068	261,350	207,610	237,994	297,723	264,819	2,719,985	2,719,985
	Net-To-Gross Rate Weighted by Measure	70%	68%	68%	65%	66%	66%	66%	66%	66%	67%	66%	65%	66%	
70%	Net-To-Gross Adjustment (kWh/yr)	-33,381	-46,791	-86,289	-67,592	-116,116	-74,070	-58,596	-88,472	-70,507	-79,500	-101,911	-92,351	-915,576	-915,576
	Net Adjusted Savings (kWh/yr)	77,321	101,522	183,861	125,059	224,157	141,263	114,472	172,878	137,103	158,493	195,812	172,468	1,804,409	1,804,409
	Planned Net Savings (kWh/yr)	646,737	646,737	646,737	646,737	646,737	646,737	646,737	646,737	646,737	646,737	646,737	646,737	7,760,839	7,760,839
	Annual % Toward Planned Net Savings (kWh)	1%	2%	5%	6%	9%	11%	12%	15%	16%	19%	21%	23%	23%	23%
	Avg. Gross Savings Per Participant (kWh/yr)	34	33	33	31	31	31	30	31	31	32	31	30	31	31
	Avg. Net Savings Per Participant (kWh/yr)	24	23	22	20	21	20	20	20	21	21	20	20	21	21
Installed kW	Total Gross Demand Reduction (kW)	10.1	13.6	24.7	17.8	31.2	19.8	15.9	24.0	19.2	22.0	27.5	24.4	250.2	250.2
	Realization Rate Weighted by Measure	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
100%	Realization Rate Adjustment (kW)	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	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	10.1	13.6	24.7	17.8	31.2	19.8	15.9	24.0	19.2	22.0	27.5	24.4	250.2	250.2
	Net-To-Gross Rate Adjusted by Measure	70%	68%	68%	65%	66%	66%	66%	66%	66%	66%	66%	65%	66%	
70%	Net-To-Gross Adjustment (kW)	-3.1	-4.3	-7.9	-6.3	-10.7	-6.8	-5.4	-8.2	-6.5	-7.4	-9.5	-8.5	-84.5	-84.5
	Net Adjusted Demand Reduction (kW)	7.1	9.3	16.8	11.5	20.5	13.0	10.5	15.9	12.6	14.6	18.0	15.9	165.7	165.7
	Planned Net Demand Reduction (kW)	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	100.9	100.9
	Annual % Toward Planned Net Reduction (kW)	7.0%	16.2%	32.9%	44.3%	64.7%	77.5%	87.9%	103.7%	116.2%	130.7%	148.5%	164.3%	164.3%	164.3%
	Avg. Gross Demand Reduction Per Participant (kW)	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	0.0
	Avg. Net Demand Reduction Per Participant (kW)	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	0.0
Program Performance	Annual $Admin. per Participant (Gross)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Annual $Admin. per kWh/year (Gross)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Annual $Admin. per kW (Gross)	$0	$0	$0	$39	$41	$46	$49	$48	$48	$49	$47	$48	$48	$48
	Annual $EM&V per $Total	N/A	N/A	0.0%	0.0%	3.2%	2.4%	3.9%	3.3%	4.5%	3.8%	3.3%	4.1%	4.1%	4.1%
	Annual $Rebate per Participant (Gross)	$0	$0	$0	$1	$1	$2	$2	$2	$2	$2	$2	$2	$2	$2

1. A participant is a rebated lamp or appliance.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.4 North Carolina Residential Home Energy Assessment Program 2020

B.4.1 2020 NC Residential Home Energy Assessment Monthly Indicator Tables

NC- Residential Home Assesment Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$384	$384	$421	$388	$557	$388	$629	$394	$406	$345	$316	$420	$5,032	$5,032
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Costs ($)	Total	$6,731	$6,731	$7,367	$6,805	$9,766	$6,792	$11,028	$6,896	$9,511	$8,083	$7,404	$9,840	$96,955	$96,955
Costs ($)	Planned	$22,532	$22,532	$22,532	$22,532	$22,532	$22,532	$22,532	$22,532	$22,532	$22,532	$22,532	$22,532	$270,379	$270,379
Costs ($)	Variance	-$15,800	-$15,800	-$15,164	-$15,727	-$12,765	-$15,740	-$11,503	-$15,635	-$13,021	-$14,449	-$15,127	-$12,692	-$173,423	-$173,423
	Annual % of Planned	2%	5%	8%	10%	14%	16%	20%	23%	26%	29%	32%	36%	36%	36%
Participants[1]	Total (Gross)	0	0	0	2	6	1	0	0	2	3	1	2	17	17
	Planned (Gross)	153	153	153	153	153	153	153	153	153	153	153	148	1,831	1,831
	Variance	-153	-153	-153	-151	-147	-152	-153	-153	-151	-150	-152	-146	-1,814	-1,814
	Annual % of Planned (Gross)	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	249	2,152	198	0	0	500	5,360	2,538	8,416	19,413	19,413
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	249	2,152	198	0	0	500	5,360	2,538	8,416	19,413	19,413
80%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	-50	-430	-40	0	0	-100	-1,072	-508	-1,683	-3,883	-3,883
	Net Adjusted Savings (kWh/yr)	0	0	0	199	1,722	158	0	0	400	4,288	2,030	6,733	15,530	15,530
	Planned Net Savings (kWh/yr)	46,877	46,877	46,877	46,877	46,877	46,877	46,877	46,877	46,877	46,877	46,877	46,877	562,522	562,522
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	2%	3%	3%	3%
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	124	359	198	N/A	N/A	250	1,787	2,538	4,208	1,142	1,142
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	100	287	158	N/A	N/A	200	1,429	2,030	3,367	914	914
Installed kW	Total Gross Demand Reduction (kW)	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.2	0.1	0.4	1.4	1.4
100%	Realization Rate Adjustment (kW)	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	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.2	0.1	0.4	1.4	1.4
80%	Net-To-Gross Adjustment (kW)	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	-0.3
	Net Adjusted Demand Reduction (kW)	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.1	0.1	0.3	1.2	1.2
	Planned Net Demand Reduction (kW)	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	106.4	106.4
	Annual % Toward Planned Net Reduction (kW)	0.0%	0.0%	0.0%	0.0%	0.5%	0.5%	0.5%	0.5%	0.6%	0.7%	0.8%	1.1%	1.1%	1.1%
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	0.0	0.1	0.0	N/A	N/A	0.0	0.1	0.1	0.2	0.1	0.1
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	0.0	0.1	0.0	N/A	N/A	0.0	0.0	0.1	0.2	0.1	0.1
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	$789	$267	$280	$350	$394	$359	$307	$307	$296	$296	$296
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	$6.34	$0.89	$0.97	$1.21	$1.36	$1.28	$0.51	$0.42	$0.26	$0.26	$0.26
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	$50,647	$3,024	$3,477	$4,344	$4,887	$5,101	$4,491	$4,363	$3,488	$3,488	$3,488
	Annual $EM&V per $Total	0.0%	0.0%	0.0%	0.0%	5.6%	4.7%	11.1%	9.9%	11.5%	10.3%	9.5%	9.2%	9.2%	9.2%
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	$35	$89	$82	$82	$82	$84	$137	$165	$262	$262	$262

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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B.5 North Carolina Non-residential Lighting Systems & Controls (DSM Phase III) Program 2015-2020

B.5.1 2015-2020 NC Non-residential Lighting Systems & Controls (DSM Phase III) Annual Indicator Tables

NC- Non-Residential Lighting Systems & Controls Program		2015	2016	2017	2018	2019	2020	2015-2020
Category	Indicator	Total	Total[2]	Total	Total	Total	Total	Program Total
O&M ($)	Direct Rebate							
O&M ($)	Direct Implementation							
O&M ($)	Direct EM&V							
O&M ($)	Indirect Other (Administrative)	$3,511	$11,956	$9,940	$14,072	$22,295	$4,923	$66,698
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	
Costs ($)	Total	$122,739	$393,406	$252,605	$249,209	$413,562	$88,425	$1,519,945
Costs ($)	Planned	$357,955	$359,278	$347,298	$403,711	$230,531	$0	$1,698,773
Costs ($)	Variance	-$235,216	$34,128	-$94,693	-$154,502	$183,030	$88,425	-$178,829
	Annual % of Planned	34%	109%	73%	62%	179%	N/A	89%
Participants[1]	Total (Gross)	13	43	23	43	62	17	201
	Planned (Gross)	96	102	104	119	43	0	464
	Variance	-83	-59	-81	-76	19	17	-263
	Annual % of Planned (Gross)	14%	42%	22%	36%	144%	N/A	43%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	564,326	3,333,527	1,738,121	5,172,076	3,030,032	601,830	14,439,912
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	564,326	3,333,527	1,738,121	5,172,076	3,030,032	601,830	14,439,912
70%	Net-To-Gross Adjustment (kWh/yr)	-169,298	-1,000,058	-521,436	-1,551,623	-909,010	-180,549	-4,331,973
	Net Adjusted Savings (kWh/yr)	395,028	2,333,469	1,216,685	3,620,453	2,121,023	421,281	10,107,938
	Planned Net Savings (kWh/yr)	1,752,864	1,619,973	2,220,165	2,661,116	1,213,184	0	9,467,302
	Annual % Toward Planned Net Savings (kWh)	23%	144%	55%	136%	175%	N/A	107%
	Avg. Gross Savings Per Participant (kWh/yr)	43,410	77,524	75,570	120,281	48,871	35,402	71,840
	Avg. Net Savings Per Participant (kWh/yr)	30,387	54,267	52,899	84,197	34,210	24,781	50,288
Installed kW	Total Gross Demand Reduction (kW)	104.6	743.2	334.5	1,109.9	594.3	94.8	2,981.3
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	104.6	743.2	334.5	1,109.9	594.3	94.8	2,981.3
70%	Net-To-Gross Adjustment (kW)	-31.4	-223.0	-100.4	-333.0	-178.3	-28.4	-894.4
	Net Adjusted Demand Reduction (kW)	73.2	520.2	234.2	777.0	416.0	66.4	2,086.9
	Planned Net Demand Reduction (kW)	490.2	274.7	366.7	479.0	218.5	0.0	1,829.1
	Annual % Toward Planned Net Reduction (kW)	15%	189%	64%	162%	190%	N/A	114%
	Avg. Gross Demand Reduction Per Participant (kW)	8.0	17.3	14.5	25.8	10	6	15
	Avg. Net Demand Reduction Per Participant (kW)	5.6	12.1	10.2	18.1	6.7	4	10
Program Performance	Annual $Admin. per Participant (Gross)	$270	$278	$432	$327	$360	$290	$332
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.00	$0.01	$0.00	$0.01	$0.01	$0.00
	Annual $Admin. per kW (Gross)	$34	$16	$30	$12.68	$38	$52	$22
	Annual $EM&V per $Total	6.4%	1.8%	2.6%	2.5%	0.9%	11.4%	2.7%
	Annual $Rebate per Participant (Gross)	$5,260	$7,742	$8,251	$4,310	$5,205	$4,286	3.9%

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

1. A participant is a unique account number.
2. The 2016 total gross deemed savings values reported in this table differs from values in the May 1, 2017 EM&V report, and have been refiled with the Commission. The adjustments totalled -481,137 kWh/year and 26 kW for 2016 reported savings. The adjustments accounts for corrections to STEP Manual version 7.0.0 issued on May 1, 2017, in section 9.1.1. The adjustment was to waste heat factors (WHFe and WHFd) applied to lighting fixtures installed in 2016, where the program participant building HVAC systems was assumed to be heat pump heating and cooling systems, rather than the previous assumption of AC cool and non-electric heat systems. This adjustment was made in response to requests by the North Carolina Public Staff Utilities Commission Re: Docket No. E-22, Sub 545, on October 23, 2017. It is reflected in STEP Manual version 8.0.0 in this EM&V report.

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B.5.2 2020 NC Non-residential Lighting Systems & Controls (DSM Phase III) Monthly Indicator Tables

NC- Non-Residential Lighting Systems & Controls Program		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2015-2020
Category	Indicator	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Total	Program Total
O&M ($)	Direct Rebate	[redacted]													
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$214	$1,325	$2,935	$0	$71	$0	$11	$0	$194	$0	$0	$173	**$4,923**	**$66,698**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	
Costs ($)	Total	$3,746	$23,216	$51,426	$0	$1,249	$0	$189	$0	$4,537	$0	$0	$4,062	**$88,425**	**$1,519,945**
Costs ($)	Planned	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	**$1,698,773**
Costs ($)	Variance	$3,746	$23,216	$51,426	$0	$1,249	$0	$189	$0	$4,537	$0	$0	$4,062	**$88,425**	**-$178,829**
	Annual % of Planned	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**89%**
Participants[1]	Total (Gross)	0	5	12	0	0	0	0	0	0	0	0	0	**17**	**201**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**464**
	Variance	0	5	12	0	0	0	0	0	0	0	0	0	**17**	**-263**
	Annual % of Planned (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**43%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	22,510	242,603	336,717	0	0	0	0	0	0	0	0	0	**601,830**	**14,439,912**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	22,510	242,603	336,717	0	0	0	0	0	0	0	0	0	**601,830**	**14,439,912**
70%	Net-To-Gross Adjustment (kWh/yr)	-6,753	-72,781	-101,015	0	0	0	0	0	0	0	0	0	**-180,549**	**-4,331,973**
	Net Adjusted Savings (kWh/yr)	15,757	169,822	235,702	0	0	0	0	0	0	0	0	0	**421,281**	**10,107,938**
	Planned Net Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**9,467,302**
	Annual % Toward Planned Net Savings (kWh)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**107%**
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	48,521	28,060	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**35,402**	**71,840**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	33,964	19,642	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**24,781**	**50,288**
Installed kW	Total Gross Demand Reduction (kW)	7.2	40.9	46.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**94.8**	**2,981.3**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	7.2	40.9	46.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**94.8**	**2,981.3**
70%	Net-To-Gross Adjustment (kW)	-2.2	-12.3	-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**-28.4**	**-894.4**
	Net Adjusted Demand Reduction (kW)	5.1	28.6	32.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**66.4**	**2,086.9**
	Planned Net Demand Reduction (kW)	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**	**1,829.1**
	Annual % Toward Planned Net Reduction (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**114%**
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	8	4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**6**	**15**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	6	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**4**	**10**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	$308	$263	$263	$267	$267	$268	$268	$279	$279	$279	$290	**$290**	**$332**
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	$0.01	**$0.01**	**$0.00**
	Annual $Admin. per kW (Gross)	$30	$32	$47	$47	$48	$48	$48	$48	$50	$50	$50	$52	**$52**	**$22**
	Annual $EM&V per $Total	0.0%	0.0%	0.6%	0.6%	2.0%	2.0%	2.3%	2.3%	7.3%	7.3%	7.3%	11.4%	**11.4%**	**2.7%**
	Annual $Rebate per Participant (Gross)	N/A	$5,039	$4,286	$4,286	$4,286	$4,286	$4,286	$4,286	$4,286	$4,286	$4,286	$4,286	**$4,286**	**3.9%**

1. A participant is a unique account number.

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B.6 North Carolina Non-residential Lighting Systems & Controls Program (DSM Phase VII) 2020

B.6.1 2020 NC Non-residential Lighting Systems & Controls (DSM Phase VII) Monthly Indicator Tables

NC- Non-Residential Lighting Systems & Controls Program		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2019-2020
Category	Indicator	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Total	Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$270	$270	$270	$435	$487	$458	$677	$270	$248	$209	$3,799	$266	**$7,657**	**$7,657**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	
Costs ($)	Total	$4,723	$4,723	$4,723	$7,627	$8,526	$8,022	$11,866	$4,723	$5,809	$4,891	$89,015	$6,236	**$160,883**	**$160,883**
Costs ($)	Planned	$15,377	$15,377	$15,377	$15,377	$15,377	$15,377	$15,377	$15,377	$15,377	$15,377	$15,377	$15,377	**$184,522**	**$184,522**
Costs ($)	Variance	-$10,654	-$10,654	-$10,654	-$7,750	-$6,851	-$7,355	-$3,511	-$10,654	-$9,567	-$10,486	$73,638	-$9,141	**-$23,639**	**-$23,639**
	Annual % of Planned	3%	5%	8%	12%	16%	21%	27%	30%	33%	36%	84%	87%	**87%**	**87%**
Participants[1]	Total (Gross)	0	0	0	1	1	3	1	0	0	0	3	0	**9**	**9**
	Planned (Gross)	3	3	3	3	3	3	3	3	3	3	3	7	**40**	**40**
	Variance	-3	-3	-3	-2	-2	0	-2	-3	-3	-3	0	-7	**-31**	**-31**
	Annual % of Planned (Gross)	0%	0%	0%	3%	5%	13%	15%	15%	15%	15%	23%	23%	**23%**	**23%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	18,225	16,907	8,125	58,095	0	0	0	10,461	0	**111,813**	**111,813**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	18,225	16,907	8,125	58,095	0	0	0	10,461	0	**111,813**	**111,813**
70%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	-5,468	-5,072	-2,438	-17,428	0	0	0	-3,138	0	**-33,544**	**-33,544**
	Net Adjusted Savings (kWh/yr)	0	0	0	12,758	11,835	5,688	40,666	0	0	0	7,323	0	**78,269**	**78,269**
	Planned Net Savings (kWh/yr)	71,261	71,261	71,261	71,261	71,261	71,261	71,261	71,261	71,261	71,261	71,261	71,261	**855,138**	**855,138**
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	1%	3%	4%	8%	8%	8%	8%	9%	9%	**9%**	**9%**
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	18,225	16,907	2,708	58,095	N/A	N/A	N/A	3,487	N/A	**12,424**	**12,424**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	12,758	11,835	1,896	40,666	N/A	N/A	N/A	2,441	N/A	**8,697**	**8,697**
Installed kW	Total Gross Demand Reduction (kW)	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	3.4	0.0	**5.3**	**5.3**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	3.4	0.0	**5.3**	**5.3**
70%	Net-To-Gross Adjustment (kW)	0.0	0.0	0.0	0.0	0.0	-0.6	0.0	0.0	0.0	0.0	-1.0	0.0	**-1.6**	**-1.6**
	Net Adjusted Demand Reduction (kW)	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	2.4	0.0	**3.7**	**3.7**
	Planned Net Demand Reduction (kW)	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	**177.3**	**177.3**
	Annual % Toward Planned Net Reduction (kW)	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.8%	0.8%	0.8%	0.8%	2.1%	2.1%	**2.1%**	**2.1%**
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	0.0	0.0	0.6	0.0	N/A	N/A	N/A	1.1	N/A	**0.6**	**0.6**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	0.0	0.0	0.4	0.0	N/A	N/A	N/A	0.8	N/A	**0.4**	**0.4**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	$1,244	$865	$438	$478	$523	$564	$599	$821	$851	**$851**	**$851**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	$0.07	$0.05	$0.05	$0.03	$0.03	$0.03	$0.04	$0.07	$0.07	**$0.07**	**$0.07**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	$1,148	$1,503	$1,644	$1,774	$1,883	$1,385	$1,434	**$1,434**	**$1,434**
	Annual $EM&V per $Total	0.0%	0.0%	0.0%	0.0%	4.0%	3.2%	5.6%	5.1%	6.4%	5.9%	2.5%	3.3%	**3.3%**	**3.3%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	$2,738	$2,299	$1,438	$1,968	$1,968	$1,968	$1,968	$10,189	$10,189	**$10,189**	**$10,189**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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B.7 North Carolina Non-residential Small Business Improvement Program 2017-2020

B.7.1 2017-2020 NC Non-residential Small Business Improvement Annual Indicator Tables

NC- Small Business Improvement Program Category	Indicator	2017 Total	2018 Total	2019 Total	2020 Total	2017-2020 Program Total
O&M ($)	Direct Rebate					
O&M ($)	Direct Implementation					
O&M ($)	Direct EM&V					
O&M ($)	Indirect Other (Administrative)	$3,870	$10,216	$7,730	$6,786	$28,602
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0
Costs ($)	Total	$98,352	$180,923	$156,020	$125,394	$560,690
Costs ($)	Planned	$350,873	$420,342	$498,047	$556,969	$1,826,231
Costs ($)	Variance	-$252,521	-$239,419	-$342,027	-$431,575	-$1,265,541
	Annual % of Planned	28.0%	43.0%	31.3%	22.5%	30.7%
Participants[1]	Total (Gross)	7	36	27	17	87
	Planned (Gross)	42	53	62	72	229
	Variance	-35	-17	-35	-55	-142
	Annual % of Planned (Gross)	16.7%	67.9%	43.5%	23.6%	38.0%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	166,507	1,000,716	695,521	380,315	2,243,059
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	166,507	1,000,716	695,521	380,315	2,243,059
93%	Net-To-Gross Adjustment (kWh/yr)	-11,655	-70,050	-48,686	-26,622	-157,014
	Net Adjusted Savings (kWh/yr)	154,851	930,665	646,835	353,693	2,086,045
	Planned Net Savings (kWh/yr)	288,232	384,890	653,054	1,976,344	3,302,520
	Annual % Toward Planned Net Savings (kWh)	53.7%	241.8%	99.0%	17.9%	63.2%
	Avg. Gross Savings Per Participant (kWh/yr)	23787	27798	25760	22371	25782
	Avg. Net Savings Per Participant (kWh/yr)	22122	25852	23957	20805	23978
Installed kW	Total Gross Demand Reduction (kW)	32.6	219.1	140.2	50.5	442.4
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	32.6	219.1	140.2	50.5	442.4
93%	Net-To-Gross Adjustment (kW)	-2.3	-15.3	-9.8	-3.5	-31.0
	Net Adjusted Demand Reduction (kW)	30.3	203.8	130.4	46.9	411.5
	Planned Net Demand Reduction (kW)	43.7	76.0	129.0	370.5	619.2
	Annual % Toward Planned Net Reduction (kW)	69.4%	268.2%	101.1%	12.7%	66.5%
	Avg. Gross Demand Reduction Per Participant (kW)	4.7	6.1	5.2	3.0	5.1
	Avg. Net Demand Reduction Per Participant (kW)	4.3	5.7	4.8	2.8	4.7
Program Performance	Annual $Admin. per Participant (Gross)	$553	$284	$286	$399	$329
	Annual $Admin. per kWh/year (Gross)	$0.02	$0.01	$0.01	$0.02	$0.01
	Annual $Admin. per kW (Gross)	$119	$47	$55	$134	$65
	Annual $EM&V per $Total	7.4%	3.9%	3.1%	5.8%	4.7%
	Annual $Rebate per Participant (Gross)	$3,778	$2,791	$3,050	$3,089	$3,009

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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B.7.2 2020 NC Non-residential Small Business Improvement Monthly Indicator Tables

NC- Small Business Improvement Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2017-2020 Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$1,331	$664	$971	$770	$374	$333	$575	$667	$284	$334	$208	$274	**$6,786**	**$28,602**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	**$0**
Costs ($)	Total	$23,321	$11,637	$17,015	$13,499	$6,561	$5,826	$10,073	$11,682	$6,651	$7,816	$4,883	$6,431	**$125,394**	**$560,690**
Costs ($)	Planned	$46,414	$46,414	$46,414	$46,414	$46,414	$46,414	$46,414	$46,414	$46,414	$46,414	$46,414	$46,414	**$556,969**	**$1,826,231**
Costs ($)	Variance	-$23,094	-$34,777	-$29,399	-$32,915	-$39,853	-$40,588	-$36,341	-$34,732	-$39,763	-$38,599	-$41,531	-$39,983	**-$431,575**	**-$1,265,541**
	Annual % of Planned	4.2%	6.3%	9.3%	11.8%	12.9%	14.0%	15.8%	17.9%	19.1%	20.5%	21.4%	22.5%	**22.5%**	**30.7%**
Participants[1]	Total (Gross)	5	1	3	1	0	1	4	1	0	1	0	0	**17**	**87**
	Planned (Gross)	6	6	6	6	6	6	6	6	6	6	6	6	**72**	**229**
	Variance	-1	-5	-3	-5	-6	-5	-2	-5	-6	-5	-6	-6	**-55**	**-142**
	Annual % of Planned (Gross)	6.9%	8.3%	12.5%	13.9%	13.9%	15.3%	20.8%	22.2%	22.2%	23.6%	23.6%	23.6%	**23.6%**	**38.0%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	136,904	10,172	84,460	66,092	0	5,196	15,902	50,699	0	10,890	0	0	**380,315**	**2,243,059**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	136,904	10,172	84,460	66,092	0	5,196	15,902	50,699	0	10,890	0	0	**380,315**	**2,243,059**
93%	Net-To-Gross Adjustment (kWh/yr)	-9,583	-712	-5,912	-4,626	0	-364	-1,113	-3,549	0	-762	0	0	**-26,622**	**-157,014**
	Net Adjusted Savings (kWh/yr)	127,320	9,460	78,548	61,466	0	4,832	14,789	47,150	0	10,127	0	0	**353,693**	**2,086,045**
	Planned Net Savings (kWh/yr)	164,695	164,695	164,695	164,695	164,695	164,695	164,695	164,695	164,695	164,695	164,695	164,695	**1,976,344**	**3,302,520**
	Annual % Toward Planned Net Savings (kWh)	6.4%	6.9%	10.9%	14.0%	14.0%	14.2%	15.0%	17.4%	17.4%	17.9%	17.9%	17.9%	**17.9%**	**63.2%**
	Avg. Gross Savings Per Participant (kWh/yr)	27381	10172	28153	66092	N/A	5196	3976	50699	N/A	10890	N/A	N/A	**22371**	**25782**
	Avg. Net Savings Per Participant (kWh/yr)	25464	9460	26183	61466	N/A	4832	3697	47150	N/A	10127	N/A	N/A	**20805**	**23978**
Installed kW	Total Gross Demand Reduction (kW)	21.1	2.1	14.1	0.0	0.0	0.7	2.3	7.8	0.0	2.4	0.0	0.0	**50.5**	**442.4**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	21.1	2.1	14.1	0.0	0.0	0.7	2.3	7.8	0.0	2.4	0.0	0.0	**50.5**	**442.4**
93%	Net-To-Gross Adjustment (kW)	-1.5	-0.1	-1.0	0.0	0.0	0.0	-0.2	-0.5	0.0	-0.2	0.0	0.0	**-3.5**	**-31.0**
	Net Adjusted Demand Reduction (kW)	19.7	2.0	13.1	0.0	0.0	0.6	2.1	7.2	0.0	2.3	0.0	0.0	**46.9**	**411.5**
	Planned Net Demand Reduction (kW)	30.9	30.9	30.9	30.9	30.9	30.9	30.9	30.9	30.9	30.9	30.9	30.9	**370.5**	**619.2**
	Annual % Toward Planned Net Reduction (kW)	5.3%	5.8%	9.4%	9.4%	9.4%	9.5%	10.1%	12.1%	12.1%	12.7%	12.7%	12.7%	**12.7%**	**66.5%**
	Avg. Gross Demand Reduction Per Participant (kW)	4.2	2.1	4.7	0.0	N/A	0.7	0.6	7.8	N/A	2.4	N/A	N/A	**3.0**	**5.1**
	Avg. Net Demand Reduction Per Participant (kW)	3.9	2.0	4.4	0.0	N/A	0.6	0.5	7.2	N/A	2.3	N/A	N/A	**2.8**	**4.7**
Program Performance	Annual $Admin. per Participant (Gross)	$266	$333	$330	$374	$411	$404	$335	$355	$373	$371	$383	$399	**$399**	**$329**
	Annual $Admin. per kWh/year (Gross)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0.02**	**$0.01**
	Annual $Admin. per kW (Gross)	$63	$86	$80	$100	$110	$117	$125	$118	$124	$125	$129	$134	**$134**	**$65**
	Annual $EM&V per $Total	0.0%	0.0%	2.3%	1.8%	3.8%	3.5%	4.6%	4.1%	5.4%	5.1%	4.9%	5.8%	**5.8%**	**4.7%**
	Annual $Rebate per Participant (Gross)	$4,305	$3,812	$3,574	$4,017	$4,017	$3,724	$2,935	$3,134	$3,134	$3,089	$3,089	$3,089	**$3,089**	**$3,009**

1. A participant is a unique account number.

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B.8 North Carolina Non-residential Prescriptive Program 2018-2020

B.8.1 2018-2020 NC Non-residential Prescriptive Annual Indicator Tables

NC- Nonresidential Prescriptive Program Category	Indicator	2018 Total	2019 Total	2020 Total	2018-2020 Program Total
O&M ($)	Direct Rebate				
O&M ($)	Direct Implementation				
O&M ($)	Direct EM&V				
O&M ($)	Indirect Other (Administrative)	$10,172	$10,038	$19,470	$39,681
Capital ($)	Direct Implementation		$0		
Costs ($)	Total	$180,139	$189,380	$372,698	$742,217
Costs ($)	Planned	$400,909	$406,529	$398,979	$1,206,417
Costs ($)	Variance	-$220,770	-$217,149	-$26,281	-$464,200
	Annual % of Planned	45%	47%	93%	62%
Participants[1]	Total (Gross)	21	36	19	76
	Planned (Gross)	29	29	29	87
	Variance	-8	7	-10	-11
	Annual % of Planned (Gross)	72%	124%	66%	87%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	221,779	227,788	1,671,465	2,121,031
	Realization Rate weighted by Measure	100%	100%	45%	
	Realization Rate Adjustment (kWh/yr)	0	0	-922,714	-922,714
	Realization Rate Adjusted Savings (kWh/yr)	221,779	227,788	748,751	1,198,317
	Net-To-Gross Weighted by Measure	85%	85%	90%	
	Net-To-Gross Adjustment (kWh/yr)	-33,267	-34,168	-81,918	-149,353
	Net Adjusted Savings (kWh/yr)	188,512	193,620	666,832	1,048,964
	Planned Net Savings (kWh/yr)	1,822,814	113,588	316,636	2,253,038
	Annual % Toward Planned Net Savings (kWh)	10%	170%	211%	47%
	Avg. Gross Savings Per Participant (kWh/yr)	10,561	6,327	87,972	27,908
	Avg. Net Savings Per Participant (kWh/yr)	8,977	5,378	35,096	13,802
Installed kW	Total Gross Demand Reduction (kW)	25.3	30.4	179.6	235.2
	Realization Rate weighted by Measure	100%	100%	74%	
	Realization Rate Adjustment (kW)	0.0	0.0	-46.0	-46.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	25.3	30.4	133.5	189.2
	Net-To-Gross Weighted by Measure	85%	85%	86%	
	Net-To-Gross Adjustment (kW)	-3.8	-4.6	-21.3	-29.7
	Net Adjusted Demand Reduction (kW)	21.5	25.8	112.2	159.5
	Planned Net Demand Reduction (kW)	292.0	46.5	126.2	464.7
	Annual % Toward Planned Net Reduction (kW)	7.4%	55.5%	88.9%	34.3%
	Avg. Gross Demand Reduction Per Participant (kW)	1.2	0.8	9.5	3.1
	Avg. Net Demand Reduction Per Participant (kW)	1.0	0.7	5.9	2.1
Program Performance	Annual $Admin. per Participant (Gross)	$484	$279	$1,025	$522
	Annual $Admin. per kWh/year (Gross)	$0.05	$0.04	$0.01	$0.02
	Annual $Admin. per kW (Gross)	$403	$330	$108	$169
	Annual $EM&V per $Total	5%	3.8%	2.3%	3%
	Annual $Rebate per Participant (Gross)	$3,919	$2,208	$13,717	$5,558

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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B.8.2 2020 NC Non-residential Prescriptive Monthly Indicator Tables

NC- Nonresidential Prescriptive Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2018-2020 Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$48	$899	$1,603	$445	$1,205	$685	$859	$8,385	$768	$1,000	$2,844	$728	**$19,470**	**$39,681**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		
Costs ($)	Total	$842	$15,747	$28,093	$7,803	$21,117	$12,006	$15,052	$146,904	$17,995	$23,428	$66,647	$17,063	**$372,698**	**$742,217**
Costs ($)	Planned	$33,248	$33,248	$33,248	$33,248	$33,248	$33,248	$33,248	$33,248	$33,248	$33,248	$33,248	$33,248	**$398,979**	**$1,206,417**
Costs ($)	Variance	-$32,406	-$17,501	-$5,155	-$25,445	-$12,131	-$21,242	-$18,196	$113,656	-$15,254	-$9,821	$33,399	-$16,185	**-$26,281**	**-$464,200**
	Annual % of Planned	0%	4%	11%	13%	18%	21%	25%	62%	67%	72%	89%	93%	**93%**	**62%**
Participants[1]	Total (Gross)	0	2	7	0	3	1	1	0	1	0	0	4	**19**	**76**
	Planned (Gross)	2	2	2	2	2	2	2	2	2	2	2	7	**29**	**87**
	Variance	-2	0	5	-2	1	-1	-1	-2	-1	-2	-2	-3	**-10**	**-11**
	Annual % of Planned (Gross)	0%	7%	31%	31%	41%	45%	48%	48%	52%	52%	52%	66%	**66%**	**87%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	5,978	15,059	0	21,333	1,907	4,786	1,006,020	5,346	142,854	454,754	13,429	**1,671,465**	**2,121,031**
	Realization Rate weighted by Measure	100%	94%	96%	100%	85%	66%	82%	43%	77%	42%	42%	117%	**45%**	
	Realization Rate Adjustment (kWh/yr)	0	-342	-618	0	-3,111	-655	-871	-573,535	-1,224	-82,677	-261,962	2,283	**-922,714**	**-922,714**
	Realization Rate Adjusted Savings (kWh/yr)	0	5,636	14,441	0	18,222	1,252	3,915	432,484	4,122	60,176	192,791	15,711	**748,751**	**1,198,317**
	Net-To-Gross Weighted by Measure	100%	75%	75%	100%	84%	85%	80%	91%	81%	91%	91%	76%	**90%**	
	Net-To-Gross Adjustment (kWh/yr)	0	-1,382	-3,535	0	-3,105	-234	-860	-43,546	-883	-5,787	-18,816	-3,771	**-81,918**	**-149,353**
	Net Adjusted Savings (kWh/yr)	0	4,254	10,906	0	15,117	1,018	3,055	388,939	3,239	54,390	173,975	11,941	**666,832**	**1,048,964**
	Planned Net Savings (kWh/yr)	26,386	26,386	26,386	26,386	26,386	26,386	26,386	26,386	26,386	26,386	26,386	26,386	**316,636**	**2,253,038**
	Annual % Toward Planned Net Savings (kWh)	0%	1%	5%	5%	10%	10%	11%	134%	135%	152%	207%	211%	**211%**	**47%**
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	2,989	2,151	N/A	7,111	1,907	4,786	N/A	5,346	N/A	N/A	3,357	**87,972**	**27,908**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	2,127	1,558	N/A	5,039	1,018	3,055	N/A	3,239	N/A	N/A	2,985	**35,096**	**13,802**
Installed kW	Total Gross Demand Reduction (kW)	0.0	1.9	5.5	0.0	7.3	1.9	2.1	100.5	2.2	12.6	41.9	3.6	**179.6**	**235.2**
	Realization Rate weighted by Measure	100%	87%	88%	100%	90%	88%	87%	73%	85%	69%	70%	99%	**74%**	
	Realization Rate Adjustment (kW)	0.0	-0.2	-0.6	0.0	-0.7	-0.2	-0.3	-27.3	-0.3	-3.9	-12.4	0.0	**-46.0**	**-46.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	1.7	4.8	0.0	6.6	1.7	1.9	73.2	1.9	8.7	29.6	3.5	**133.5**	**189.2**
	Net-To-Gross Weighted by Measure	100%	75%	76%	100%	79%	76%	76%	87%	76%	88%	88%	76%	**86%**	
	Net-To-Gross Adjustment (kW)	0.0	0	-1	0	-1	0	0	-11	0	-1	-4	-1	**-21.3**	**-29.7**
	Net Adjusted Demand Reduction (kW)	0.0	1	4	0	5	1	1	62	1	8	25	3	**112.2**	**159.5**
	Planned Net Demand Reduction (kW)	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	**126.2**	**464.7**
	Annual % Toward Planned Net Reduction (kW)	0.0%	1.0%	3.9%	3.9%	8.0%	9.0%	10.1%	59.4%	60.6%	66.6%	86.8%	88.9%	**88.9%**	**34.3%**
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	1.0	0.8	N/A	2.4	1.9	2.1	N/A	2.2	N/A	N/A	0.9	**9.5**	**3.1**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	0.6	0.5	N/A	1.7	1.3	1.4	N/A	1.5	N/A	N/A	0.7	**5.9**	**2.1**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	$473	$283	$333	$350	$376	$410	$1,009	$993	$1,060	$1,249	$1,025	**$1,025**	**$522**
	Annual $Admin. per kWh/year (Gross)	N/A	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0.01**	**$0.02**
	Annual $Admin. per kW (Gross)	N/A	$491	$345	$406	$286	$295	$307	$119	$123	$119	$107	$108	**$108**	**$169**
	Annual $EM&V per $Total	0.0%	0.0%	4.5%	3.8%	4.3%	3.7%	5.2%	2.1%	2.6%	2.4%	2.0%	2.3%	**2.3%**	**3%**
	Annual $Rebate per Participant (Gross)	N/A	$2,203	$2,189	$2,189	$2,702	$2,851	$3,037	$12,558	$12,075	$13,222	$16,979	$13,717	**$13,717**	**$5,558**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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B.9 North Carolina Non-residential Heating and Cooling Efficiency Program (DSM VII) 2020

B.9.1 2020 NC Non-residential Heating and Cooling Efficiency (DSM Phase VII) Monthly Indicator Tables

NC- Non-Residential Heating and Cooling Efficiency Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total
O&M ($)	Direct Rebate													
O&M ($)	Direct Implementation													
O&M ($)	Direct EM&V													
O&M ($)	Indirect Other (Administrative)	$124	$124	$124	$124	$167	$124	$197	$124	$155	$92	$92	$150	**$1,598**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Costs ($)	Total	$2,178	$2,178	$2,178	$2,178	$2,920	$2,178	$3,460	$2,178	$3,622	$2,145	$2,145	$3,513	**$30,873**
Costs ($)	Planned	$10,171	$10,171	$10,171	$10,171	$10,171	$10,171	$10,171	$10,171	$10,171	$10,171	$10,171	$10,171	**$122,049**
Costs ($)	Variance	-$7,993	-$7,993	-$7,993	-$7,993	-$7,251	-$7,993	-$6,711	-$7,993	-$6,549	-$8,026	-$8,026	-$6,658	**-$91,176**
	Annual % of Planned	2%	4%	5%	7%	10%	11%	14%	16%	19%	21%	22%	25%	**25%**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned (Gross)	3	3	3	3	3	3	3	3	3	3	3	9	**42**
	Variance	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-9	**-42**
	Annual % of Planned (Gross)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
70%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
	Planned Net Savings (kWh/yr)	45,475	45,475	45,475	45,475	45,475	45,475	45,475	45,475	45,475	45,475	45,475	45,475	**545,699**
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**
100%	Realization Rate Adjustment (kW)	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**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**
70%	Net-To-Gross Adjustment (kW)	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**
	Net Adjusted Demand Reduction (kW)	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**
	Planned Net Demand Reduction (kW)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	**129.7**
	Annual % Toward Planned Net Reduction (kW)	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%**
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**
	Annual $EM&V per $Total	0.0%	0.0%	0.0%	0.0%	5.8%	4.9%	10.9%	9.7%	14.3%	13.1%	12.0%	14.9%	**14.9%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

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B.10 North Carolina Non-residential Office Program 2020

B.10.1 2020 NC Non-residential Office Monthly Indicator Tables

NC- Non-residential Office Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate	[redacted]													
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Costs ($)	Total	$1,051	$1,051	$1,051	$1,051	$3,278	$1,098	$3,888	$1,051	$2,914	$1,051	$1,051	$2,608	$21,142	$21,142
Costs ($)	Planned	$6,038	$6,038	$6,038	$6,038	$6,038	$6,038	$6,038	$6,038	$6,038	$6,038	$6,038	$6,038	$72,457	$72,457
Costs ($)	Variance	-$4,987	-$4,987	-$4,987	-$4,987	-$2,760	-$4,940	-$2,150	-$4,987	-$3,124	-$4,987	-$4,987	-$3,430	-$51,316	-$51,316
	Annual % of Planned	1%	3%	4%	6%	10%	12%	17%	19%	23%	24%	26%	29%	29%	29%
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	5	5	5
	Variance	0	0	0	0	0	0	0	0	0	0	0	-5	-5	-5
	Annual % of Planned (Gross)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Planned Net Savings (kWh/yr)	25,853	25,853	25,853	25,853	25,853	25,853	25,853	25,853	25,853	25,853	25,853	25,853	310,240	310,240
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Installed kW	Total Gross Demand Reduction (kW)	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	0.0
100%	Realization Rate Adjustment (kW)	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	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	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	0.0
90%	Net-To-Gross Adjustment (kW)	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	0.0
	Net Adjusted Demand Reduction (kW)	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	0.0
	Planned Net Demand Reduction (kW)	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	28.9	28.9
	Annual % Toward Planned Net Reduction (kW)	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%	0.0%
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Annual $EM&V per $Total	0.0%	0.0%	0.0%	0.0%	29.4%	25.6%	40.0%	36.9%	41.7%	39.2%	37.0%	39.8%	39.8%	39.8%
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.11 North Carolina Non-residential Small Manufacturing Program (DSM Phase VII) 2020

B.11.1 2020 NC Non-residential Small Manufacturing (DSM Phase VII) Monthly Indicator Tables

NC- Non-residential Small Manufacturing Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 Apr	2020 May	2020 June	2020 Jul	2020 Aug	2020 Sept	2020 Oct	2020 Nov	2020 Dec	2020 Total	2019-2020 Program Total
O&M ($)	Direct Rebate	[redacted]													
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$67	$67	$67	$67	$147	$70	$148	$67	$114	$49	$49	$75	**$987**	**$987**
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0**	
Costs ($)	Total	$1,171	$1,171	$1,171	$1,171	$2,573	$1,221	$2,597	$1,171	$2,683	$1,153	$1,153	$1,752	**$18,987**	**$18,987**
Costs ($)	Planned	$6,494	$6,494	$6,494	$6,494	$6,494	$6,494	$6,494	$6,494	$6,494	$6,494	$6,494	$6,494	**$77,923**	**$77,923**
Costs ($)	Variance	-$5,323	-$5,323	-$5,323	-$5,323	-$3,921	-$5,273	-$3,897	-$5,323	-$3,811	-$5,340	-$5,340	-$4,741	**-$58,937**	**-$58,937**
	Annual % of Planned	2%	3%	5%	6%	9%	11%	14%	16%	19%	21%	22%	24%	**24%**	**24%**
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Planned (Gross)	0	0	0	0	0	0	0	0	0	0	0	4	**4**	**4**
	Variance	0	0	0	0	0	0	0	0	0	0	0	-4	**-4**	**-4**
	Annual % of Planned (Gross)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**	**0%**
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
90%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Planned Net Savings (kWh/yr)	16,769	16,769	16,769	16,769	16,769	16,769	16,769	16,769	16,769	16,769	16,769	16,769	**201,227**	**201,227**
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**	**0%**
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
Installed kW	Total Gross Demand Reduction (kW)	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**	**0.0**
100%	Realization Rate Adjustment (kW)	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**	**0.0**
	Realization Rate Adjusted Gross Demand Reduction (kW)	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**	**0.0**
90%	Net-To-Gross Adjustment (kW)	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**	**0.0**
	Net Adjusted Demand Reduction (kW)	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**	**0.0**
	Planned Net Demand Reduction (kW)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	**43.1**	**43.1**
	Annual % Toward Planned Net Reduction (kW)	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%**	**0.0%**
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
Program Performance	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	Annual $EM&V per $Total	0.0%	0.0%	0.0%	0.0%	17.8%	15.3%	23.4%	21.2%	27.2%	25.2%	23.5%	24.4%	**24.4%**	**24.4%**
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.12 North Carolina Non-residential Window Film Program (DSM Phase VII) 2020

B.12.1 2020 NC Non-residential Window Film (DSM Phase VII) Monthly Indicator Tables

NC- Non-Residential Window Film Program		2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2019-2020
Category	Indicator	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Total	Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$66	$66	$66	$66	$93	$66	$108	$127	$131	$50	$49	$81	$968	$968
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Costs ($)	Total	$1,156	$1,156	$1,156	$1,156	$1,627	$1,156	$1,887	$2,221	$3,065	$1,181	$1,139	$1,903	$18,804	$18,804
Costs ($)	Planned	$2,357	$2,357	$2,357	$2,357	$2,357	$2,357	$2,357	$2,357	$2,357	$2,357	$2,357	$2,357	$28,279	$28,279
Costs ($)	Variance	-$1,200	-$1,200	-$1,200	-$1,200	-$730	-$1,200	-$469	-$136	$708	-$1,175	-$1,218	-$453	-$9,475	-$9,475
	Annual % of Planned	4%	8%	12%	16%	22%	26%	33%	41%	52%	56%	60%	66%	66%	66%
Participants[1]	Total (Gross)	0	0	0	0	0	0	0	1	0	0	0	0	1	1
	Total Square Feet	0	0	0	0	0	0	0	1,004	0	0	0	0	1,004	1,004
	Planned (Gross)	673	673	673	673	673	673	673	673	673	673	673	676	8,079	8,079
	Variance	-673	-673	-673	-673	-673	-673	-673	331	-673	-673	-673	-676	-7,075	-7,075
	Annual % of Planned (Gross)	0%	0%	0%	0%	0%	0%	0%	12%	12%	12%	12%	12%	12%	12%
Square Feet	Total Square Feet	0	0	0	0	0	0	0	1,004	0	0	0	0	1,004	1004
	North Facing	0	0	0	0	0	0	0	254	0	0	0	0	254	254
	East Facing	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	West Facing	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	South Facing	0	0	0	0	0	0	0	750	0	0	0	0	750	750
Installed kWh/year	Total Gross Energy Savings (kWh/yr)	0	0	0	0	0	0	0	17,430	0	0	0	0	17,430	17,430
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	17,430	0	0	0	0	17,430	17,430
80%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	0	0	0	0	-3,486	0	0	0	0	-3,486	-3,486
	Net Adjusted Savings (kWh/yr)	0	0	0	0	0	0	0	13,944	0	0	0	0	13,944	13,944
	Planned Net Savings (kWh/yr)	10,218	10,218	10,218	10,218	10,218	10,218	10,218	10,218	10,218	10,218	10,218	10,218	122,615	122,615
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	0%	0%	0%	0%	11%	11%	11%	11%	11%	11%	11%
	Avg. Gross Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17,429.7	N/A	N/A	N/A	N/A	17,429.7	17,429.7
	Avg. Gross Savings Per Square Foot(kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17	N/A	N/A	N/A	N/A	17	17
	Avg. Net Savings Per Participant (kWh/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	13944	N/A	N/A	N/A	N/A	13,944	13944
	Avg. net Savings Per Square Foot(kW/yr)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14	N/A	N/A	N/A	N/A	14	14
Installed kW	Total Gross Demand Reduction (kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	4.7	4.7
100%	Realization Rate Adjustment (kW)	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	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	4.7	4.7
80%	Net-To-Gross Adjustment (kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.9	0.0	0.0	0.0	0.0	-0.9	-0.9
	Net Adjusted Demand Reduction (kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	3.7	3.7
	Planned Net Demand Reduction (kW)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	29.9	29.9
	Annual % Toward Planned Net Reduction (kW)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%
	Avg. Gross Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.7	N/A	N/A	N/A	N/A	4.7	4.7
	Avg. Gross Demand Reduction Per Square Foot (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	N/A	N/A	N/A	N/A	0.0	0.0
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.7	N/A	N/A	N/A	N/A	3.7	3.7
	Avg. Net Demand Reduction Per Participant (kW)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	N/A	N/A	N/A	N/A	0.0	0.0
Program	Annual $Admin. per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$657	$788	$838	$887	$968	$968	$968
Performance	Annual $Admin. per kWh/year (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$0.04	$0.05	$0.05	$0.05	$0.06	$0.06	$0.06
	Annual $Admin. per kW (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$141	$169	$180	$191	$208	$208	$208
	Annual $EM&V per $Total	0.0%	0.0%	0.0%	0.0%	6.7%	5.6%	11.9%	9.6%	14.7%	13.6%	12.7%	15.3%	15.3%	15.3%
	Annual $Rebate per Participant (Gross)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	$1,004	$1,004	$1,004	$1,004	$1,004	$1,004	$1,004

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.13 North Carolina Residential Air Conditioner Cycling Program 2011-2020

B.13.1 2011-2020 NC Residential Air Conditioner Cycling Program Annual Indicator Tables

NC - Residential AC Cycling Program Category	Indicator	2011 Total	2012 Total	2013 Total	2014 Total	2015 Total	2016 Total	2017 Total	2018 Total	2019 Total	2020 Total	2011-2020 Program Total
O&M ($)	Direct Rebate											
O&M ($)	Direct Implementation											
O&M ($)	Direct EM&V											
O&M ($)	Indirect Other (Administrative)	$20,344	$16,948	$28,964	$13,341	$6,734	$7,646	$9,349	$13,272	$9,722	$11,806	$138,125
Capital ($)	Direct Implementation											
Costs ($)	Total	$269,383	$696,052	$440,722	$441,315	$315,550	$279,602	$238,761	$239,609	$244,525	$223,870	$3,389,390
Costs ($)	Planned	$403,525	$800,702	$662,709	$609,423	$649,694	$549,799	$584,160	$453,453	$484,114	$497,320	$5,694,898
Costs ($)	Variance	-$134,142	-$104,650	-$221,987	-$168,108	-$334,143	-$270,197	-$345,400	-$213,844	-$239,589	-$273,449	-$2,305,509
	Cum. % toward planned total	67%	87%	67%	72%	49%	51%	41%	53%	51%	45%	60%
Participants	Total (Cumulative @ End of Month)	1,003	2,853	4,144	5,260	5,631	5,863	5,891	5,969	6,247	6,279	6,279
	Removals (Uninstalled) / Deactivations	-1	-260	-608	-1,082	-1,711	-2,143	-2,285	-2,901	-3,186	-3,489	-3,489
	Opt-outs	9	1	1	1	4	13	1	1	1	1	4
	Adjusted Participants (Cum.)	993	2,592	3,535	4,177	3,916	3,707	3,605	3,067	3,060	2,789	2,786
0%	Net to gross adjustment (Cum.)	0	0	0	0	0	0	0	0	0	0	0
96%	In Service Rate Adjustment (Cum.)	-40	104	-141	-167	0	0	0	0	0	0	0
	Net Participation (Cum.)	953	2,489	3,394	4,010	3,916	3,707	3,605	3,067	3,061	2,790	2,786
	Planned (Cum.)	1,230	3,198	5,090	6,094	4,840	3,920	5,963	4,733	4,235	4,235	4,235
	Variance (Cum.)	-277	-720	-1,696	-2,084	-924	1,943	-2,358	-1,666	-1,174	-1,445	-1,449
	Cum % toward planned total (Net basis)	77.5%	77.5%	66.7%	65.8%	80.9%	94.6%	60%	65%	72%	66%	65.8%
	Removal (Uninstalled) / Deactivation Rate	-0.02%	-0.8%	-1.03%	-1.06%	-1.30%	-0.94%	-0.33%	-1.58%	-1.28%	-1.64%	-1.07%
	Average % Opt-outs (rate)	0.9%	0.03%	0.02%	0.02%	0.09%	0.36%	0.03%	0.03%	0.03%	0.03%	0.16%
	Realization Rate	111%	99%	78%	93%	100%	100%	100%	100%	100%	100%	98%
	Connected load	2,084	11,398	12,957	15,572	15,654	14,187	13,419	12,069	11,479	11,267	12,623
	Ex-Ante kW estimates	1.00	1.09	0.95	0.78	0.71	0.97	0.68	0.63	0.63	0.63	0.79
	Connected Load per Participant	2.19	4.58	3.82	3.88	4.00	3.83	3.72	3.94	3.75	4.04	3.77
Installed kW	Peak Shaving Potential kW - Gross Participants	1,103.3	3,138.3	4,558.4	4,076.5	3,998.0	5,687.1	4,005.9	3,744.9	3,910.6	3,980.1	3,980.1
	Removed (Uninstalled) / Deactivated Peak Shaving Potentia	-1.0	-286.0	-668.8	-838.6	-1,214.8	-2,078.7	-1,553.8	-1,820.1	-1,994.4	-2,211.6	-2,211.6
	Less Opt-outs (kW)	10.0	1.0	0.8	0.6	2.5	13.0	0.8	0.7	0.7	0.6	2.8
	Dispatchable Peak Shaving Potential - Total kW	1,092	2,851	3,889	2,924	2,781	3,595	2,451	1,925	1,916	1,769	1,766
0%	Less Free Ridership Factor (Cum.)	0	0	0	0	0	0	0	0	0	0	0
96%	In Service Rate Adjustment (Cum.)	-44	114	-156	-117	0	0	0	0	0	0	0
	Adjustment for Realization Rate	115	16	-815	-211	0	0	0	0	0	0	0
	Net Demand (Cum.)	1,164	2,721	2,918	2,597	2,781	3,595	2,451	1,925	1,916	1,769	1,769
	Planned Demand (Cum.)	1,168	3,032	4,830	5,814	4,840	4,157	5,392	3,220	2,664	2,664	2,664
	Cum. % toward planned total (Net basis)	100%	90%	60%	45%	57%	86%	45%	60%	72%	66%	66%
	Dispatchable Peak Shaving Potential kW per Participant	1.22	1.09	0.86	0.65	0.71	0.97	0.68	0.63	0.63	0.63	0.63
Program Performance	Cum. $Admin. per Cum. Participant	$20	$13	$16	$15	$15	$16	$18	$20	$20	$22	$21
	Cum. $Admin. per Cum. Gross kW	$18	$12	$15	$21	$22	$17	$26	$31	$32	$35	$35
	Cum. $EM&V per Cum. $Total	1%	1%	1%	1%	1%	2%	2%	2%	2%	2%	2%
	Cum. $Rebate per Cum. Participant	$1	$36	$55	$74	$96	$116	$140	$158	$170	$188	$188

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.13.2 2020 NC Residential Air Conditioner Cycling Program Monthly Indicator Tables

NC - Residential AC Cycling Program Category	Indicator	2020 Jan	2020 Feb	2020 Mar	2020 April	2020 May	2020 Jun	2020 Jul	2020 Aug	2020 Sep	2020 Oct	2020 Nov	2020 Dec	2020 Total	2011-2020 Program Total
O&M ($)	Direct Rebate														
O&M ($)	Direct Implementation														
O&M ($)	Direct EM&V														
O&M ($)	Indirect Other (Administrative)	$412	$417	$585	$491	$517	$2,277	$2,333	$2,274	$1,705	$340	$96	$359	**$11,806**	**$138,125**
Capital ($)	Direct Implementation														
Costs ($)	Total	$8,120	$8,954	$9,118	$8,606	$9,066	$40,040	$40,947	$39,842	$40,256	$8,185	$2,257	$8,481	**$223,870**	**$3,389,390**
Costs ($)	Planned	$22,408	$22,408	$22,408	$22,408	$22,408	$79,514	$79,514	$79,514	$79,514	$22,408	$22,408	$22,408	**$497,320**	**$5,694,898**
Costs ($)	Variance	-$14,288	-$13,454	-$13,290	-$13,803	-$13,343	-$39,474	-$38,567	-$39,672	-$39,257	-$14,223	-$20,151	-$13,927	**-$273,449**	**-$2,305,509**
	Cum. % toward planned total	2%	3%	5%	7%	9%	17%	25%	33%	41%	43%	43%	45%	**45%**	**60%**
Participants	Total (Cumulative @ End of Month)	6,264	6,266	6,267	6,267	6,267	6,270	6,271	6,272	6,276	6,278	6,278	6,279	**6,279**	**6,279**
	Removals (Uninstalled) / Deactivations	-3,201	-3,229	-3,243	-3,260	-3,268	-3,282	-3,324	-3,371	-3,412	-3,432	-3,455	-3,489	**-3,489**	**-3,489**
	Opt-outs													**1**	**4**
	Adjusted Participants (Cum.)	3,063	3,037	3,024	3,007	2,999	2,988	2,947	2,901	2,864	2,846	2,823	2,790	**2,789**	**2,786**
0%	Net to gross adjustment (Cum.)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
96%	In Service Rate Adjustment (Cum.)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Net Participation (Cum.)	3,063	3,037	3,024	3,007	2,999	2,988	2,947	2,901	2,864	2,846	2,823	2,790	**2,790**	**2,786**
	Planned (Cum.)	4,235	4,235	4,235	4,235	4,235	4,235	4,235	4,235	4,235	4,235	4,235	4,235	**4,235**	**4,235**
	Variance (Cum.)	-1,172	-1,198	-1,211	-1,228	-1,236	-1,247	-1,288	-1,334	-1,371	-1,389	-1,412	-1,445	**-1,445**	**-1,449**
	Cum % toward planned total (Net basis)	72.3%	71.7%	71.4%	71.0%	70.8%	70.6%	69.6%	68.5%	67.6%	67.2%	66.7%	65.9%	**66%**	**65.8%**
	Removal (Uninstalled) / Deactivation Rate	-0.49%	-1.42%	-1.39%	-1.03%	-0.83%	-0.74%	-1.90%	-3.07%	-3.07%	-2.14%	-1.52%	-2.04%	**-1.64%**	**-1.07%**
	Average % Opt-outs (rate)	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	0.03%	**0.03%**	**0.16%**
	Realization Rate	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	**100%**	**98%**
	Connected load	11,605	11,560	11,516	11,504	11,465	11,365	11,241	11,127	11,079	11,018	10,900	10,826	**11,267**	**12,623**
	Ex-Ante kW estimates	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	**0.63**	**0.79**
	Connected Load per Participant	3.79	3.81	3.81	3.83	3.82	3.80	3.81	3.84	3.87	3.87	3.86	3.88	**4.04**	**3.77**
Installed kW	Peak Shaving Potential kW - Gross Participants	3,970.6	3,971.9	3,972.5	3,972.5	3,972.5	3,974.4	3,975.1	3,975.7	3,978.2	3,979.5	3,979.5	3,980.1	**3,980.1**	**3,980.1**
	Removed (Uninstalled) / Deactivated Peak Shaving Potentia	-2,029.1	-2,046.8	-2,055.7	-2,066.5	-2,071.5	-2,080.4	-2,107.0	-2,136.8	-2,162.8	-2,175.5	-2,190.1	-2,211.6	**-2,211.6**	**-2,211.6**
	Less Opt-outs (kW)	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	**0.6**	**2.8**
	Dispatchable Peak Shaving Potential - Total kW	1,942	1,925	1,917	1,906	1,901	1,894	1,868	1,839	1,815	1,804	1,789	1,769	**1,769**	**1,766**
0%	Less Free Ridership Factor (Cum.)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
96%	In Service Rate Adjustment (Cum.)	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Adjustment for Realization Rate	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0**
	Net Demand (Cum.)	1,942	1,925	1,917	1,906	1,901	1,894	1,868	1,839	1,815	1,804	1,789	1,769	**1,769**	**1,769**
	Planned Demand (Cum.)	2,664	2,664	2,664	2,664	2,664	2,664	2,664	2,664	2,664	2,664	2,664	2,664	**2,664**	**2,664**
	Cum. % toward planned total (Net basis)	73%	72%	72%	72%	71%	71%	70%	69%	68%	68%	67%	66%	**66%**	**66%**
	Dispatchable Peak Shaving Potential kW per Participant	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	**0.63**	**0.63**
Program Performance	Cum. $Admin. per Cum. Participant	$20	$20	$20	$20	$21	$21	$21	$22	$22	$22	$22	$22	**$22**	**$21**
	Cum. $Admin. per Cum. Gross kW	$32	$32	$32	$32	$32	$33	$34	$34	$35	$35	$35	$35	**$35**	**$35**
	Cum. $EM&V per Cum. $Total	2%	2%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%	**2%**	**2%**
	Cum. $Rebate per Cum. Participant	$170	$170	$170	$170	$170	$175	$179	$184	$189	$189	$188	$188	**$188**	**$188**

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.14 North Carolina Residential Lighting Program 2011-2012

NC- Residential Lighting Program Category	Indicator	2011 Total	2012 Total	2011-2012 Program Total
O&M ($)	Direct Rebate			
O&M ($)	Direct Implementation			
O&M ($)	Direct EM&V			
O&M ($)	Indirect Other (Administrative)	$5,847	$1,066	$6,913
Costs ($)	Total	$77,419	$9,705	$87,124
Costs ($)	Planned	$125,612	$20,779	$146,391
Costs ($)	Variance	-$48,193	-$11,074	-$59,267
	Cum. % toward planned total	61.6%	46.7%	59.5%
Participants	Total bulbs (Gross)	37,120	0	37,120
	Planned (Gross)	127,975		127,975
	Variance	-90,855	0	-90,855
	Cum % toward planned total (Gross)	29.0%		29.0%
Installed kWh/year	Total (Gross)	1,882,829	0	1,882,829
84%	Realization Rate Adjustment	-301,253	0	-301,253
	Adjusted Gross Savings	1,581,577	0	1,581,577
65%	Net-To-Gross Adjustment	-553,552	0	-553,552
	Net Adjusted Savings	1,028,025	0	1,028,025
	Planned (Net)	3,585,903		3,585,903
	Cum. % toward planned total (Net)	28.7%		28.7%
	Avg. per Bulb (Net)	28		28
Installed kW	Total (Gross)	205	0	205
84%	Realization Rate Adjustment	-33	0	-33
	Adjusted Gross Demand	172	0	172
65%	Net-To-Gross Adjustment	-60	0	-60
	Net Adjusted Demand	112	0	112
	Planned (Net)	298		298
	Cum. % toward planned total (Net)	37.5%		37.5%
	Avg. per Bulb (Net)	0.003		0.003
Program Performance	Cum. $Admin. per Cum. Bulb (Gross)	$0.2		$0.2
	Cum. $Admin. per Cum. kWh (Gross)	$0.00		$0.00
	Cum. $Admin. per Cum. kW (Gross)	$29		$34
	Cum. $EM&V per Cum Total Costs ($)	3.7%	17.4%	5.2%
	Cum. $Rebate per Cum. Bulb (Gross)	$1		$1

1. Program closed end of 2012.

DNV

B.15 North Carolina Residential Low-income Program 2011-2015

NC- Residential Low-income Program Category	Indicator	2011* Total	2012 Total	2013 Total	2014 Total	2015 Total	2011-2015 Program Total
O&M ($)	Direct Rebate						
O&M ($)	Direct Implementation						
O&M ($)	Direct EM&V						
O&M ($)	Indirect Other (Administrative)	$20,601	$22,730	$15,525	$9,060	$24,980	$92,895
Costs ($)	Total	$260,176	$193,154	$164,591	$175,888	$800,616	$1,594,425
Costs ($)	Planned	$296,979	$540,333	$229,609	$195,488	$1,041,930	$2,304,338
Costs ($)	Variance	-$36,803	-$347,179	-$65,018	-$19,599	-$241,314	-$709,913
	Cum. % toward planned total	87.6%	35.7%	71.7%	90.0%	76.8%	69.2%
	Audits	207	156	120	120	647	1,250
Participants	Total (Gross)	207	156	120	120	653	1,256
	Planned (Gross)	325	519	33	132	600	1,609
	Variance	-118	-363	87	-12	53	-353
	Cum % toward planned total (Gross)	63.7%	30.1%	363.6%	90.9%	108.8%	78.1%
Installed kWh/year	Total Gross Deemed Savings	200,471	183,162	106,895	102,596	537,503	1,130,626
62%	Realization Rate Adjustment	-106,249	-97,076	-26,724	-38,986	-204,251	-473,286
	Adjusted Gross Savings	94,221	86,086	80,171	63,609	333,252	657,340
93.6%	Net-To-Gross Adjustment	-6,030	-5,510	-5,131	-4,071	-21,328	-42,070
	Net Adjusted Savings	88,191	80,576	75,040	59,538	311,924	615,270
	Planned Savings (Net)	134,347	195,653	85,480	106,694	1,170,600	1,692,774
	Cum. % Toward Planned Savings (Net)	65.6%	41.2%	87.8%	55.8%	26.6%	36.3%
	Avg. Savings Per Participant (Net)	426	517	625	496	478	490
Installed kW	Total Gross Deemed Demand	61	36	27	23	128	275
62%	Realization Rate Adjustment	-32.3	-19.2	-6.7	-8.7	-48.5	-115
	Adjusted Gross Demand	29	17	20	14	79	159
93.6%	Net-To-Gross Adjustment	-2	-1	-1	-1	-5	-10
	Net Adjusted Demand	27	16	19	13	74	149
	Planned Demand (Net)	23	38	16	16	55	148
	Cum. % Toward Planned Demand (Net)	116.6%	41.9%	117.4%	83.2%	135.7%	100.9%
	Avg. Demand Per Participant (Net)	0.1	0.1	0.2	0.1	0.1	0.1
Program Performance	Cum. $Admin. per Cum. Participant (Gross)	$100	$146	$129	$76	$38	$74
	Cum. $Admin. per Cum. kWh (Gross)	$0.10	$0.12	$0.15	$0.09	$0.05	$0.08
	Cum. $Admin. per Cum. kW (Gross)	$338	$627	$580	$395	$196	$338
	Cum. $EM&V per Cum Total Costs ($)	2.3%	2.7%	4.7%	3.0%	0.4%	1.7%
	Cum. $Rebate per Cum. Participant (Gross)	$1,067	$989	$1,011	$1,043	$1,090	$1,062

1. Program closed end of 2015.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.16 North Carolina Residential Heat Pump Tune-up Program 2014-2017

NC - Residential Heat Pump Tune-Up Program Category	Indicator	2014 Total	2015 Total	2016 Total	2017 Total	2014-2017 Program Total
O&M ($)	Direct Rebate					
O&M ($)	Direct Implementation					
O&M ($)	Direct EM&V					
O&M ($)	Indirect Other (Administrative)	$3,186	$15,540	$6,321	$2,018	$27,065
Costs ($)	Total	$99,944	$467,762	$207,995	$51,288	$826,988
Costs ($)	Planned	$395,676	$439,770	$461,312	$54,112	$1,350,870
Costs ($)	Variance	-$295,732	$27,992	-$253,318	-$2,825	-$523,882
	Annual % of Planned	25%	106%	45%	95%	61%
Participants[1]	Total (Gross)	581	3,307	1,274	125	5,287
	Planned (Gross)	2,777	2,777	1,542	0	7,096
	Variance	-2,196	530	-268	125	-1,809
	Annual % of Planned (Gross)	21%	119%	83%		75%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	154,857	843,691	322,679	32,050	1,353,277
99%	Realization Rate Adjustment (kWh/yr)	-1,239	-6,750	-2,581	-256	-10,826
	Realization Rate Adjusted Savings (kWh/yr)	153,618	836,942	320,098	31,793	1,342,451
90%	Net-To-Gross Adjustment (kWh/yr)	-15,362	-83,694	-32,010	-3,179	-134,245
	Net Adjusted Savings (kWh/yr)	138,256	753,248	288,088	28,614	1,208,206
	Planned Net Savings (kWh/yr)	2,116,074	2,116,074	174,326	0	4,406,474
	Annual % Toward Planned Net Savings (kWh)	7%	36%	165%		27%
	Avg. Gross Savings Per Participant (kWh/yr)	267	255	253	256	256
	Avg. Net Savings Per Participant (kWh/yr)	238	228	226	229	229
Installed kW	Total Gross Demand Reduction (kW)	80	625	241	25	971
99%	Realization Rate Adjustment (kW)	-1	-5	-2	0	-8
	Realization Rate Adjusted Gross Demand Reduction(kW)	79	620	239	25	963
90%	Net-To-Gross Adjustment (kW)	-8	-62	-24	-2	-96
	Net Adjusted Demand Reduction (kW)	71	558	215	22	867
	Planned Net Demand Reduction (kW)	639	639	58	0	1,336
	Annual % Toward Planned Net Reduction (kW)	11%	87%	368%		65%
	Avg. Gross Demand Reduction Per Participant (kW)	0.14	0.19	0.19	0.20	0.18
	Avg. Net Demand Reduction Per Participant (kW)	0.12	0.17	0.17	0.18	0.16
Program Performance	Annual $Admin. per Participant (Gross)	$5	$5	$5	$16	$5
	Annual $Admin. per kWh/year (Gross)	$0.02	$0.02	$0.02	$0.06	$0.02
	Annual $Admin. per kW (Gross)	$40	$25	$26	$81	$28
	Annual $EM&V per $Total	6%	1%	3%	8%	3%
	Annual $Rebate per Participant (Gross)	$90	$90	$89	$90	$90

1. Program closed end of 2017.
2. A participant is a single unit that has been installed and rebated. A unique account number may represent multiple participants if that account had multiple units installed and rebated.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.17 North Carolina Residential Heat Pump Upgrade Program 2014-2017

NC - Residential Heat Pump Upgrade Program Category	Indicator	2014 Total	2015 Total	2016 Total	2017 Total	2014-2017 Program Total
O&M ($)	Direct Rebate	[redacted]				
O&M ($)	Direct Implementation					
O&M ($)	Direct EM&V					
O&M ($)	Indirect Other (Administrative)	$1,847	$7,845	$8,235	$2,527	$20,454
Costs ($)	Total	$47,447	$269,195	$270,955	$64,223	$651,821
Costs ($)	Planned	$350,500	$383,960	$424,079	$33,581	$1,192,119
Costs ($)	Variance	-$303,052	-$114,764	-$153,124	$30,643	-$540,298
	Annual % of Planned	14%	70%	64%	191%	55%
Participants[1]	Total (Gross)	44	597	665	118	1,424
	Planned (Gross)	1,200	1,200	252	0	2,652
	Variance	-1,156	-603	413	118	-1,228
	Annual % of Planned (Gross)	4%	50%	264%		54%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	72,449	282,170	317,574	63,092	735,286
78%	Realization Rate Adjustment (kWh/yr)	4,854	-63,206	-71,137	-14,133	-143,621
	Realization Rate Adjusted Savings (kWh/yr)	77,303	218,964	246,438	48,960	591,665
45%	Net-To-Gross Adjustment (kWh/yr)	-11,595	-120,211	-135,294	-26,879	-293,980
	Net Adjusted Savings (kWh/yr)	65,708	98,753	111,143	22,081	297,685
	Planned Net Savings (kWh/yr)	1,038,000	1,038,000	49,858	0	2,125,858
	Annual % Toward Planned Net Savings (kWh)	6%	10%	223%		14%
	Avg. Gross Savings Per Participant (kWh/yr)	1,647	473	478	535	516
	Avg. Net Savings Per Participant (kWh/yr)	1,493	165	167	187	209
Installed kW	Total Gross Demand Reduction (kW)	19	58	69	14	160
89%	Realization Rate Adjustment (kW)	-3	-6	-8	-2	-19
	Realization Rate Adjusted Gross Demand Reduction(kW)	16	51	61	13	141
45%	Net-To-Gross Adjustment (kW)	-2	-28	-33	-7	-71
	Net Adjusted Demand Reduction (kW)	14	23	27	6	70
	Planned Net Demand Reduction (kW)	348	348	18	0	714
	Annual % Toward Planned Net Reduction (kW)	4%	7%	153%		10%
	Avg. Gross Demand Reduction Per Participant (kW)	0.44	0.10	0.10	0.12	0.11
	Avg. Net Demand Reduction Per Participant (kW)	0.31	0.04	0.04	0.05	0.05
Program Performance	Annual $Admin. per Participant (Gross)	$42	$13	$12	$21	$14
	Annual $Admin. per kWh/year (Gross)	$0.03	$0.03	$0.03	$0.04	$0.03
	Annual $Admin. per kW (Gross)	$96	$136	$120	$174	$127.89
	Annual $EM&V per $Total	34%	11%	7%	14%	12%
	Annual $Rebate per Participant (Gross)	$223	$212	$222	$225	$218

1. Program closed end of 2017.
2. A participant is a single unit that has been installed and rebated. A unique account number may represent multiple participants if that account had multiple units installed and rebated.
3. Realization Rate Adjustment occurred in 2015. Prior to 2012-2014 kWh realization rate was 106.7%, kW realization rate was 83.1%, and Net to Gross rate was 85%. From the start of 2015 forward kWh realization rate was 78%, kW realization rate was 89%, and Net to Gross rate was 45%.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.18 North Carolina Residential Duct Sealing Program 2014-2017

NC - Residential Duct Sealing Program Category	Indicator	2014 Total	2015 Total	2016 Total	2017 Total	2014-2017 ProgramTotal
O&M ($)	Direct Rebate					
O&M ($)	Direct Implementation					
O&M ($)	Direct EM&V					
O&M ($)	Indirect Other (Administrative)	$951	$3,700	$4,363	$690	$9,704
Costs ($)	Total	$21,105	$102,470	$143,554	$17,533	$284,662
Costs ($)	Planned	$115,655	$110,723	$118,580	$18,338	$363,296
Costs ($)	Variance	-$94,550	-$8,253	$24,974	-$805	-$78,634
	Annual % of Planned	18%	93%	121%	96%	78%
Participants[1]	Total (Gross)	0	323	217	14	554
	Planned (Gross)	346	346	101	0	793
	Variance	-346	-23	116	14	-239
	Annual % of Planned (Gross)	0%	93%	215%		70%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	0	201,495	129,136	8,003	338,633
49%	Realization Rate Adjustment (kWh/yr)	0	-101,956	-65,343	-4,049	-171,348
	Realization Rate Adjusted Savings (kWh/yr)	0	99,538	63,793	3,953	167,285
80%	Net-To-Gross Adjustment (kWh/yr)	0	-19,908	-12,759	-791	-33,457
	Net Adjusted Savings (kWh/yr)	0	79,631	51,034	3,163	133,828
	Planned Net Savings (kWh/yr)	181,304	181,304	12,013	0	374,621
	Annual % Toward Planned Net Savings (kWh)	0%	44%	425%		36%
	Avg. Gross Savings Per Participant (kWh/yr)		624	595	572	611
	Avg. Net Savings Per Participant (kWh/yr)		247	235	226	242
Installed kW	Total Gross Demand Reduction (kW)	0	148	95	6	249
43%	Realization Rate Adjustment (kW)	0	-85	-55	-3	-143
	Realization Rate Adjusted Gross Demand Reduction(kW)	0	63	40	2	106
80%	Net-To-Gross Adjustment (kW)	0	-13	-8	0	-21
	Net Adjusted Demand Reduction (kW)	0	50	32	2	85
	Planned Net Demand Reduction (kW)	114	114	4	0	232
	Annual % Toward Planned Net Reduction (kW)	0%	44%	802%		36%
	Avg. Gross Demand Reduction Per Participant (kW)		0.46	0.44	0.42	0.45
	Avg. Net Demand Reduction Per Participant (kW)		0.16	0.15	0.14	0.15
Program Performance	Annual $Admin. per Participant (Gross)		$11	$20	$49	$18
	Annual $Admin. per kWh/year (Gross)		$0.02	$0.03	$0.09	$0.03
	Annual $Admin. per kW (Gross)		$25	$46	$117	$39
	Annual $EM&V per $Total	41%	5%	5%	25%	9%
	Annual $Rebate per Participant (Gross)		$125	$125	$125	$125

1. Program closed end of 2017.
2. A participant is a single unit that has been installed and rebated. A unique account number may represent multiple participants if that account had multiple units installed and rebated.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.19 North Carolina Residential Home Energy Check-up Program 2014-2017

NC - Residential Home Energy Check-Up Program		2014	2015	2016	2017	2014-2017
Category	Indicator	Total	Total	Total	Total[2]	Program Total
O&M ($)	Direct Rebate					
O&M ($)	Direct Implementation					
O&M ($)	Direct EM&V					
O&M ($)	Indirect Other (Administrative)	$654	$11,982	$658	$1,086	$14,380
Costs ($)	Total	$14,345	$351,877	$21,660	$27,588	$415,470
Costs ($)	Planned	$86,513	$92,939	$98,144	$60,535	$338,131
Costs ($)	Variance	-$72,168	$258,938	-$76,484	-$32,946	$77,339
	Annual % of Planned	17%	379%	44%	46%	123%
Participants[1]	Total (Gross)	0	996	4	49	1,049
	Planned (Gross)	160	160	881	0	1,201
	Variance	-160	836	-877	49	-152
	Annual % of Planned (Gross)	0%	623%	0%		87%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	0	593,172	1,495	35,051	629,718
154%	Realization Rate Adjustment (kWh/yr)	0	317,347	800	18,752	336,899
	Realization Rate Adjusted Savings (kWh/yr)	0	910,520	2,294	53,803	966,617
82%	Net-To-Gross Adjustment (kWh/yr)	0	-164,804	-415	-9,738	-174,958
	Net Adjusted Savings (kWh/yr)	0	745,716	1,879	44,065	791,659
	Planned Net Savings (kWh/yr)	162,720	162,720	308,536	0	633,976
	Annual % Toward Planned Net Savings (kWh)	0%	458%	1%		125%
	Avg. Gross Savings Per Participant (kWh/yr)		596	374	715	600
	Avg. Net Savings Per Participant (kWh/yr)		749	470	899	755
Installed kW	Total Gross Demand Reduction (kW)	0	52	0	2	55
154%	Realization Rate Adjustment (kW)	0	28	0	1	29
	Realization Rate Adjusted Gross Demand Reduction(kW)	0	80	0	4	84
82%	Net-To-Gross Adjustment (kW)	0	-14	0	-1	-15
	Net Adjusted Demand Reduction (kW)	0	65	0	3	69
	Planned Net Demand Reduction (kW)	29	29	67	0	125
	Annual % Toward Planned Net Reduction (kW)	0%	227%	1%		55%
	Avg. Gross Demand Reduction Per Participant (kW)		0.05	0.04	0.05	0.05
	Avg. Net Demand Reduction Per Participant (kW)		0.07	0.05	0.06	0.07
Program Performance	Annual $Admin. per Participant (Gross)		$12	$165	$22	$14
	Annual $Admin. per kWh/year (Gross)		$0.02	$0.44	$0.03	$0.02
	Annual $Admin. per kW (Gross)		$230	$3,983	$443	$263
	Annual $EM&V per $Total	24.8%	2.3%	50.0%	20.2%	6.7%
	Annual $Rebate per Participant (Gross)		$221	$200	$193	$220

1. Program closed end of 2017.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

2. A participant is a single unit that has been installed and rebated. A unique account number may represent multiple participants if that account had multiple units installed and rebated.
3. The 2017 total gross deemed savings values reported in this table include adjustments of -2.1 kWh/year and -0.00044 kW made to the January 2017 reported savings. The adjustments accounts for corrections to STEP Manual version 7.0.0 issued on May 1, 2017. Specifically, the correction was in section 2.1.5 for "Low-Flow Showerhead" measures, to the "ΔT" variable, which is a measure of the change in temperature of the water used for shower and temperature entering the house (ΔT = Tshower – Tin house). STEP Manual 7.0.0 reported the value as 44.9°F, but has been corrected to 44.1°F. This correction is reflected in STEP Manual version 8.0.0 in this EM&V report.
4. Realization Rate Adjustment occurred in 2015. 2012-2014 Net to Gross Adjustment was 80.0%. From 2015 forward Net to Gross Adjustment was 82% and Realization Rate as adjusted to 154%.

DNV

B.20 North Carolina Residential Retail LED Program 2017-2018

NC- Residential LED Program Category	Indicator	2017 Total[2]	2018 Total	2019 Total	2017-2019 Program Total
O&M ($)	Direct Rebate				
O&M ($)	Direct Implementation				
O&M ($)	Direct EM&V				
O&M ($)	Indirect Other (Administrative)	$26,160	$73,173	$11,032	$110,366
Costs ($)	Total	$664,838	$1,295,830	$190,393	$2,151,061
Costs ($)	Planned	$1,088,516	$1,171,147	$92,757	$2,352,420
Costs ($)	Variance	-$423,678	$124,683	$97,636	-$201,359
	Annual % of Planned	61.1%	110.6%	205.3%	91.4%
Participants[1]	Total (Gross)	70,261	264,236	0	334,497
	Planned (Gross)	165,000	220,000	0	385,000
	Variance	-94,739	44,236	0	-50,503
	Annual % of Planned (Gross)	42.6%	120.1%	N/A	86.9%
Purchased kWh/year	Total Gross Energy Savings (kWh/yr)	2,215,073	5,918,263	0	8,133,336
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	2,215,073	5,918,263	0	8,133,336
85%	Net-To-Gross Adjustment (kWh/yr)	-332,261	-887,739	0	-1,220,000
	Net Adjusted Savings (kWh/yr)	1,882,812	5,030,524	0	6,913,336
	Planned Net Savings (kWh/yr)	2,250,789	3,874,754	0	6,125,543
	Annual % Toward Planned Net Savings (kWh)	83.7%	129.8%	N/A	112.9%
	Avg. Gross Savings Per Participant (kWh/yr)	32	22	N/A	24
	Avg. Net Savings Per Participant (kWh/yr)	27	19	N/A	21
Purchased kW	Total Gross Demand Reduction (kW)	242.4	606.0	0.0	848.5
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	242.4	606.0	0.0	848.5
85%	Net-To-Gross Adjustment (kW)	-36.4	-90.9	0.0	-127.3
	Net Adjusted Demand Reduction (kW)	206.1	515.1	0.0	721.2
	Planned Net Demand Reduction (kW)	331.1	433.0	0.0	764.1
	Annual % Toward Planned Net Reduction (kW)	62.2%	119.0%	N/A	94.4%
	Avg. Gross Demand Reduction Per Participant (kW)	0.0	0.0	N/A	0.0
	Avg. Net Demand Reduction Per Participant (kW)	0.0	0.0	N/A	0.0
Program Performance	Annual $Admin. per Participant (Gross)	$0.37	$0.28	N/A	$0.33
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.01	N/A	$0.01
	Annual $Admin. per kW (Gross)	$108	$121	N/A	$130
	Annual $EM&V per $Total	6.8%	6.6%	17.7%	7.7%
	Annual $Rebate per Participant (Gross)	$1.87	$2.68	N/A	$2.76

1. Program closed end of 2019.
2. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.21 North Carolina Commercial Lighting Program 2011-2014

NC- Commercial Lighting Program Category	Indicator	2011 Total	2012 Total	2013 Total	2011-2014 Program Total
O&M ($)	Direct Rebate				
O&M ($)	Direct Implementation				
O&M ($)	Direct EM&V				
O&M ($)	Indirect Other (Administrative)	$16,336	$7,585	$5,209	$35,758
Capital ($)		$0	$0	$0	$0
Costs ($)	Total	$216,305	$85,178	$51,201	$485,059
Costs ($)	Planned	$294,641	$546,511	$206,515	$1,251,849
Costs ($)	Variance	-$78,336	-$461,332	-$155,314	-$766,790
	Cum. % toward planned total	73.4%	15.6%	24.8%	38.7%
Participants	Total (Gross)	1	25	0	47
	Planned (Gross)	2	9	0	15
	Variance	-1	16	0	32
	Cum % toward planned total (Gross)	50.0%	277.8%		313.3%
Installed kWh/year	Total Gross Deemed Savings	1,787,400	409,819	0	3,092,876
178.0%	Realization Rate Adjustment [1]	1,376,298	320,111	0	2,394,058
	Adjusted Gross Savings	3,163,699	729,930	0	5,486,934
50.0%	Net-To-Gross Adjustment	-1,581,849	-364,965	0	-2,743,467
	Net Adjusted Savings	1,581,849	364,965	0	2,743,467
	Planned Savings (Net)	515,922	2,172,078	0	2,825,967
	Cum. % Toward Planned Savings (Net)	306.6%	16.8%		97.1%
	Avg. Savings Per Participant (Net)	1,581,849	14,599		58,372
Installed kW	Total Gross Deemed Demand	682	110	0	1,027
98.0%	Realization Rate Adjustment	-13.6	-2	0	-21
	Adjusted Gross Demand	668	108	0	1,006
50.0%	Net-To-Gross Adjustment	-334	-54	0	-503
	Net Adjusted Demand	334	54	0	503
	Planned Demand (Net)	62	275	0	337
	Cum. % Toward Planned Demand (Net)	538.7%	19.6%		149.3%
	Avg. Demand Per Participant (Net)	334.0	2.2		10.7
Program Performance	Cum. $Admin. per Cum. Participant (Gross)	$16,336	$303		$761
	Cum. $Admin. per Cum. kWh (Gross)	$0.01	$0.02		$0.01
	Cum. $Admin. per Cum. kW (Gross)	$23.96	$69.04		$34.82
	Cum. $EM&V per Cum Total Costs ($)	4.62%	2.21%	0.00%	6.5%
	Cum. $Rebate per Cum. Participant (Gross)	$158,605	$1,726		$5,465

1. Program closed end of 2014.
2. Realization rate is 177% January 1st through May 30th, 179% June 1st through September 30th, and 177% October 1st through December 31st.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.22 North Carolina Commercial HVAC Program 2011-2014

NC- Commercial HVAC Program Category	Indicator	2011 Total	2012 Total	2013 Total	2011-2014 Program Total
O&M ($)	Direct Rebate				
O&M ($)	Direct Implementation				
O&M ($)	Direct EM&V				
O&M ($)	Indirect Other (Administrative)	$1,140	$7,812	$5,177	$18,219
Capital ($)		$0	$0	$0	$0
Costs ($)	Total	$15,093	$73,854	$50,910	$220,106
Costs ($)	Planned	$55,015	$103,728	$97,195	$357,665
Costs ($)	Variance	-$39,922	-$29,875	-$46,285	-$137,559
	Cum. % toward planned total	27.4%	71.2%	52.4%	61.5%
Participants	Total (Gross)	0	4	0	4
	Planned (Gross)	2	11	0	18
	Variance	-2	-7	0	-14
	Cum % toward planned total (Gross)	0.0%	36.4%		22.2%
Installed kWh/year	Total Gross Deemed Savings	0	388,155	0	388,155
63.3%	Realization Rate Adjustment [1]	0	-142,453	0	-142,453
	Adjusted Gross Savings	0	245,702	0	245,702
45.0%	Net-To-Gross Adjustment	0	-135,136	0	-135,136
	Net Adjusted Savings	0	110,566	0	110,566
	Planned Savings (Net)	58,153	299,847	0	525,666
	Cum. % Toward Planned Savings (Net)	0.0%	36.9%		21.0%
	Avg. Savings Per Participant (Net)		27,641		27,641
Installed kW	Total Gross Deemed Demand	0	73	0	73
97.0%	Realization Rate Adjustment	0.0	-2	0	-2
	Adjusted Gross Demand	0	71	0	71
45.0%	Net-To-Gross Adjustment	0	-39	0	-39
	Net Adjusted Demand	0	32	0	32
	Planned Demand (Net)	22	122	0	144
	Cum. % Toward Planned Demand (Net)	0.0%	26.2%		22.2%
	Avg. Demand Per Participant (Net)		8		8
Program Performance	Cum. $Admin. per Cum. Participant (Gross)		$1,953		$4,555
	Cum. $Admin. per Cum. kWh (Gross)		$0.02		$0.05
	Cum. $Admin. per Cum. kW (Gross)		$107		$249
	Cum. $EM&V per Cum Total Costs ($)	81.6%	17.5%	0.0%	20.1%
	Cum. $Rebate per Cum. Participant (Gross)		$6,323		$6,323

1. Program closed end of 2014.
2. Realization rate is 63% January 1st through May 30th, 35% June 1st through September 30th, and 63% October 1st through December 31st.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.23 North Carolina Non-residential Duct Testing and Sealing Program 2014-2017

NC - Non-Residential Duct Sealing and Testing Program Category	Indicator	2014 Total	2015 Total	2016 Total[2]	2017 Total	2014-2017 Program Total
O&M ($)	Direct Rebate					
O&M ($)	Direct Implementation					
O&M ($)	Direct EM&V					
O&M ($)	Indirect Other (Administrative)	$8,090	$28,601	$11,032	$5,524	$53,248
Costs ($)	Total	$253,157	$746,482	$362,980	$140,392	$1,503,010
Costs ($)	Planned	$367,630	$381,014	$400,363	$71,633	$1,220,640
Costs ($)	Variance	-$114,474	$365,468	-$37,383	$68,758	$282,370
	Annual % of Planned	69%	196%	91%	196%	123%
Participants[1]	Total (Gross)	60	152	33	5	250
	Planned (Gross)	30	30	39	0	99
	Variance	30	122	-6	5	149
	Annual % of Planned (Gross)	200%	507%	85%		253%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	595,895	2,400,813	550,135	184,255	3,731,098
87%	Realization Rate Adjustment (kWh/yr)	-77,466	-312,106	-71,518	-23,953	-485,043
	Realization Rate Adjusted Savings (kWh/yr)	518,428	2,088,707	478,618	160,302	3,246,055
97%	Net-To-Gross Adjustment (kWh/yr)	-14,516	-58,484	-13,401	-4,488	-90,890
	Net Adjusted Savings (kWh/yr)	503,912	2,030,224	465,216	155,813	3,155,166
	Planned Net Savings (kWh/yr)	989,610	989,610	230,534	0	2,209,754
	Annual % Toward Planned Net Savings (kWh)	51%	205%	202%		143%
	Avg. Gross Savings Per Participant (kWh/yr)	9,932	15,795	16,671	36,851	14,924
	Avg. Net Savings Per Participant (kWh/yr)	8,399	13,357	14,097	31,163	12,621
Installed kW	Total Gross Demand Reduction (kW)	65	292	160	54	570
94%	Realization Rate Adjustment (kW)	-4	-17	-9	-3	-33
	Realization Rate Adjusted Gross Demand Reduction (kW)	61	275	150	51	537
97%	Net-To-Gross Adjustment (kW)	-2	-8	-4	-1	-15
	Net Adjusted Demand Reduction (kW)	60	267	146	49	522
	Planned Net Demand Reduction (kW)	221	221	95	0	537
	Annual % Toward Planned Net Reduction (kW)	27%	121%	154%		97%
	Avg. Gross Demand Reduction Per Participant (kW)	1.08	1.92	4.84	10.77	2.28
	Avg. Net Demand Reduction Per Participant (kW)	0.99	1.76	4.43	9.86	2.09
Program Performance	Annual $Admin. per Participant (Gross)	$135	$188	$334	$1,105	$213
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.01	$0.02	$0.03	$0.01
	Annual $Admin. per kW (Gross)	$124	$98	$69	$103	$93.42
	Annual $EM&V per $Total	9.3%	0.7%	2.0%	3.7%	2.8%
	Annual $Rebate per Participant (Gross)	$3,015	$4,265	$9,551	$23,994	$5,058

1. Program closed end of 2017.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

2. A participant is the first instance of unique account number that has been installed and rebated. A unique account number that may have multiple approved rebates in two or more different months is counted as a single participant.
3. The 2016 total gross deemed savings values reported in this table differs from values in the May 1, 2017 EM&V report, and have been refiled with the Commission. An adjustments totaled -83,464 kWh/year and 0 kW for 2016 reported savings. The adjustments accounts for corrections to STEP Manual version 7.0.0 issued on May 1, 2017, in section 12. The adjustment was made to full load heating hours (FLHheat) in Tables 90 and 91 to be consistent with those in the Mid-Atlantic TRM v 6, in response to requests by the North Carolina Public Staff Utilities Commission Re: Docket No. E-22, Sub 545, on October 23, 2017. This affected multiple non-residential HVAC measures (e.g. heat pumps, variable refrigerant flow, mini split systems) that reference Table 90 and 91, in multiple non-residential programs. This adjustment is reflected in STEP Manual version 8.0.0 in this EM&V report.
4. Another adjustment was made to correct the full load cooling hours in North Carolina for this program. The code that calculated this savings did not match the STEP Manual v 7.0.0.

DNV

B.24 North Carolina Non-residential Energy Audit Program 2014-2017

NC - Non-Residential Energy Audit Program Category	Indicator	2014 Total	2015 Total	2016 Total	2017 Total	2014-2017 Program Total
O&M ($)	Direct Rebate					
O&M ($)	Direct Implementation					
O&M ($)	Direct EM&V					
O&M ($)	Indirect Other (Administrative)	$6,487	$3,164	$3,088	$3,936	$16,675
Costs ($)	Total	$199,201	$130,744	$101,589	$100,018	$531,553
Costs ($)	Planned	$142,946	$124,892	$130,094	$19,406	$417,338
Costs ($)	Variance	$56,255	$5,852	-$28,505	$80,612	$114,215
	Annual % of Planned	139%	105%	78%	515%	127%
Audits	Total (Gross)	16	81	14	0	111
Participants[1]	Total (Gross)	16	78	12	2	108
	Planned (Gross)	37	37	48	0	122
	Variance	-21	41	-36	2	-14
	Annual % of Planned (Gross)	43%	211%	25%		89%
Installed kWh/year	Total (Gross)	495,669	225,418	270,829	825,840	1,817,756
	Attribution Rate weighted by Measure	99%	99%	99%	76%	89%
	Realization Rate weighted by Measure	99%	69%	94%	79%	85%
	Adjusted (Net) by Realization Rate and Attribution Rate	487,729	153,498	253,571	491,719	1,386,517
	Planned (Net)	1,093,017	827,170	323,638	0	2,243,824
	Annual % Toward Planned Net Savings (kWh)	45%	19%	78%		62%
	Avg. Gross Savings Per Participant (kWh/yr)	30,979	2,890	22,569	412,920	16,831
	Avg. Net Savings Per Participant (kWh/yr)	30,483	1,968	21,131	245,859	12,838
Installed kW	Total (Gross)	57	30	31	147	264
	Attribution Rate weighted by Measure	99%	99%	99%	76%	86%
	Realization Rate weighted by Measure	99%	64%	94%	79%	83%
	Adjusted kW (Net)	55	20	29	80	184
	Planned (Net)	195	179	50	0	424
	Annual % Toward Planned Net Reduction (kW)	28.5%	11.3%	58%		43%
	Avg. Gross Demand Reduction Per Participant (kW)	3.6	0.4	2.5	73.6	2.4
	Avg. Net Demand Reduction Per Participant (kW)	3.5	0.3	2.4	39.9	1.7
Program Performance	Annual $Admin. per Participant (Gross)	$405	$41	$257	$1,968	$154
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.01	$0.01	$0.00	$0.01
	Annual $Admin. per kW (Gross)	$114	$106	$101	$27	$63
	Annual $EM&V per $Total	12.2%	4.5%	7.2%	7.0%	8.4%
	Annual $Rebate per Participant (Gross)	$8,988	$916	$6,886	$18,631	$3,103

1. Program closed end of 2017.
2. A participant is a single unit that has been installed and rebated. A unique account number may represent multiple participants if that account had multiple units installed and rebated.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.25 North Carolina Non-residential Heating and Cooling Efficiency Program (DSM Phase III) 2020

NC- Non-Residential Heating & Cooling Efficiency Program		2015	2016	2017	2015-2017	2018	2019	2020	2015-2020
Category	Indicator	Total	Total[2]	Total	Program Total	Total	Total	Total	Program Total
O&M ($)	Direct Rebate								
O&M ($)	Direct Implementation								
O&M ($)	Direct EM&V								
O&M ($)	Indirect Other (Administrative)	$1,360	$1,610	$2,353	$5,323	$4,390	$2,934	$712	$13,359
Costs ($)	Total	$40,347	$52,963	$59,792	$153,101	$77,749	$57,884	$15,659	$304,393
Costs ($)	Planned	$124,310	$121,415	$122,498	$368,223	$126,949	$101,892	$0	$597,064
Costs ($)	Variance	-$83,963	-$68,452	-$62,706	-$215,122	-$49,200	-$44,007	$15,659	-$292,671
	Annual % of Planned	32%	44%	49%	42%	61%	57%	N/A	51%
Participants[1]	Total (Gross)	3	6	3	12	3	1	0	16
	Planned (Gross)	48	52	53	153	53	12	0	218
	Variance	-45	-46	-50	-141	-50	-11	0	-202
	Annual % of Planned (Gross)	6%	12%	6%	8%	6%	8%	N/A	7%
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	91,144	289,500	82,971	463,615	225,775	83,099	0	772489
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	91,144	289,500	82,971	463,615	225,775	83,099	0	772489
70%	Net-To-Gross Adjustment (kWh/yr)	-27,343	-86,850	-24,891	-139,085	-67,732	-24,930	0	-231747
	Net Adjusted Savings (kWh/yr)	63,801	202,650	58,080	324,531	158,042	58,170	0	540742
	Planned Net Savings (kWh/yr)	606,768	1,619,973	2,563,872	4,790,614	2,043,754	168,545	0	7002913
	Annual % Toward Planned Net Savings (kWh)	11%	13%	2%	7%	8%	35%	N/A	8%
	Avg. Gross Savings Per Participant (kWh/yr)	30,381	48,250	27,657	38,635	75,258	83,099	N/A	48,281
	Avg. Net Savings Per Participant (kWh/yr)	21,267	33,775	19,360	27,044	52,681	58,170	N/A	33,796
Installed kW	Total Gross Demand Reduction (kW)	26.9	93.2	-40.3	79.9	84.7	13.3	0.0	177.9
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Realization Rate Adjusted Gross Demand Reduction(kW)	26.9	93.2	-40.3	79.9	84.7	13.3	0.0	177.9
70%	Net-To-Gross Adjustment (kW)	-8.1	-28.0	12.1	-24.0	-25.4	-4.0	0.0	-53.4
	Net Adjusted Demand Reduction (kW)	18.8	65.3	-28.2	55.9	59.3	9.3	0.0	124.5
	Planned Net Demand Reduction (kW)	154.2	274.7	1,042.3	1,471.1	497.0	41.0	0.0	2,009.1
	Annual % Toward Planned Net Reduction (kW)	12.2%	23.8%	-2.7%	3.8%	11.9%	22.8%	N/A	6.2%
	Avg. Gross Demand Reduction Per Participant (kW)	9.0	15.5	-13.4	6.7	28.2	13.3	N/A	11.1
	Avg. Net Demand Reduction Per Participant (kW)	6.3	10.9	-9.4	4.7	19.8	9.3	N/A	7.8
Program Performance	Annual $Admin. per Participant (Gross)	$453	$268	$784	$444	$1,463	$2,934	N/A	$835
	Annual $Admin. per kWh/year (Gross)	$0.01	$0.01	$0.03	$0.01	$0.02	$0.04	N/A	$0.02
	Annual $Admin. per kW (Gross)	$51	$17	-$58	$67	$52	$220	N/A	$75
	Annual $EM&V per $Total	14%	15%	15%	14%	11%	7.8%	95.2%	16%
	Annual $Rebate per Participant (Gross)	$2,728	$3,404	$6,996	$4,133	$11,613	$21,728	N/A	$6,635

1. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED

DNV

B.26 North Carolina Non-residential Window Film (DSM Phase III) Program 2015-2020

NC- Non-Residential Window Film Program		2015	2016	2017	2018	2019	2020	2015-2020
Category	Indicator	Total	Total	Total	Total	Total	Total	Program Total
O&M ($)	Direct Rebate	[redacted]						
O&M ($)	Direct Implementation							
O&M ($)	Direct EM&V							
O&M ($)	Indirect Other (Administrative)	$851	$799	$870	$984	$344	$92	$3,941
Capital ($)	Direct Implementation	$0	$0	$0	$0	$0	$0	$0
Costs ($)	Total	$24,693	$26,289	$22,104	$17,432	$6,937	$1,612	$99,067
Costs ($)	Planned	$82,903	$115,046	$126,681	$143,604	$3,850	$0	$472,084
Costs ($)	Variance	-$58,211	-$88,757	-$104,577	-$126,172	$3,087	$1,612	-$373,018
	Annual % of Planned	30%	23%	17%	12%	180%	N/A	21%
Participants[1]	Total Participants	0	0	0	1	0		1
	Total Square Feet	0	0	0	402	0	0	402
	Planned Square Feet	48,000	76,742	91,659	95,900	0		312,301
	Variance	-48,000	-76,742	-91,659	-95,498	0	0	-311,899
	Annual % of Planned (Gross)	0%	0%	0%	0%	N/A	N/A	0%
Square feet	Total Square Feet	0	0	0	402	0	0	402
	North Facing	0	0	0	0	0	0	0
	East Facing	0	0	0	402	0	0	402
	West Facing	0	0	0	0	0	0	0
	South Facing	0	0	0	0	0	0	0
Installed kWh/year	Total Gross Deemed Savings (kWh/yr)	0	0	0	4,516	0	0	4,516
100%	Realization Rate Adjustment (kWh/yr)	0	0	0	0	0	0	0
	Realization Rate Adjusted Savings (kWh/yr)	0	0	0	4,516	0	0	4,516
80%	Net-To-Gross Adjustment (kWh/yr)	0	0	0	-903	0	0	-903
	Net Adjusted Savings (kWh/yr)	0	0	0	3,613	0	0	3,613
	Planned Net Savings (kWh/yr)	864	1,064,075	1,016,658	691,176	0	0	2,772,773
	Annual % Toward Planned Net Savings (kWh)	0%	0%	0%	1%	N/A	N/A	0%
	Avg. Gross Savings Per Participant (kWh/yr)			N/A	4,516	N/A	N/A	4,516
	Avg. Gross Savings Per Square Foot (kWh/yr)			N/A	11	N/A	N/A	11
	Avg. Net Savings Per Participant (kWh/yr)			N/A	3,613	N/A	N/A	3,613
	Avg. Net Savings Per Square Foot (kWh/yr)			N/A	9	N/A	N/A	8.99
Installed kW	Total Gross Demand Reduction (kW)	0.0	0.0	0.0	0.7	0	12	12.7
100%	Realization Rate Adjustment (kW)	0.0	0.0	0.0	0.0	0	0	0.0
	Realization Rate Adjusted Gross Demand Reduction (kW)	0.0	0.0	0.0	0.7	0	12	12.7
80%	Net-To-Gross Adjustment (kW)	0.0	0.0	0.0	-0.1	0	-2	-2.5
	Net Adjusted Demand Reduction (kW)	0.0	0.0	0.0	0.6	0	10	10.2
	Planned Net Demand Reduction (kW)	0.2	973.7	915.3	635.0	0	0	2,524.2
	Annual % Toward Planned Net Reduction (kW)	0%	0%	0%	0.1%	N/A	N/A	0.40%
	Avg. Gross Demand Reduction Per Participant (kW)			N/A	0.7	N/A	N/A	12.7
	Avg. Gross Demand Reduction Per Square Foot (kW)			N/A	0.002	N/A	N/A	0.032
	Avg. Net Demand Reduction Per Participant (kW)			N/A	0.6	N/A	N/A	10.2
	Avg. Net Demand Reduction Per Square Foot (kW)			N/A	0.001	N/A	N/A	0.025
Program Performance	Annual $Admin. per Participant (Gross)			N/A	$984.4	N/A	N/A	$3,941
	Annual $Admin. per kWh/year (Gross)			N/A	$0.22	N/A	N/A	$0.87
	Annual $Admin. per kW (Gross)			N/A	$1,337.1	N/A	$15	$309
	Annual $EM&V per $Total	18%	29%	25%	29%	51%	94%	28%
	Annual $Rebate per Participant (Gross)			N/A	$342	N/A	N/A	$342

1. Program close end of 2019.
2. A participant is a unique account number.

EXTRAORDINARILY SENSITIVE INFORMATION REDACTED