

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-7, SUB 1249

In the Matter of )  
Application of Duke Energy Carolinas, LLC )  
for Approval of Demand-Side Management )  
and Energy Efficiency Cost Recovery Rider )  
Pursuant to N.C. Gen. Stat. § 62-133.9 and )  
Commission Rule R8-69 )

---

**DIRECT TESTIMONY OF**  
**ROBERT P. EVANS**  
**FOR**  
**DUKE ENERGY CAROLINAS, LLC**

OFFICIAL COPY

Feb 23 2021

**I. INTRODUCTION AND PURPOSE**

1   **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND**  
2   **POSITION WITH DUKE ENERGY.**

3   A. My name is Robert P. Evans, and my business address is 410 S. Wilmington  
4   Street, Raleigh, North Carolina 27601. I am employed by Duke Energy  
5   Corporation (“Duke Energy”) as Senior Manager-Strategy and Collaboration  
6   for the Carolinas in the Market Solutions Customer Regulatory Strategy and  
7   Evaluation group.

8   **Q. PLEASE BRIEFLY STATE YOUR EDUCATIONAL BACKGROUND**  
9   **AND EXPERIENCE.**

10   A. I graduated from Iowa State University (“ISU”) in 1978 with a Bachelor of  
11   Science Degree in Industrial Administration and a minor in Industrial  
12   Engineering. As a part of my undergraduate work, I participated in both the  
13   graduate level Regulatory Studies Programs sponsored by American Telephone  
14   and Telegraph Corporation, and graduate level study programs in Engineering  
15   Economics. Subsequent to my graduation from ISU, I received additional  
16   Engineering Economics training at the Colorado School of Mines, completed  
17   the National Association of Regulatory Utility Commissioners Regulatory  
18   Studies program at Michigan State, and completed the Advanced American Gas  
19   Association Ratemaking program at the University of Maryland. Upon  
20   graduation from ISU, I joined the Iowa State Commerce Commission (now  
21   known as the Iowa Utility Board (“IUB”) in the Rates and Tariffs Section of  
22   the Utilities Division. During my tenure with the IUB, I held several positions,

1 including Senior Rate Analyst in charge of Utility Rates and Tariffs, and  
2 Assistant Director of the Utility Division. In those positions, I provided  
3 testimony in gas, electric, water, and telecommunications proceedings as an  
4 expert witness in the areas of rate design, service rules, and tariff applications.  
5 In 1982, I accepted employment with City Utilities of Springfield, Missouri, as  
6 an Operations Analyst. In that capacity, I provided support for rate-related  
7 matters associated with the municipal utility's gas, electric, water, and sewer  
8 operations. In addition, I worked closely with its load management and energy  
9 conservation programs. In 1983, I joined the Rate Services staff of the Iowa  
10 Power and Light Company, now known as MidAmerican Energy, as a Rate  
11 Engineer. In this position, I was responsible for the preparation of rate-related  
12 filings and presented testimony on rate design, service rules, and accounting  
13 issues before the IUB. In 1986, I accepted employment with Tennessee-  
14 Virginia Energy Corporation (now known as the United Cities Division of  
15 Atmos Energy) as Director of Rates and Regulatory Affairs. While in this  
16 position, I was responsible for regulatory filings, regulatory relations, and  
17 customer billing. In 1987, I went to work for the Virginia State Corporation  
18 Commission in the Division of Energy Regulation as a Utilities Specialist. In  
19 this capacity, I worked on electric and natural gas issues and provided testimony  
20 on cost of service and rate design matters brought before that regulatory body.  
21 In 1988, I joined North Carolina Natural Gas Corporation ("NCNG") as its  
22 Manager of Rates and Budgets. Subsequently, I was promoted to Director-  
23 Statistical Services in NCNG's Planning and Regulatory Compliance

1 Department. In that position, I performed a variety of work associated with  
2 financial, regulatory, and statistical analysis and presented testimony on several  
3 issues brought before the North Carolina Utilities Commission  
4 (“Commission”). I held that position until the closing of NCNG’s merger with  
5 Carolina Power and Light Company, the predecessor of Progress Energy, Inc.  
6 (“Progress”), on July 15, 1999.

7 From July 1999 through January 2008, I was employed in Principal and  
8 Senior Analyst roles by the Progress Energy Service Company, LLC. In these  
9 roles, I provided NCNG, Progress Energy Carolinas, Inc. (now Duke Energy  
10 Progress, LLC or “DEP”), and Progress Energy Florida, Inc. with rate and  
11 regulatory support in their state and federal venues. From 2008 through the  
12 merger of Duke Energy and Progress, I provided regulatory support for  
13 demand-side management (“DSM”) and energy efficiency (“EE”) programs.  
14 Subsequent to the Progress merger with Duke Energy, I obtained my current  
15 position.

16 **Q. HAVE YOU PREVIOUSLY PROVIDED TESTIMONY IN MATTERS**  
17 **BROUGHT BEFORE THIS COMMISSION?**

18 A. Yes. I have provided testimony to this Commission in matters concerning  
19 revenue requirements, avoided costs, cost of service, rate design, and the  
20 recovery of costs associated with DSM/EE programs and related accounting  
21 matters.

22 **Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES?**

1 A. I am responsible for the regulatory support of DSM/EE programs in North  
2 Carolina for both Duke Energy Carolinas, LLC (“DEC” or the “Company”) and  
3 DEP.

4 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS**  
5 **PROCEEDING?**

6 A. My testimony supports DEC’s Application for approval of its DSM/EE Cost  
7 Recovery Rider, Rider EE, for 2022 (“Rider 13”), which encompasses the  
8 Company’s currently effective cost recovery and incentive mechanism  
9 (“Mechanism”) and portfolio of programs approved in the Commission’s *Order*  
10 *Approving DSM/EE Programs and Stipulation of Settlement* issued October 29,  
11 2013, in Docket No. E-7, Sub 1032 and the prospective Mechanism approved  
12 in the Commission’s *Order Approving Revisions to Demand-Side Management*  
13 *and Energy Efficiency Cost Recovery Mechanisms* issued on October 20, 2020,  
14 in Docket Nos. E-2, Sub 931 and E-7, Sub 1032 (“2020 Sub 1032 Order”,  
15 collectively, “Sub 1032 Orders”). My testimony provides (1) a discussion of  
16 items the Commission specifically directed the Company to address in this  
17 proceeding; (2) an overview of the Commission’s Rule R8-69 filing  
18 requirements; (3) a synopsis of the DSM/EE programs included in this filing;  
19 (4) a discussion of program results; (5) an explanation of how these results have  
20 affected the Rider 13 calculations; (6) information on DEC’s Evaluation  
21 Measurement & Verification (“EM&V”) activities; (7) an overview of the  
22 calculation of the Portfolio Performance Incentive (“PPI”); (8) information  
23 relating to the Collaborative; (9) a discussion relating to the Company’s

1 Reserve Margin Adjustment Factor; and (10) a discussion relating to additional  
2 studies the Company would like to perform.

3 **Q. PLEASE DESCRIBE THE EXHIBITS ATTACHED TO YOUR**  
4 **TESTIMONY.**

5 A. Evans Exhibit 1 supplies, for each program, load impacts and avoided cost  
6 revenue requirements by vintage. Evans Exhibit 2 contains a summary of net  
7 lost revenues for the period January 1, 2018 through December 31, 2022. Evans  
8 Exhibit 3 contains the actual program costs for North Carolina for the period  
9 January 1, 2018 through December 31, 2020. Evans Exhibit 4 contains the  
10 found revenues used in the net lost revenues calculations. Evans Exhibit 5  
11 supplies evaluations of event-based programs. Evans Exhibit 6 contains  
12 information about and the results of DEC's programs and a comparison of  
13 actual impacts to previous estimates. Evans Exhibit 7 contains the projected  
14 program and portfolio cost-effectiveness results for the Company's current  
15 portfolio of programs. Evans Exhibit 8 contains a summary of 2020 program  
16 performance and an explanation of the variances between the forecasted  
17 program results and the actual results. Evans Exhibit 9 is a list of DEC's  
18 industrial and large commercial customers that have opted out of participation  
19 in its DSM or EE programs and a listing of those customers that have elected  
20 to opt in to DEC's DSM or EE programs after having initially notified the  
21 Company that they declined to participate, as required by Commission Rule  
22 R8-69(d)(2). Evans Exhibit 10 contains the projected shared savings incentive  
23 (PPI) associated with Vintage 2022. Evans Exhibit 11 provides a summary of

1 the estimated activities and timeframe for completion of EM&V by program.  
2 Evans Exhibit 12 provides the actual and expected dates when the EM&V for  
3 each program or measure will become effective. Evans Exhibit 13 provides a  
4 table showing program cost and avoided costs savings for the test period ending  
5 December 31, 2020 and for the previous five test periods. Evans Exhibit 14  
6 provides a table of avoided cost related impacts associated with the  
7 incorporation of a reserve margin adjustment factor. Evans Exhibits A through  
8 C provide the detailed completed EM&V reports for the following: Save  
9 Energy and Water Kits 2018 – 2019 (Evans Exhibit A); Multifamily Energy  
10 Efficiency Program 2017 - 2019 (Evans Exhibit B); and Non-Residential Smart  
11 Saver Prescriptive Program Evaluation 2017 - 2018 (Evans Exhibit C).

12 **Q. WERE EVANS EXHIBITS 1-13 PREPARED BY YOU OR AT YOUR**  
13 **DIRECTION AND SUPERVISION?**

14 A. Yes, they were.

15 **II. ACTIONS ORDERED BY THE COMMISSION**

16 **Q. PLEASE DESCRIBE THE ACTIONS THE COMMISSION DIRECTED**  
17 **DEC TO TAKE IN THE COMMISSION'S ORDER IN DOCKET NO. E-**  
18 **7, SUB 1230.**

19 A. In its December 11, 2020 *Order Approving DSM/EE Rider and Requiring*  
20 *Filing of Customer Notice* in Docket No. E-7, Sub 1230 ("Sub 1230"), the  
21 Commission ordered: (1) that the combined DEC/DEP Collaborative should  
22 continue to meet every other month; (2) that DEC shall explain how the  
23 Company will distinguish peak demand and energy savings between Grid

1 Improvement Plan (“GIP”) and DSM and EE programs; and (3) provide a list of  
2 GIP projects that have been implemented and explain how those projects have  
3 affected the performance of the Company’s DSM/EE portfolio, if at all.

4 **Q. HAS THE COMBINED DEC/DEP COLLABORATIVE CONTINUED**  
5 **TO MEET EVERY OTHER MONTH?**

6 A. Yes, the combined DEC/DEP collaborative has continued to meet every other  
7 month. Further information associated with the DEC/DEP Collaborative is  
8 provided in Section X of my testimony.

9 **Q. PLEASE EXPLAIN HOW THE COMPANY WILL DISTINGUISH**  
10 **PEAK DEMAND AND ENERGY SAVINGS BETWEEN GIP AND**  
11 **DSM/EE PROGRAMS.**

12 A. As GIP is implemented, any impacts on DSM/EE programs will show up in the  
13 individual DSM and EE program EM&V results. The EM&V process is  
14 important as the GIP’s impacts could vary by type of measure and as such, from  
15 program to program. Only the DEC Integrated Volt Var (“IVVC”) program  
16 within the GIP is anticipated to result in demand and energy savings, and those  
17 savings will be measured and documented within the Company’s GIP reporting.

18 **Q. PLEASE PROVIDE A LIST OF GIP PROJECTS THAT HAVE BEEN**  
19 **IMPLEMENTED AND EXPLAIN HOW THOSE PROJECTS HAVE**  
20 **AFFECTED THE PERFORMANCE OF THE COMPANY’S DSM/EE**  
21 **PORTFOLIO.**

22 A. In 2020, the Company began a programmatic approach to implementing the  
23 GIP projects. Of the various components associated with the GIP, only the



1 IVVC program is anticipated to impact the performance of the Company's  
2 DSM/EE portfolio.

3 The Capacity component of the Self Optimized Grid ("SOG")  
4 program includes reconductoring power lines to larger size wires to  
5 accommodate two-way power flow. An additional benefit of this upgrade  
6 includes reduced line losses on the distribution circuitry. Those efficiencies  
7 from SOG along with efficiencies gained from other maintenance activities on  
8 the distribution system are captured in periodic line loss studies. DSM/EE uses  
9 the line loss in its analysis; therefore, SOG creates no additional impact.

10 IVVC would operate in Conservation Voltage Reduction ("CVR")  
11 mode a majority (approximately 90%) of the time, year-round. CVR  
12 functionality would target an approximate 2% voltage reduction on the  
13 distribution retail substations and circuits (feeders) within the scope of  
14 implementation, while maintaining voltage within regulatory limits for all  
15 customers. Lowering the distribution feeder voltage results in a reduction of  
16 system loading, creating the benefit of decreased generation. During 2020 the  
17 Company started the circuit conditioning and substation upgrades necessary for  
18 IVVC; however, no circuits were scheduled to come under IVVC control in  
19 2020; thus, IVVC had no effect on the performance of the Company's DSM/EE  
20 portfolio.

### 21 **III. RULE R8-69 FILING REQUIREMENTS**

22 **Q. WHAT INFORMATION DOES DEC PROVIDE IN RESPONSE TO**  
23 **THE COMMISSION'S FILING REQUIREMENTS?**

- 1 A. The information for Rider 13 is provided in response to the Commission's filing  
 2 requirements contained in R8-69(f)(1) and can be found in the testimony and  
 3 exhibits of Company witnesses Evans and Listebarger as follows:

<b>R8-69(f)(1)</b>		<b>Items</b>	<b>Location in Testimony</b>
(i)		Projected NC retail sales for the rate period	Listebarger Exhibit 6
(ii)		For each measure for which cost recovery is requested through Rider 13:	
(ii)	a.	Total expenses expected to be incurred during the rate period	Evans Exhibit 1
(ii)	b.	Total costs savings directly attributable to measures	Evans Exhibit 1
(ii)	c.	EM&V activities for the rate period	Evans Exhibit 11
(ii)	d.	Expected peak demand reductions	Evans Exhibit 1
(ii)	e.	Expected energy reductions	Evans Exhibit 1
(iii)		Filing requirements for DSM/EE EMF rider, including:	
(iii)	a.	Total expenses for the test period in the aggregate and broken down by type of expenditure, unit, and jurisdiction	Evans Exhibit 3
(iii)	b.	Total avoided costs for the test period in the aggregate and broken down by type of expenditure, unit, and jurisdiction	Evans Exhibit 1
(iii)	c.	Description of results from EM&V activities	Testimony of Robert Evans and Evans Exhibits A-C
(iii)	d.	Total peak demand reductions in the aggregate and broken down per program	Evans Exhibit 1
(iii)	e.	Total energy reduction in the aggregate and broken down per program	Evans Exhibit 1
(iii)	f.	Discussion of findings and results of programs	Testimony of Robert Evans and Evans Exhibit 6
(iii)	g.	Evaluations of event-based programs	Evans Exhibit 5
(iii)	h.	Comparison of impact estimates from previous year and explanation of significant differences	Testimony of Robert Evans and Evans Exhibits 6 and 8
(iv)		Determination of utility incentives	Testimony of Robert Evans and Evans Exhibit 10
(v)		Actual revenues from DSM/EE and DSM/EE EMF riders	Listebarger Exhibit 4
(vi)		Proposed Rider 13	Testimony of Shannon Listebarger Exhibit 1
(vii)		Projected NC sales for customers opting out of measures	Listebarger Exhibit 6
(viii)		Supporting work papers	Via Data Transfer

4

1 **IV. PORTFOLIO OVERVIEW**

2 **Q. WHAT ARE DEC'S CURRENT DSM AND EE PROGRAMS?**

3 A. The Company has two interruptible programs for nonresidential customers,  
4 Interruptible Service ("IS") and Standby Generation ("SG"), which are  
5 accounted for outside of the Mechanism approved by the Commission in the  
6 Sub 1032 Orders. Aside from IS and SG, the following DSM/EE programs  
7 have been implemented by DEC in its North Carolina service territory:

8 **RESIDENTIAL CUSTOMER PROGRAMS**

- 9 • Energy Assessment Program
- 10 • EE Education Program
- 11 • Energy Efficient Appliances and Devices Program
- 12 • Smart \$aver EE Program
- 13 • Multifamily EE Program
- 14 • My Home Energy Report (MyHER) Program
- 15 • Income-Qualified EE and Weatherization Program for Individuals
- 16 • Neighborhood Energy Saver Program
- 17 • Power Manager Load Control Service Program

18 **NONRESIDENTIAL CUSTOMER PROGRAMS**

- 19 • Nonresidential Smart \$aver Energy Efficient Products and  
20 Assessment Program:
- 21 ○ Energy Efficient Food Service Products
- 22 ○ Energy Efficient HVAC Products
- 23 ○ Energy Efficient IT Products

- 1                   ○ Energy Efficient Lighting Products
- 2                   ○ Energy Efficient Process Equipment Products
- 3                   ○ Energy Efficient Pumps and Drives Products
- 4                   ○ Custom Incentive and Energy Assessment
- 5                 • PowerShare Nonresidential Load Curtailment Program
- 6                 • Small Business Energy Saver Program
- 7                 • EnergyWise for Business Program
- 8                 • Nonresidential Smart \$aver Performance Incentive Program

9     **Q.     ARE THESE SUBSTANTIVELY THE SAME PROGRAMS DEC**  
10    **RECEIVED APPROVAL FOR IN DOCKET NO. E-7, SUB 1032?**

11    A.     Yes. The programs contained in the current portfolio are the same as those  
12           approved by the Commission in the initial Sub 1032 Order, with the exception  
13           of: the discontinuation of the PowerShare CallOption and the Smart Energy  
14           in Offices Program and the addition of the Nonresidential Smart \$aver  
15           Performance Incentive Program.

16    **Q.     PLEASE DESCRIBE ANY UPDATES MADE TO THE UNDERLYING**  
17    **ASSUMPTIONS FOR DEC'S PORTFOLIO OF PROGRAMS THAT**  
18    **HAVE ALTERED PROJECTIONS FOR VINTAGE 2022.**

19    A.     Updates to underlying assumptions that materially impact DEC's 2022  
20           portfolio projection are related to EM&V-related impacts and changes in  
21           avoided costs. Notably, the projections, at this time, do not recognize the  
22           reserve margin adjustment factor, which is discussed later in my testimony.

1    **Q.     PLEASE DESCRIBE THE EM&V IMPACT TO DEC’S ESTIMATED**  
2           **2022 PROGRAM PORTFOLIO.**

3    A.     Changes in the EM&V results were updated to reflect the savings impacts for  
4           those programs for which DEC received EM&V results after it prepared its  
5           application in Sub 1230. Updating EM&V for its programs results in changes  
6           to the projected avoided cost benefits associated with the projected  
7           participation. Hence, these EM&V updates will impact the calculation of the  
8           specific program and overall portfolio cost-effectiveness, as well as impact  
9           the calculation of DEC’s projected shared savings incentive.

10   **Q.     PLEASE DESCRIBE THE AVOIDED COST IMPACT TO DEC’S**  
11           **ESTIMATED 2022 PROGRAM PORTFOLIO.**

12   A.     Changes in the avoided cost rates directly impact the cost effectiveness of the  
13           Company’s programs. Because the avoided cost rates have been declining,  
14           the cost effectiveness of the Company’s programs have tended to decline as  
15           well.

16   **Q.     AFTER FACTORING THESE UPDATES INTO THE VINTAGE 2022**  
17           **PORTFOLIO, DO THE RESULTS OF DEC’S PROSPECTIVE**  
18           **UTILITY COST-EFFECTIVENESS TESTS INDICATE THAT IT**  
19           **SHOULD DISCONTINUE OR MODIFY ANY OF ITS PROGRAMS?**

20   A.     DEC performed a prospective analysis of each of its programs and the  
21           aggregate portfolio for the Vintage 2022 period. The cost-effectiveness  
22           results for the entire portfolio for Vintage 2022 are contained in Evans Exhibit  
23           7. The cost-effectiveness criteria has been modified for 2022. Previously the

1 Total Resource Cost (“TRC”) test was the indicator of program viability.  
2 Effective in 2022, the Utility Cost Test (“UCT”) replaces the TRC for use in  
3 screening DSM/EE programs. The aggregate portfolio continues to project  
4 cost-effectiveness, with the exception of the Income-Qualified EE Products  
5 and Services Program, which was not cost-effective at the time of  
6 Commission approval, the EnergyWise for Business Program, and an  
7 element of the Nonresidential Smart \$aver Program. Based on the results of  
8 these cost-effectiveness tests, there are no reasons to discontinue any of  
9 DEC’s programs. Notably, the Company continues to examine its programs  
10 for potential modifications to increase their effectiveness, regardless of the  
11 current cost-effectiveness results.

12 **Q. WOULD IT BE APPROPRIATE TO ELIMINATE THE**  
13 **ENERGYWISE FOR BUSINESS PROGRAM?**

14 A. No. The forecasted UCT does not reflect the most recent EM&V study  
15 results, which show a 100 percent increase in average energy savings.  
16 Irrespective of this increase, the Company intends to modify this program and  
17 freeze participation levels in the interim. The Company is confident that the  
18 UCT score of the redesigned program will exceed the 1.0 threshold.

19 **Q. PLEASE IDENTIFY THE ELEMENT OF THE NONRESIDENTIAL**  
20 **SMART \$AVER PROGRAM THAT WAS FORECASTED TO BE**  
21 **LESS THAN COST EFFECTIVE.**

22 A. The Information Technology subcategory of the Nonresidential Smart \$aver  
23 Program had a UCT score that was less than 1.0.

1   **Q.    WOULD IT BE APPROPRIATE TO DISCONTINUE THIS**  
2   **PROGRAM ELEMENT?**

3   A.    No, it would not. This element is integral for ensuring that a robust portfolio  
4       of prescriptive offerings is available for its nonresidential customers. In  
5       addition, this element is only a measure category within a much larger  
6       program. The UCT score for the prescriptive portion of the Nonresidential  
7       Smart \$aver Program is 3.69, and the UCT score for the Nonresidential Smart  
8       \$aver Program, as a whole, is 3.46.

9   **Q.    DID DEC MODIFY ITS PORTFOLIO OF PROGRAMS DURING**  
10  **VINTAGE 2020?**

11  A.    Yes. The Company has made several modifications to its portfolio of  
12       programs during Vintage 2020 that were intended to increase its cost  
13       effectiveness. The impacted programs and summaries of their modifications  
14       are provided below:

15       Power Manager

16       Several changes were made to this program including the addition of a  
17       “smart” thermostat-based winter-focused load control option, the suspension  
18       of new enrollments in the existing approved summer-only “smart”  
19       thermostat-based option, thus freezing participation in the summer-only  
20       “smart” thermostat-based option to participants in place on or before  
21       December 31, 2020.

1        Neighborhood Energy Saver (previously known as the Income Qualified  
2        Energy Efficiency and Weatherization Assistance for Residential  
3        Neighborhoods Program)

4        New measures were added to the program. The Company added insulation,  
5        air sealing, duct sealing, and “smart” thermostats to the existing portfolio of  
6        measures in the program.

7        Residential Energy Assessments

8        New measures, at discounted costs, were added that participants could request  
9        at the time of the initial energy assessment. These include specialty lighting,  
10       water-reducing measures, blower door tests, and Wi-Fi enabled smart  
11       thermostats.

12                    **V.        DSM/EE PROGRAM RESULTS TO DATE**

13       **Q.        HOW MUCH ENERGY, CAPACITY AND AVOIDED COST**  
14       **SAVINGS DID DEC DELIVER AS A RESULT OF ITS DSM/EE**  
15       **PROGRAMS DURING VINTAGE 2020?**

16       A.        During Vintage 2020, DEC’s DSM/EE programs delivered over 650 million  
17       kilowatt-hours (“kWh”) of energy savings and over 1,025 megawatts (“MW”)  
18       of capacity savings, which produced net present value of avoided cost savings  
19       of close to \$328 million. The 2020 performance results for individual  
20       programs are provided on page 4 of Evans Exhibit 1.

21       **Q.        HOW DID THE COMPANY’S PROGRAMS PERFORM RELATIVE**  
22       **TO THEIR ORIGINAL ESTIMATES FOR VINTAGE 2020?**



1 A. Referring to Evans Exhibit 8, one can see that overall performance during  
2 2020 was less than that forecasted. This, of course, is primarily due to the  
3 unforeseen effects of the COVID pandemic, which was not anticipated at the  
4 time of the forecast. There were some highlights though. For example, the  
5 energy savings associated with the Energy Efficient Appliances and Devices  
6 program exceeded its forecast by 127 percent. This, along with positive  
7 EM&V results for the MyHER program, helped propel residential energy  
8 savings beyond their forecasted level. Unfortunately, non-residential savings  
9 were significantly less than those forecasted.

10 **VI. PROJECTED RESULTS**

11 **Q. PLEASE PROVIDE A PROJECTION OF THE RESULTS THAT DEC**  
12 **EXPECTS TO SEE FROM IMPLEMENTATION OF ITS**  
13 **PORTFOLIO OF PROGRAMS.**

14 A. Consistent with the terms of its Commission-approved cost recovery  
15 mechanism Save-A-Watt, DEC will update the actual and projected EE  
16 achievement levels in its annual Rider EE filing to account for any program  
17 or measure additions based on the performance of programs, market  
18 conditions, economics and consumer demand. The actual results for Vintage  
19 2020 and projection of the results for Vintages 2021 and 2022, as well as the  
20 associated projected program expense for DEC's portfolio of programs, are  
21 summarized in the following table:  
22  
23

DEC System (NC & SC) DSM/EE Portfolio 2020 Actual Results and 2021-2022 Projected Results			
	2020	2021	2022
Annual System Net MW	1,025	1,187	1,107
Annual System Net GWh	650	760	814
Annual Program Costs (Millions)	\$110.7	\$143.3	\$158.5

## VII. EM&V ACTIVITIES

**Q. PLEASE DESCRIBE THE COMPANY'S EM&V ACTIVITIES  
RELEVANT TO THIS PROCEEDING.**

A. Evans Exhibit 11 summarizes the estimated activities and timeframe for completion of EM&V by program. Evans Exhibit 12 provides the actual and expected dates when the EM&V for each program or measure will become effective. Evans Exhibits A through C provide the detailed completed EM&V reports or updates for the following programs:

Evans Exhibit	EM&V Reports	Report Finalization Date	Evaluation Type
A	Save Energy and Water Kits: 2018 – 2019	4/23/2020	Process and Impact
B	Multifamily Energy Efficiency Program: 2017 – 2019	4/16/2020	Process and Impact
C	Non-Residential Smart Saver Prescriptive Program Evaluation 2017 – 2018	7/16/2020	Process and Impact

**Q. HOW WERE EM&V RESULTS UTILIZED IN DEVELOPING THE  
PROPOSED RIDER 13?**

A. The Company has applied EM&V consistently with the agreement among DEC, SACE, and the Public Staff and approved by the Commission in its *Order Approving DSM/EE Rider and Requiring Filing of Proposed Customer*

1        *Notice* issued on November 8, 2011, in Docket No. E-7, Sub 979 (“EM&V  
2        Agreement”). In accordance with the Sub 1032 Orders, DEC continues to  
3        apply EM&V in accordance with the EM&V Agreement.

4                Actual participation and evaluated load impacts are used  
5        prospectively to update net lost revenues estimates. In addition, the EM&V  
6        Agreement provides that initial EM&V results shall be applied retrospectively  
7        to program impacts that were based upon estimated impact assumptions  
8        derived from industry standards (rather than EM&V results for the program  
9        in the Carolinas), in particular the DSM/EE programs initially approved by  
10       the Commission in Docket No. E-7, Sub 831 (“Sub 831”), with the exception  
11       of the Nonresidential Smart Saver Custom Rebate Program and the Low-  
12       Income EE and Weatherization Assistance Program.

13               For purposes of the vintage true-ups and forecast, initial EM&V  
14       results are considered actual results for a program and continue to apply until  
15       superseded by new EM&V results, if any. For all new programs and pilots  
16       approved after the Sub 831 programs, DEC will use the initial estimates of  
17       impacts until it has EM&V results, which will then be applied retrospectively  
18       to the beginning of the offering and will be considered actual results until a  
19       second EM&V is performed.

20               All program impacts from EM&V apply only to the programs for  
21       which the analysis was directly performed, though DEC’s new product  
22       development may utilize actual impacts and research about EE and  
23       conservation behavior directly attributed to existing DEC program offerings.

1 Because program impacts from EM&V in this Application apply only  
2 to the programs for which the analysis was directly performed, there are no  
3 costs associated with performing additional EM&V for other measures, other  
4 than the original cost for EM&V for these programs. As indicated in previous  
5 proceedings, DEC estimates that 5 percent of total portfolio program costs  
6 will be required to adequately and efficiently perform EM&V on the portfolio.

7 The level of EM&V required varies by program and depends on that  
8 program's contribution to total portfolio, the duration the program has been  
9 in the portfolio without material change, and whether the program and  
10 administration is new and different in the energy industry. DEC estimates,  
11 however, that no additional costs above 5 percent of total program costs will  
12 be associated with performing EM&V for all measures in the portfolio.

13 **Q. WHICH PROGRAMS CONTAIN IMPACT RESULTS BASED ON**  
14 **CAROLINAS-BASED EM&V?**

15 A. The following programs have Carolinas-based EM&V applied and have been  
16 provided as Evans Exhibits A through C:

17 Save Energy and Water Kits 2018 – 2019 (Evans Exhibit A); Multifamily  
18 Energy Efficiency Program 2017 – 2019 (Evans Exhibit B); and Non-  
19 Residential Smart \$aver Prescriptive Program Evaluation 2017 - 2018 (Evans  
20 Exhibit C).

21 **VIII. RIDER IMPACTS**

22 **Q. HAVE THE PARTICIPATION RESULTS AFFECTED THE**  
23 **VINTAGE 2020 EXPERIENCE MODIFICATION FACTOR?**

1 A. Yes. The EMF in Rider 13 accounts for changes to actual participation  
2 relative to the forecasted participation levels utilized in DEC's Vintage 2017  
3 Rider EE. As DEC receives actual participation information, it is then able  
4 to update participation-driven actual avoided cost benefits from its DSM/EE  
5 programs and the net lost revenues derived from its EE programs. For  
6 example, as previously mentioned, the overall savings along with their related  
7 expenditures were less than those that were forecasted. As a result, the EMF  
8 will be reduced to reflect the lower costs, net lost revenues, and shared savings  
9 incentive (PPI) associated with its programs.

10 **Q. HOW HAVE EM&V RESULTS BEEN INCORPORATED INTO THE**  
11 **VINTAGE 2020 TRUE-UP COMPONENT OF RIDER 13?**

12 A. All of the final EM&V results that have been received by DEC as of  
13 December 31, 2020 have been applied prospectively from the first day of the  
14 month immediately following the month in which the study participation  
15 sample for the EM&V was completed in accordance with the EM&V  
16 Agreement. Accordingly, for any program for which DEC has received  
17 EM&V results, the per participant impact applied to the projected program  
18 participation in Vintage 2020 is based upon the actual EM&V results that  
19 have been received.

20 **Q. PLEASE DESCRIBE HOW DEC CALCULATED FOUND**  
21 **REVENUES.**

22 A. Consistent with the Sub 1032 Orders and with the "Decision Tree" found in  
23 Appendix A of the Commission's February 8, 2011 order in Docket No. E-7,

1 Sub 831, and approved for the new portfolio in the Sub 1032 Orders, possible  
2 found revenue activities were identified, categorized, and netted against the  
3 net lost revenues created by DEC's EE programs. Found revenues may result  
4 from activities that directly or indirectly result in an increase in customer  
5 demand or energy consumption within DEC's service territory. Load-  
6 building activities such as these, however, would not be considered found  
7 revenues if they (1) would have occurred regardless of DEC's activity, (2)  
8 were a result of a Commission-approved economic development activity not  
9 determined to produce found revenues, or (3) were part of an unsolicited  
10 request for DEC to engage in an activity that supports efforts to grow the  
11 economy. On the other hand, found revenues would occur for load growth  
12 that did not fall into the previous categories but was directly or indirectly a  
13 result of DEC's activities. Based on the results of this work, all potential  
14 found revenue-related activities are identified and categorized in Evans  
15 Exhibit 4. Additionally, consistent with the methodology employed and  
16 approved in Docket No. E-7, Sub 1073, as discussed in detail in the testimony  
17 of Company witness Timothy J. Duff in Docket No. E-7, Sub 1050, DEC also  
18 proposes to adjust the calculation of found revenues to account for the impacts  
19 of activities outside of its EE programs that it undertakes that reduce customer  
20 consumption – i.e., “negative found revenues.”

21 **Q. PLEASE DISCUSS THE ADJUSTMENT THAT DEC PROPOSES TO**  
22 **MAKE TO ITS FOUND REVENUE CALCULATION TO ACCOUNT**  
23 **FOR NEGATIVE FOUND REVENUES.**

1     A.     DEC continues to aggressively pursue, with its outdoor lighting customers,  
2           the replacement of aging Mercury Vapor lights with Light Emitting Diode  
3           (“LED”) fixtures. By moving customers past the standard High Pressure  
4           Sodium (“HPS”) fixture to an LED fixture in this replacement process, DEC  
5           is generating significant energy savings. These energy savings, since they  
6           come outside of DEC’s EE programs, are not captured in DEC’s calculation  
7           of lost revenues. Because one of the activities that DEC includes in the  
8           calculation of found revenues is the increase in consumption from new  
9           outdoor lighting fixtures added by DEC, it is logical and symmetrical to count  
10          the energy consumption reduction realized in outdoor lighting efficiency  
11          upgrades. The Company does not take credit for the entire efficiency gain  
12          from replacing Mercury Vapor lights, but rather only the efficiency gain from  
13          replacing HPS with LED fixtures. In addition, DEC has not recognized any  
14          negative found revenues in excess of the found revenues calculated; in other  
15          words, the net found revenues number will never be negative and have the  
16          effect of increasing net lost revenue calculations. In Docket No. E-7, Sub  
17          1073, the Commission found inclusion of negative found revenues associated  
18          with the Company’s initiative to replace Mercury Vapor lighting with LED  
19          fixtures in the calculation of net found revenues to be reasonable, and the  
20          Company proposes to continue this practice in Rider 13.

21    **Q.     HAS THE OPT-OUT OF NONRESIDENTIAL CUSTOMERS**  
22           **AFFECTED THE RESULTS FROM THE PORTFOLIO OF**  
23           **APPROVED PROGRAMS?**

1 A. Yes, the opt-out of qualifying nonresidential customers has had a negative  
2 effect on DEC's overall nonresidential impacts. For Vintage 2020, DEC had  
3 5,154 eligible customer accounts opt out of participating in DEC's  
4 nonresidential portfolio of EE programs. In addition, DEC had 5,654 eligible  
5 customer accounts opt out of participating in DEC's nonresidential DSM  
6 programs. Notably, during 2020, 30 opt-out eligible accounts opted-in to the  
7 EE portion of the Rider, and 11 opt-out eligible accounts opted-in to the DSM  
8 portion of the Rider.

9 **Q. PLEASE EXPLAIN THE INCREASE IN THE NUMBER OF OPT-**  
10 **OUTS IN 2020 COMPARED TO 2019.**

11 A. Because the Company does not participate in the customers' economic benefit  
12 analysis or decision-making process, providing a concrete explanation why  
13 opt-outs increased is difficult. As nonresidential customers become better  
14 equipped at determining the economic benefit of participating in the  
15 Company's DSM/EE programs versus the costs associated with opting into  
16 the DSM/EE rider, they are more knowledgeable on the best allocation of  
17 their resources.

18 **Q. IS THE COMPANY CONTINUING ITS EFFORTS TO ATTRACT**  
19 **THE PROGRAM PARTICIPATION OF OPT-OUT ELIGIBLE**  
20 **CUSTOMERS?**

21 A. Yes. Increasing the participation of opt-out eligible customers in DSM and  
22 EE programs is very important to the Company. As discussed earlier, DEC  
23 continues to evaluate and revise its nonresidential portfolio of programs to



1 accommodate new technologies, eliminate product gaps, remove barriers to  
2 participation, and make its programs more attractive. It also continues to  
3 leverage its Large Account Management Team to make sure customers are  
4 informed about product offerings and the March Opt-in Window.

5 **IX. PPI CALCULATION**

6 **Q. PLEASE PROVIDE AN OVERVIEW OF THE COST RECOVERY**  
7 **AND INCENTIVE MECHANISM APPROVED IN DOCKET NO. E-7,**  
8 **SUB 1032.**

9 A. Pursuant to the related Sub 1032 Orders, the Mechanism allows DEC to (1)  
10 recover the reasonable and prudent costs incurred for adopting and  
11 implementing DSM and EE measures in accordance with N.C. Gen. Stat. §  
12 62-133.9 and Commission Rules R8-68 and R8-69; (2) recover net lost  
13 revenues incurred for up to 36 months of a measure's life for EE programs;  
14 and (3) earn a PPI based upon the sharing of a percentage of the net savings  
15 achieved through DEC's DSM/EE programs on an annual basis. Prior to 2022  
16 the shared savings percentage is 11.5% and starting in 2022, this percentage  
17 was lowered to 10.6%. The PPI is also subject to certain limitations that are  
18 set forth in the Cost Recovery and Incentive Mechanism.

19 **Q. PLEASE EXPLAIN HOW DEC DETERMINES THE PPI.**

20 A. First, DEC determines the net savings eligible for incentive by subtracting the  
21 present value of the annual lifetime DSM/EE program costs (excluding  
22 approved low-income programs as described below) from the net present  
23 value of the annual lifetime avoided costs achieved through the Company's

1 programs (again, excluding approved low-income programs). The Company  
2 then multiplies the net savings eligible for incentive by the applicable shared  
3 savings percentage to determine its pretax incentive.

4 **Q. PLEASE EXPLAIN WHETHER DEC EXCLUDES ANY PROGRAMS**  
5 **FROM THE DETERMINATION OF ITS PPI CALCULATION.**

6 A. Consistent with the Sub 1032 Orders, DEC has excluded the impacts and costs  
7 associated with the Neighborhood Energy Saver Program and the Income-  
8 Qualified EE and Weatherization Program for Individuals from its calculation  
9 of the PPI. At the time the program was approved, it was not cost-effective,  
10 but was approved based on its societal benefit. Beginning in 2022 the  
11 Income-Qualified EE and Weatherization programs are eligible to receive a  
12 program return incentive (“PRI”). The PRI is determined by multiplying the  
13 net present value of avoided cost by 10.6 percent. As with the PPI, the PRI is  
14 also subject to certain limitations that are set forth in the Cost Recovery and  
15 Incentive Mechanism approved by the Commission in Docket No. E-7, Sub  
16 1032 on October 20, 2020.

17 **X. COLLABORATIVE**

18 **Q. PLEASE SUMMARIZE THE COLLABORATIVE ACTIVITIES**  
19 **OCCURRING IN 2020.**

20 A. The Collaborative met for formal meetings in January, March, May, July,  
21 September and November. Between meetings, interested stakeholders joined  
22 conference calls in February, April, May, August, October, and December to  
23 zero in on certain agenda items or priorities which could not be fully explored

1 during the formal meetings, such as new program development ideas and  
2 pandemic-related issues. Collaborative members gained a deeper  
3 understanding of the issues facing Duke's DSM/EE programs and brought the  
4 Company valuable feedback and perspective. Meetings and calls have begun  
5 and will continue in a similar fashion through 2021 as well.

6 **Q. HAS THE COLLABORATIVE EXAMINED THE REASONS FOR**  
7 **THE FORECASTED DECLINE IN SAVINGS AND EXPLORED**  
8 **OPTIONS FOR PREVENTING OR CORRECTING A DECLINE IN**  
9 **FUTURE DSM/EE SAVINGS?**

10 A. The forecasted decline in savings underpinned all the Collaborative's  
11 discussions in 2020. Since the decline is attributed primarily to the changing  
12 lighting standards and widespread adoption of LEDs, the members made  
13 bringing the Company new program ideas a priority. The Company is  
14 investigating several of those ideas to determine if they can be developed into  
15 cost-effective programs now or in the future.

16 **Q. HAS THE COLLABORATIVE LOOKED SPECIFICALLY AT EE**  
17 **PROGRAMS TO ASSIST LOW-INCOME CUSTOMERS IN SAVING**  
18 **ENERGY, PARTICULARLY IN LIGHT OF THE FINANCIAL**  
19 **HARDSHIPS CREATED BY THE ONGOING PANDEMIC?**

20 A. Yes, the Collaborative has suggested several ideas for expanding or  
21 modifying our current programs to assist low-income households. Members  
22 have helped us develop partnerships with organizations which provide  
23 weatherization assistance and have expressed interest in exploring more

1 opportunities in the coming year. Several of the program ideas they submitted  
2 have aspects that can target low-income customers as well.

3 The Collaborative spent time last year looking specifically at each  
4 program and how it could adapt to the challenges presented by the pandemic.  
5 The group will continue to examine customer behaviors and potential  
6 adjustments to the program portfolio as conditions change.

7 **XI. RESERVE MARGIN ADJUSTMENT FACTOR**

8 **Q. IS THE COMPANY PROPOSING TO APPLY A RESERVE MARGIN**  
9 **ADJUSTMENT FACTOR (“RMAF”) TO THE AVOIDED CAPACITY**  
10 **VALUES ASSOCIATED WITH ENERGY EFFICIENCY SAVINGS IN**  
11 **ITS APPLICATION?**

12 A. Because the Commission did not approve the Company’s use of an RMAF in  
13 Docket No. E-7, Sub 1230, stating that “exactly how much the reserve margin  
14 adjustment should be is not supported by substantial evidence in this docket,”  
15 the Company is including in its application a projection of avoided costs both  
16 with and without the utilization of an RMAF.

17 **Q. WHAT INFORMATION DOES THE COMPANY BELIEVE**  
18 **SUBSTANTIATES THE RMAF THAT IT IS PROPOSING TO APPLY**  
19 **TO THE 2022 AVOIDED CAPACITY ASSOCIATED WITH ENERGY**  
20 **EFFICIENCY SAVINGS?**

21 A. The Company believes that the following four facts substantiate and support  
22 the magnitude of the RMAF that it is proposing be applied to the capacity  
23 savings associated with energy efficiency savings in the projection of Vintage

1 2022.

2 1. The Company's Integrated Resource Plan included a 17% reserve margin  
3 to be applied to supply-side resources.

4 2. EE measures included in the Company's DSM portfolio are assigned  
5 Peak KW reductions, subject to validation through routine EM&V.

6 3. The Avoided Capacity Rate to be applied in the valuation of these Peak  
7 KW reductions complies with the methodology approved in the 2020 Sub  
8 1032 Order, issued on October 20, 2020.

9 4. The approved Avoided Capacity Rate as described above includes a  
10 Performance Adjustment Factor ("PAF") of 1.05 and the PAF is intended  
11 to represent an estimated Equivalent Forced Outage Rate ("EFOR").

12 **Q. GIVEN THESE FACTS, WHAT IS THE MAGNITUDE OF THE**  
13 **RMAF THAT THE COMPANY IS PROPOSING BE APPLIED TO ITS**  
14 **PROJECTION OF VINTAGE 2022?**

15 A. The Company is proposing to apply an 11.429% RMAF to the capacity  
16 savings associated with energy efficiency programs.

17 **Q. PLEASE EXPLAIN HOW THE 11.429% RMAF WAS DETERMINED**  
18 **BASED ON THE FACTS IN THIS PROCEEDING.**

19 A. Because this PAF could be considered to represent a portion of the  
20 Company's Reserve Margin, the Company has reduced the reduce the RMAF  
21 by the PAF, which already reflected a portion of the Reserve Margin. In other  
22 words, the RMAF is calculated by dividing the sum of 1 plus the reserve  
23 margin by the sum of 1 plus the PAF or in this case  $(1+0.17)/(1+0.05) =$

1 1.11429.

2 **Q. HAS THE COMPANY DETERMINED THE IMPACT OF APPLYING**  
3 **THE RMAF ON THE NPV OF THE AVOIDED COSTS ASSOCIATED**  
4 **WITH THE VINTAGE 2022 PORTFOLIO?**

5 A. Yes, the impact of applying the RMAF to the avoided capacity costs  
6 associated with energy efficiency programs results in the appropriate  
7 recognition of an additional \$5,942,245 of the projected system avoided cost  
8 benefit from the Vintage 2022 Portfolio. This information has been provided  
9 on Evans Exhibit 14.

10 **Q. HAS THE COMPANY SHARED THIS PROPOSAL WITH THE**  
11 **STAKEHOLDERS IN THE COLLABORATIVE?**

12 A. Yes. At its January 29th Collaborative Meeting, the Company shared its  
13 proposed methodology to calculate the RMAF to be applied to Vintage 2022,  
14 as well as the underlying facts substantiating the amount. No parties voiced  
15 disagreement with the proposed RMAF or the factual substantiation for the  
16 RMAF.

17 **XII. ADDITIONAL STUDIES**

18 **Q. PLEASE DESCRIBE THE ADDITIONAL STUDIES THE COMPANY**  
19 **WOULD LIKE TO PERFORM.**

20 A. Based on Collaborative-related requests, the Company would like to embark  
21 on studies related to Non-Energy Benefits (“NEBs”) with respect to its  
22 DSM/EE programs and the participation of Low and Moderate Income  
23 (“LMI”) customers in its DSM/EE programs.

1 For NEBs, the Company is beginning discussions with an external  
2 consultant for preliminary modeling to prioritize those NEBs that are most  
3 relevant to the Company's portfolio. In preliminary discussions with the  
4 external consultant, the initial cost of this modeling is approximately \$40,000.  
5 In addition, EM&V will explore the feasibility of asking NEBs-related  
6 questions through on-going EM&V process evaluations with participants.  
7 These NEBs-related questions will focus on specific NEBs that require  
8 primary research, such as comfort and the peace of mind experienced as a  
9 direct result of their program participation. If available, additional  
10 information related to the costs of this study will be relayed to the  
11 Commission later in this proceeding.

12 For the LMI proposal, the Company and the Carolinas Collaborative  
13 solicited proposals from three of the existing EM&V evaluators to conduct a  
14 saturation study assessing participation rates among low- and moderate-  
15 income households, as well as other metrics. The Collaborative identified a  
16 proposal that they collectively felt most closely matched the needs of the  
17 various Collaborative stakeholders. The key components of the proposal will:

- 18 • Characterize LMI customer participation in Duke Energy's energy  
19 efficiency programs;
- 20 • Compare LMI customer participation to that of non-LMI customers;
- 21 • Measure energy and bill impacts achieved through LMI customers  
22 participating in Duke Energy's programs;

- 1 • Identify drivers and barriers to participation among LMI customers;
- 2 and
- 3 • Identify strategies to cost-effectively increase LMI customer
- 4 participation through programmatic enhancements.

5                   The cost for the final LMI proposal is projected to cost \$293,300. Due  
6                   to the cost, the Company is presenting the LMI proposal to the Commission  
7                   for approval before commencing any work. The saturation study will be  
8                   completed by the time the cost recovery mechanism modifications take effect  
9                   in 2022.

10 **XI. CONCLUSION**

11 **Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT**  
12 **TESTIMONY?**

13 A. Yes.