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October 31, 2018

M. Lynn Jarvis
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4325

Re: Proposed Modifications to the Residential Smart \$aver Energy Efficiency Program; Docket No. E-7, Subs 1032 and 1164

Dear Ms. Jarvis:

Enclosed for filing with and approval by the North Carolina Utilities Commission (the "Commission") is Duke Energy Carolinas LLC's ("DEC" or the "Company") proposed modifications to its Residential Smart \$aver Energy Efficiency Program ("Program"). This energy efficiency ("EE") Program (formerly known as the HVAC EE Program) was originally approved by the Commission in its October 29, 2013 Order in Docket No. E-7, Sub 1032. This Program was filed and approved pursuant to Commission Rule R8-68 and the Commission's Orders dated February 29, 2008 and March 13, 2008 in Docket No. E-100, Sub 113, Rulemaking Proceeding to Implement Session Law 2007-397 (Senate Bill 3).

This filing is in response to the Commission's Order Approving DSM/EE Rider and Requiring Filing of Customer Notice issued on September 11, 2018 in Docket No. E-7, Sub 1164. The Commission ordered "That the Company shall propose modifications to the Residential Smart \$aver EE Program no later than October 31, 2018, with the goal of restoring the TRC score to 1.0 or greater, and the Company shall include a discussion of impact of these modifications and any other actions it has taken to improve cost-effectiveness in the next year's DSM/EE rider proceeding."

As the Commission is aware, the Program addresses the largest single source of energy consumption in a residential customer's home. It encourages the installation of high efficiency air conditioners and heat pumps ("HVAC"). While this Program is a long standing and critical component of the Company's portfolio of EE programs, it continues to be one of the most challenging to run with respect to maintaining its cost effectiveness as measured by the Total Resource Cost ("TRC") test. This challenge is primarily driven by advancements in HVAC related standards and the fact that as the efficiency standards have advanced, the incremental efficiency associated with each successive Seasonal Energy Efficiency Ratio ("SEER") rating increases, and the incremental cost of exceeding the standard SEER rating correspondingly

increases. For this reason, the costs associated with the TRC test, which accounts for the participant's out-of-pocket costs, are in many ways the most difficult to influence.

Nevertheless, the Company has come up with a set of modifications to the Program that are projected to result in a TRC score equaling 1.01. This is being accomplished through: (1) the recognition of lower actual incremental customer costs; (2) making trade ally participation more streamlined and less costly; (3) reducing the Company's Program administrative costs; and (4) recognizing a three-year transition to referral-only channels.

The proposed tariff modifications are intended to increase the Company's ability to quickly react to changes in the market place market pursuant to the Demand-Side Management ("DSM") and EE Program Flexibility Guidelines, approved initially by the Commission in its July 16, 2012 Order Adopting Flexibility Guidelines in Docket No. E-7, Sub 831 and subsequently applied to the new portfolio of programs approved in the Commission's October 29, 2013 Order Approving DSM/EE Programs and Stipulation of Settlement in Docket No. E-7, Sub 1032.

DEC believes that the Program modifications will continue to increase the cost effectiveness of the Program. The Company has modeled the Program's updated cost effectiveness results resulting from these modifications. The updated and previously reported cost effectiveness results (provided in Evans Exhibit 7 in Docket E-7, Sub 1164) are provided in the following table:

Cost Effectiveness Tests	Updated Results	Previous Results
Utility Cost Test (<i>UCT</i>)	1.42	0.94
Total Resource Cost Test (<i>TRC</i>)	1.01	0.59
Rate Impact Measure Test (<i>RIM</i>)	0.66	0.45
Participant Test	1.77	1.52

DEC respectfully requests that the Commission:

1. Approve the Residential Smart \$aver Energy Efficiency Program and tariff (provided on Attachment G) until such time that the Commission orders otherwise;
2. Find that the Residential Smart \$aver Energy Efficiency Program continues to meet the requirements of a "new" EE program consistent with Rule R8-69.

3. Find that all costs incurred by DEC associated with the Residential Smart \$aver Energy Efficiency Program will be eligible for consideration for cost recovery through the Company's annual DSM/EE rider in accordance with Rule R8-69(b).
4. Approve the proposed utility incentives for inclusion in the Company's annual DSM/EE rider in accordance with Rule R8-69.
5. Approve the proposed Program modifications on or before January 1, 2019.

Thank you for your attention to this matter. If you have any questions or need any additional information, please contact me.

Sincerely,

Electronically Submitted
s/ Molly McIntosh Jagannathan
molly.jagannathan@troutman.com

Enclosures

cc: Parties of Record

R8-68 Filing Requirements	
Smart \$aver® Energy Efficiency Program	
Filing Requirements	
(c)(2)(i)(a)	Measure / Program Name Smart \$aver® Energy Efficiency Program ("Program")
(c)(2)(i)(b)	Consideration to be Offered Program participants will receive prescriptive incentives for completion of qualified energy saving improvements.
(c)(2)(i)(c)	Anticipated Total Cost of the Measure / Program See Attachment B, line 12.
(c)(2)(i)(d)	Source and Amount of Funding Proposed to be Used The source of funding will come from the Duke Energy Carolinas, LLC ("DEC" or the "Company") general fund, consisting of all sources and capital. Costs associated with the Program will also be subject to cost recovery through the Demand-Side Management ("DSM")/Energy Efficiency ("EE") annual cost recovery rider consistent with Commission Rule R8-68(b). See attachment B, line 12.
(c)(2)(i)(e)	Proposed Classes of Persons to Whom This Will be Offered This Program is available to customers residing in owner-occupied or landlord-approved single-family residences served on a Company offered residential rate. Depending upon market conditions, measure availability for customers residing in other residential structures (i.e. duplexes, condominiums, and mobile homes) may vary.
(c)(2)(ii)(a)	Describe the Measure / Program's Objective The objective of this Program is to provide residential customers with opportunities to lower their homes' electric use through improvements made to HVAC equipment and services, water conditioning or pumping devices, as well as improvements made to the structure of their residence. As a result of increased Seasonal Energy Efficiency Ratio (SEER rating) baselines and higher costs for energy efficient equipment, the Company will implement modifications to offer a cost-effective Program. Available measures and corresponding incentives are provided in section (c)(2)(iv)(b) below. Measures that will be offered under through this Program, as modified may include but are not limited to: <ul style="list-style-type: none"> • Heating Ventilation and Air Conditioning (HVAC) equipment, service, and controls, including smart thermostats • Attic Insulation and Air Sealing • Duct Sealing • Variable Speed Pool Pumps • Heat Pump Water Heater
(c)(2)(ii)(b)	Describe the Measure / Program Duration Duration - see Attachment A, line 1.
(c)(2)(ii)(c)	Describe the Measure / Program Sector and Eligibility Requirements The Program is available to homeowners, landlords that implement qualified installations or services for their individually metered single family residences. Individually metered duplexes, mobile homes and condominiums will be handled on a case-by-case basis which will depend upon the structure, maintenance responsibility and dwelling characteristics.
(c)(2)(ii)(d)	Examples of Communication Materials and Related Cost Cost associated with communications materials for this Program through various communication channels is approximately \$2,489,315 and is embedded in the cost displayed in Attachment B, line 9. This Program may be promoted through various marketing channels that may include but are not limited to: <ul style="list-style-type: none"> • Trade Allies • Direct Mail • TV/Radio • Community Events • Bill Inserts
(c)(2)(ii)(d) (continued)	

	<ul style="list-style-type: none"> • Retailer Point-of-Sale 										
(c)(2)(ii)(e)	Estimated Number of Participants										
	Estimated DEC Participation - see Attachment A, lines 3 - 12.										
(c)(2)(ii)(f)	Impact that each measure or program is expected to have on the electric public utility or electric membership corporation, its customer body as a whole, and its participating North Carolina customers;										
	Estimated DEC Program Impact - see Attachment A, lines 13 - 49.										
(c)(2)(ii)(g)	Any other information the electric public utility or electric membership corporation believes is relevant to the application, including information on competition known by the electric public utility or the electric membership corporation.										
	Not applicable.										
(c)(2)(iii)(a)	<p>Proposed Marketing Plan Including Market Barriers and how the Electric Public Utility Plans to Address Them.</p> <p>The Company will market the Program through various marketing channels that may include, but are not limited to:</p> <ul style="list-style-type: none"> • Trade Allies • Direct Mail • TV/Radio • Community Events • Bill Inserts • Retailer Point-of-Sale <p>The Company may not be aware of all market barriers or understands the methods that can be used to address these market barriers. Potential market barriers include:</p> <table border="1"> <thead> <tr> <th>MARKET BARRIERS</th><th>ACTIONS TO ADDRESS</th></tr> </thead> <tbody> <tr> <td>Communication of program protocols to trade allies</td><td>The Company will clearly define and communicate Program requirements and measure protocols to potential contractors prior to participation in the Program. The Company will administer training specific to the Program and measures listed, requiring successful completion and a signed agreement evidencing the trade contractors' understanding of and their agreement to perform the services in compliance with Program specifications.</td></tr> <tr> <td>Recruitment of Trade Allies</td><td>The Company anticipates there may be initial recruitment barriers registering the required number of Trade Allies who can consistently meet the performance metrics required to participate in the referrals delivery channel.</td></tr> <tr> <td>Customer understands of the Company's motivation in promoting energy efficiency.</td><td>The Company will communicate how this Program benefits not only the customer but also the environment.</td></tr> <tr> <td>Customer adoption of referrals delivery channel</td><td>The Company will need to market in the appropriate channels to bring high levels of awareness to customers that the Program offers reputable high-quality contractors who are selected and monitored to perform HVAC and home performance-based services. Communication with the customer on why and how these services are available to them will encourage adoption.</td></tr> </tbody> </table>	MARKET BARRIERS	ACTIONS TO ADDRESS	Communication of program protocols to trade allies	The Company will clearly define and communicate Program requirements and measure protocols to potential contractors prior to participation in the Program. The Company will administer training specific to the Program and measures listed, requiring successful completion and a signed agreement evidencing the trade contractors' understanding of and their agreement to perform the services in compliance with Program specifications.	Recruitment of Trade Allies	The Company anticipates there may be initial recruitment barriers registering the required number of Trade Allies who can consistently meet the performance metrics required to participate in the referrals delivery channel.	Customer understands of the Company's motivation in promoting energy efficiency.	The Company will communicate how this Program benefits not only the customer but also the environment.	Customer adoption of referrals delivery channel	The Company will need to market in the appropriate channels to bring high levels of awareness to customers that the Program offers reputable high-quality contractors who are selected and monitored to perform HVAC and home performance-based services. Communication with the customer on why and how these services are available to them will encourage adoption.
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(c)(2)(iii)(b)	Total Market Potential and Estimated Market Growth throughout the Duration of the Program;										

	<p>Market potential represents the number of eligible customers based on eligibility requirements defined in the Program tariff. There are approximately 900,000 residential customers that meet the criteria for this program.</p> <p>Estimated Market Growth (Participation) - see Attachment A, lines 3 - 12.</p>												
(c)(2)(iii)(c)	<p>Estimated Summer and Winter Peak Demand Reduction by Unit Metric and in the Aggregate by Year</p> <p>Estimated Summer and Winter Peak Demand Reduction – see Attachment A, lines 13 - 17 and 23 - 24 and Attachment E, lines 1 - 10.</p>												
(c)(2)(iii)(d)	<p>Estimated Energy Reduction per Appropriate Unit Metric and in the Aggregate by Year</p> <p>Estimated Energy Reduction - see Attachment A, lines 18 - 22 and lines 25 - 29.</p>												
(c)(2)(iii)(e)	<p>Estimated Lost Energy Sales per Appropriate Unit metric and in the Aggregate by Year</p> <p>Lost Energy Sales - see Attachment A, lines 30 - 39.</p>												
(c)(2)(iii)(f)	<p>Estimated Load Shape Impacts</p> <p>See responses to (c)(2)(iii)(c) and (c)(c)(iii)(d).</p>												
(c)(2)(iv)(a)	<p>Estimated Total and Per Unit Cost and Benefit of the Measure / Program and the Planned Accounting Treatment for Those Costs and Benefits</p> <p>Costs associated with this Program will be expensed as incurred. DEC is also eligible to recover a return on any outstanding deferred balance.</p> <p>Total estimated cost by category – see Attachment B lines 6 - 9. Total estimated benefit – see Attachment B line 11. Total estimated per unit cost by category – see Attachment D lines 1 - 25.</p> <p>Data shown on Attachment B represents present value of cost and benefits over the life of the measure. The cost shown in Attachment B reflects the reduction of Program cost offset by projected referrals fees.</p>												
(c)(2)(iv)(b)	<p>Type, Amount, and Reason for Any Participation Incentives and Other Consideration and to Whom They Will be Offered, Including Schedules Listing Participation Incentives and Other Consideration to be Offered</p> <p>Prescriptive incentives will be awarded on a consistent and nondiscriminatory basis to eligible customers who have successfully implemented a qualifying measure and submitted a completed application in compliance with Program requirements. Incentive distribution may include, but are not limited to builder rebates, rebate checks, gift cards, pre-paid credit cards, etc.</p> <p>Initial incentives for Program measures are provided in the following table:</p> <table border="1"> <tr> <td>Heating Ventilation and Air Conditioning (HVAC) equipment, service, and controls</td><td>\$400</td></tr> <tr> <td>Smart Thermostat</td><td>\$50</td></tr> <tr> <td>Attic Insulation Air Sealing</td><td>\$250</td></tr> <tr> <td>Duct Sealing</td><td>\$100</td></tr> <tr> <td>Variable Speed Pool Pump</td><td>\$300</td></tr> <tr> <td>Heat Pump Water Heater</td><td>\$350</td></tr> </table>	Heating Ventilation and Air Conditioning (HVAC) equipment, service, and controls	\$400	Smart Thermostat	\$50	Attic Insulation Air Sealing	\$250	Duct Sealing	\$100	Variable Speed Pool Pump	\$300	Heat Pump Water Heater	\$350
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(c)(2)(iv)(c)	Service Limitations or Conditions Planned to be Imposed on Customers Who do not Participate in the Measure / Program
	None
(c)(2)(v)	Cost-Effectiveness Evaluation (including the results of all cost-effectiveness tests and should include, at a minimum, an analysis of the Total Resource Cost Test, the Participant Test, the Utility Cost Test, and the Ratepayer Impact Measure Test) Description of the Methodology Used to Produce the Impact Estimates, as well as, if Appropriate, Methodologies Considered and Rejected in the Interim Leading to the Final Model Specification “Program Manager to update Analytics to review can confirm source documentation is available to support assumptions”
	The source of the impacts for the existing home performance measures included in the Program is the Residential Smart Saver Program Evaluation, Measurement and Verification (“EM&V”) report completed by Nexant on May 25, 2018.
	Navigant Consulting is the source of the impacts for the referred heat pump, central air conditioner and smart thermostat measures. See Attachment B, line 13 for cost-effectiveness test scores.
(c)(2)(vi)	Commission Guidelines Regarding Incentive Programs (provide the information necessary to comply with the Commission’s Revised Guidelines for Resolution of Issues Regarding Incentive Programs, issued by Commission Order on March 27, 1996, in Docket No. M-100, Sub 124, set out as an Appendix to Chapter 8 of these rules)
	The Program does not provide any inducement or incentive affecting a residential customer’s decision to install or adopt natural gas or electric service.
(c)(2)(vii)	Integrated Resource Plan (explain in detail how the measure is consistent with the electric public utility’s or electric membership corporation’s integrated resource plan filings pursuant to Rule R8-60)
	Energy and capacity reductions from this program will be included for planning purposes in future integrated resource plans.
(c)(2)(viii)	Other (any other information the electric public utility or electric membership corporation believes relevant to the application, including information on competition known by the electric public utility or the electric membership corporation)
	Not applicable.
Additional Filing Requirements	
(c)(3)(i)(a)	Costs and Benefits- Any Costs Incurred or Expected to be Incurred in Adopting and Implementing a Measure / Program to be Considered for Recovery Through the Annual Rider Under G.S. 62-133.9
	See Attachment C, lines 11 - 35.
(c)(3)(i)(b)	Estimated total costs to be avoided by the measure by appropriate capacity, energy and measure unit metric and in the aggregate by year
	See Attachment A, lines 40 - 49.
(c)(3)(i)(c)	Estimated participation incentives by appropriate capacity, energy, and measure unit metric and in the aggregate by year.
	Incentive per cumulative kW - see Attachment E, lines 21 - 25.
	Incentive per cumulative kWh - see Attachment F, lines 16 - 20.
(c)(3)(i)(d)	How the electric public utility proposes to allocate the costs and benefits of the measure among the customer classes and jurisdictions it serves.
	The program costs for EE programs targeted at North Carolina and South Carolina retail residential customers are allocated to North Carolina retail jurisdiction based on the ratio of North Carolina retail kWh sales to total retail kWh sales, then recovered only from North Carolina residential customers.
(c)(3)(i)(e)	The capitalization period to allow the utility to recover all costs or those portions of the costs associated with a new program or measure to the extent that those costs are intended to produce future benefits as provided in G.S. 62-133.9(d)(1).
	No costs from this Program will be capitalized.

(c)(3)(i)(f)	The electric public utility shall also include the estimated and known costs of measurement and verification activities pursuant to the Measurement and Verification Reporting Plan described in paragraph (ii).
	Total portfolio evaluation costs are estimated to be 5 percent of total program costs.
(c)(3)(ii)(a)	Measurement and Verification Reporting Plan for New Demand-Side Management and Energy Efficiency Measures: Describe the industry-accepted methods to be used to evaluate, measure, verify, and validate the energy and peak demand savings estimated in (2)(iii)c and d above.
	EM&V actions will provide an independent, third-party report of energy savings attributable to the Program including an impact analysis and process evaluation.
	The impact analysis will review deemed savings assumptions and verify equipment installations. Depending upon the measure, selective monitoring and site visits will be performed at a sample of participant homes to estimate hours of operation and associated amperage. In addition, the evaluator will select engineering-based estimation of energy and demand savings to determine EE impacts for other measures. A statistically representative sample of participants will be selected for the analysis.
	The process evaluation will include participant surveys, along with vendor satisfaction surveys or interviews, to estimate net-to-gross and uncover issues that might impact customer satisfaction or program effectiveness. A statistically representative sample of participants will be selected for the process analysis.
(c)(3)(ii)(b)	Measurement and Verification Reporting Plan for New Demand-Side Management and Energy Efficiency Measures: Provide a schedule for reporting the savings to the Commission;
	The Company will report savings associated with this program in its annual DSM/EE cost recovery proceedings.
(c)(3)(ii)(c)	Measurement and Verification Reporting Plan for New Demand-Side Management and Energy Efficiency Measures: describe the methodologies used to produce the impact estimates, as well as, if appropriate, the methodologies it considered and rejected in the interim leading to final model specification; and
	See (c)(2)(v)
(c)(3)(ii)(d)	Measurement and Verification Reporting Plan for New Demand-Side Management and Energy Efficiency Measures: Identify any third party and include all of the costs of that third party, if the electric public utility plans to utilize an independent third party for purposes of measurement and verification
	The Company intends to use a third party evaluator. See section (c)(3)(i)(f) for cost.
(c)(3)(iii)	Cost Recovery Mechanism- Describe the Proposed Method of Cost Recovery From its Customers
	The Company seeks to recover program costs, net lost revenues and a utility incentive pursuant to the cost recovery mechanism approved by the Commission in Docket No. E-7, Sub 1032 on October 29, 2013 (as subsequently revised by the Commission's Order dated August 23, 2017 in Docket No. E-7, Sub 1130).
(c)(3)(iv)	Tariffs or Rates- Provide Proposed Tariffs or Modifications to Existing Tariffs That Will be Required to Implement Each Measure / Program
	The tariff for the Residential Smart Saver® Energy Efficiency Program is included as Attachment G.
(c)(3)(v)	Utility Incentives- Indicate Whether it Will Seek to Recover Any Utility Incentives, Including, if Appropriate, Net Lost Revenues, in Addition to its Costs
	The Company seeks to recover program costs, net lost revenues and a utility incentive in Rider EE.

Attachment A
Participation

Smart \$aver® Energy Efficiency		
1	Measure Life (Average)	16
2	Free Rider % (Average)	24.6%
3	Incremental Participants Year 1	29,692
4	Incremental Participants Year 2	29,692
5	Incremental Participants Year 3	29,692
6	Incremental Participants Year 4	12,461
7	Incremental Participants Year 5	12,461
8	Cumulative Participation Year 1	29,692
9	Cumulative Participation Year 2	59,384
10	Cumulative Participation Year 3	89,076
11	Cumulative Participation Year 4	101,537
12	Cumulative Participation Year 5	113,998
13	Cumulative Summer Coincident kW w/ losses (net free) Year 1	2,718
14	Cumulative Summer Coincident kW w/ losses (net free) Year 2	5,435
15	Cumulative Summer Coincident kW w/ losses (net free) Year 3	8,153
16	Cumulative Summer Coincident kW w/ losses (net free) Year 4	10,455
17	Cumulative Summer Coincident kW w/ losses (net free) Year 5	12,758
18	Cumulative kWh w/ losses (net free) Year 1	10,603,099
19	Cumulative kWh w/ losses (net free) Year 2	21,206,198
20	Cumulative kWh w/ losses (net free) Year 3	31,809,298
21	Cumulative kWh w/ losses (net free) Year 4	37,657,967
22	Cumulative kWh w/ losses (net free) Year 5	43,506,636
23	Per Participant Weighted Average Coincident Saved Winter kW w/ losses	0.101
24	Per Participant Weighted Average Coincident Saved Summer kW w/ losses	0.124
25	Per Participant Average Annual kWh w/ losses (net free) Year 1	357
26	Per Participant Average Annual kWh w/ losses (net free) Year 2	357
27	Per Participant Average Annual kWh w/ losses (net free) Year 3	357
28	Per Participant Average Annual kWh w/ losses (net free) Year 4	371
29	Per Participant Average Annual kWh w/ losses (net free) Year 5	382
30	Cumulative Lost Revenue (net free) Year 1	\$1,015,106
31	Cumulative Lost Revenue (net free) Year 2	\$2,076,299
32	Cumulative Lost Revenue (net free) Year 3	\$3,185,147
33	Cumulative Lost Revenue (net free) Year 4	\$3,856,565
34	Cumulative Lost Revenue (net free) Year 5	\$4,556,825
35	Average Lost Revenue per Participant (net free) Year 1	\$34
36	Average Lost Revenue per Participant (net free) Year 2	\$35
37	Average Lost Revenue per Participant (net free) Year 3	\$36
38	Average Lost Revenue per Participant (net free) Year 4	\$38
39	Average Lost Revenue per Participant (net free) Year 5	\$40
40	Total Avoided Costs/MW saved Year 1	\$129,007
41	Total Avoided Costs/MW saved Year 2	\$132,441
42	Total Avoided Costs/MW saved Year 3	\$135,311
43	Total Avoided Costs/MW saved Year 4	\$138,355
44	Total Avoided Costs/MW saved Year 5	\$141,644
45	Total Avoided Costs/MWh saved Year 1	\$36
46	Total Avoided Costs/MWh saved Year 2	\$36
47	Total Avoided Costs/MWh saved Year 3	\$38
48	Total Avoided Costs/MWh saved Year 4	\$40
49	Total Avoided Costs/MWh saved Year 5	\$39

Attachment B
Cost-Effectiveness Evaluation

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Oct 31 2018

Smart \$aver® Energy Efficiency					
		UCT	TRC	RIM	Participant
1	Avoided T&D Electric	\$9,973,163	\$9,973,163	\$9,973,163	\$0
2	Cost-Based Avoided Elec Production	\$18,933,574	\$18,933,574	\$18,933,574	\$0
3	Cost-Based Avoided Elec Capacity	\$9,618,216	\$9,618,216	\$9,618,216	\$0
4	Participant Elec Bill Savings (gross)	\$0	\$0	\$0	\$56,256,707
5	Net Lost Revenue Net Fuel	\$0	\$0	\$31,434,321	\$0
6	Administration Costs	\$1,515,963	\$1,515,963	\$1,515,963	\$0
7	Implementation Costs	\$1,245,367	\$1,245,367	\$1,245,367	\$0
8	Incentives	\$21,876,280	\$0	\$21,876,280	\$21,876,280
9	Other Utility Costs	\$2,489,315	\$2,489,315	\$2,489,315	\$0
10	Participant Costs	\$0	\$32,796,222	\$0	\$44,150,223
11	Total Benefits	\$38,524,953	\$38,524,953	\$38,524,953	\$78,132,987
12	Total Costs	\$27,126,925	\$38,046,867	\$58,561,246	\$44,150,223
13	Benefit/Cost Ratios	1.42	1.01	0.66	1.77
Data represents present value of costs and benefits over the life of the program.					

Attachment C
Program Costs by Year

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Oct 31 2018

Smart \$aver® Energy Efficiency		
1	Incremental Participants Year 1	29,692
2	Incremental Participants Year 2	29,692
3	Incremental Participants Year 3	29,692
4	Incremental Participants Year 4	12,461
5	Incremental Participants Year 5	12,461
6	Total Participant Costs Year 1	\$11,986,618
7	Total Participant Costs Year 2	\$11,986,618
8	Total Participant Costs Year 3	\$11,986,618
9	Total Participant Costs Year 4	\$6,697,113
10	Total Participant Costs Year 5	\$6,697,113
11	Administration Costs Year 1	\$408,002
12	Administration Costs Year 2	\$418,473
13	Administration Costs Year 3	\$418,473
14	Administration Costs Year 4	\$224,299
15	Administration Costs Year 5	\$224,299
16	Implementation Costs Year 1	\$325,244
17	Implementation Costs Year 2	\$325,244
18	Implementation Costs Year 3	\$325,244
19	Implementation Costs Year 4	\$211,837
20	Implementation Costs Year 5	\$211,837
21	Total Incentives Year 1	\$5,906,400
22	Total Incentives Year 2	\$5,906,400
23	Total Incentives Year 3	\$5,906,400
24	Total Incentives Year 4	\$3,376,950
25	Total Incentives Year 5	\$3,376,950
26	Other Utility Costs Year 1	\$977,636
27	Other Utility Costs Year 2	\$983,575
28	Other Utility Costs Year 3	\$940,166
29	Other Utility Costs Year 4	(\$120,295)
30	Other Utility Costs Year 5	(\$168,322)
31	Total Utility Costs Year 1	\$7,617,283
32	Total Utility Costs Year 2	\$7,633,693
33	Total Utility Costs Year 3	\$7,590,283
34	Total Utility Costs Year 4	\$3,692,791
35	Total Utility Costs Year 5	\$3,644,764

Attachment D
Program Costs per Participant

Smart \$aver® Energy Efficiency		
1	Average Per Participant Administration Costs Year 1	\$13.74
2	Average Per Participant Administration Costs Year 2	\$14.09
3	Average Per Participant Administration Costs Year 3	\$14.09
4	Average Per Participant Administration Costs Year 4	\$18.00
5	Average Per Participant Administration Costs Year 5	\$18.00
6	Average Per Participant Implementation Costs Year 1	\$10.95
7	Average Per Participant Implementation Costs Year 2	\$10.95
8	Average Per Participant Implementation Costs Year 3	\$10.95
9	Average Per Participant Implementation Costs Year 4	\$17.00
10	Average Per Participant Implementation Costs Year 5	\$17.00
11	Average Per Participant Incentives Year 1	\$198.92
12	Average Per Participant Incentives Year 2	\$198.92
13	Average Per Participant Incentives Year 3	\$198.92
14	Average Per Participant Incentives Year 4	\$271.00
15	Average Per Participant Incentives Year 5	\$271.00
16	Average Per Participant Other Utility Costs Year 1	\$32.93
17	Average Per Participant Other Utility Costs Year 2	\$33.13
18	Average Per Participant Other Utility Costs Year 3	\$31.66
19	Average Per Participant Other Utility Costs Year 4	(\$9.65)
20	Average Per Participant Other Utility Costs Year 5	(\$13.51)
21	Average Per Participant Total Utility Costs Year 1	\$256.54
22	Average Per Participant Total Utility Costs Year 2	\$257.10
23	Average Per Participant Total Utility Costs Year 3	\$255.63
24	Average Per Participant Total Utility Costs Year 4	\$296.35
25	Average Per Participant Total Utility Costs Year 5	\$292.49

Attachment E
Program Costs per kW

OFFICIAL COPY

Oct 31 2018

Smart \$aver® Energy Efficiency		
1	Cumulative Winter Coincident kW w/ losses (net free) Year 1	2,069
2	Cumulative Winter Coincident kW w/ losses (net free) Year 2	4,138
3	Cumulative Winter Coincident kW w/ losses (net free) Year 3	6,207
4	Cumulative Winter Coincident kW w/ losses (net free) Year 4	6,836
5	Cumulative Winter Coincident kW w/ losses (net free) Year 5	7,465
6	Cumulative Summer Coincident kW w/ losses (net free) Year 1	2,718
7	Cumulative Summer Coincident kW w/ losses (net free) Year 2	5,435
8	Cumulative Summer Coincident kW w/ losses (net free) Year 3	8,153
9	Cumulative Summer Coincident kW w/ losses (net free) Year 4	10,455
10	Cumulative Summer Coincident kW w/ losses (net free) Year 5	12,758
11	Administration Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 1	\$150
12	Administration Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 2	\$77
13	Administration Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 3	\$51
14	Administration Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 4	\$21
15	Administration Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 5	\$18
16	Implementation Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 1	\$120
17	Implementation Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 2	\$60
18	Implementation Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 3	\$40
19	Implementation Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 4	\$20
20	Implementation Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 5	\$17
21	Incentives / Cumulative Summer Coincident kW w/ losses (net free) Year 1	\$2,173
22	Incentives / Cumulative Summer Coincident kW w/ losses (net free) Year 2	\$1,087
23	Incentives / Cumulative Summer Coincident kW w/ losses (net free) Year 3	\$724
24	Incentives / Cumulative Summer Coincident kW w/ losses (net free) Year 4	\$323
25	Incentives / Cumulative Summer Coincident kW w/ losses (net free) Year 5	\$265
26	Other Utility Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 1	\$360
27	Other Utility Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 2	\$181
28	Other Utility Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 3	\$115
29	Other Utility Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 4	(\$12)
30	Other Utility Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 5	(\$13)
31	Total Utility Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 1	\$2,803
32	Total Utility Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 2	\$1,404
33	Total Utility Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 3	\$931
34	Total Utility Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 4	\$353
35	Total Utility Costs / Cumulative Summer Coincident kW w/ losses (net free) Year 5	\$286

Attachment F
Program Costs per kWh

Smart \$aver® Energy Efficiency		
1	Cumulative kWh w/ losses (net free) Year 1	10,603,099
2	Cumulative kWh w/ losses (net free) Year 2	21,206,198
3	Cumulative kWh w/ losses (net free) Year 3	31,809,298
4	Cumulative kWh w/ losses (net free) Year 4	37,657,967
5	Cumulative kWh w/ losses (net free) Year 5	43,506,636
6	Administration Costs / Cumulative kWh w/ losses (net free) Year 1	\$0.04
7	Administration Costs / Cumulative kWh w/ losses (net free) Year 2	\$0.02
8	Administration Costs / Cumulative kWh w/ losses (net free) Year 3	\$0.01
9	Administration Costs / Cumulative kWh w/ losses (net free) Year 4	\$0.01
10	Administration Costs / Cumulative kWh w/ losses (net free) Year 5	\$0.01
11	Implementation Costs / Cumulative kWh w/ losses (net free) Year 1	\$0.03
12	Implementation Costs / Cumulative kWh w/ losses (net free) Year 2	\$0.02
13	Implementation Costs / Cumulative kWh w/ losses (net free) Year 3	\$0.01
14	Implementation Costs / Cumulative kWh w/ losses (net free) Year 4	\$0.01
15	Implementation Costs / Cumulative kWh w/ losses (net free) Year 5	\$0.00
16	Incentives / Cumulative kWh w/ losses (net free) Year 1	\$0.56
17	Incentives / Cumulative kWh w/ losses (net free) Year 2	\$0.28
18	Incentives / Cumulative kWh w/ losses (net free) Year 3	\$0.19
19	Incentives / Cumulative kWh w/ losses (net free) Year 4	\$0.09
20	Incentives / Cumulative kWh w/ losses (net free) Year 5	\$0.08
21	Other Utility Costs / Cumulative kWh w/ losses (net free) Year 1	\$0.09
22	Other Utility Costs / Cumulative kWh w/ losses (net free) Year 2	\$0.05
23	Other Utility Costs / Cumulative kWh w/ losses (net free) Year 3	\$0.03
24	Other Utility Costs / Cumulative kWh w/ losses (net free) Year 4	(\$0.00)
25	Other Utility Costs / Cumulative kWh w/ losses (net free) Year 5	(\$0.00)
26	Total Utility Costs / Cumulative kWh w/ losses (net free) Year 1	\$0.72
27	Total Utility Costs / Cumulative kWh w/ losses (net free) Year 2	\$0.36
28	Total Utility Costs / Cumulative kWh w/ losses (net free) Year 3	\$0.24
29	Total Utility Costs / Cumulative kWh w/ losses (net free) Year 4	\$0.10
30	Total Utility Costs / Cumulative kWh w/ losses (net free) Year 5	\$0.08

Duke Energy Carolinas, LLC

Electricity No. 4
 North Carolina First Revised Leaf No. 168
 Superseding North Carolina Original Leaf No. 168

RESIDENTIAL - SMART \$AVER® ENERGY EFFICIENCY PROGRAM

PURPOSE

The purpose of this program is to encourage the purchase and installation of energy conservation measures designed to increase energy efficiency in new or existing residential dwellings.

PROGRAM

- The program is available to owners of individually-metered residences including single family detached, duplexes, townhomes, condominiums and mobile homes who are served on a residential service schedule.
- The types of equipment, products, and services eligible for incentives may include but are not limited to the following:
 - Heating Ventilation and Air Conditioning (HVAC) equipment, service, and controls, including smart thermostats
 - Thermal boundary improvements
 - HVAC duct improvements
 - Water conditioning and/or pumps
 - Other high efficiency equipment, products, and services as determined by the Company on a case by case basis.
- New HVAC equipment must (1) achieve or exceed the minimum Seasonal Energy Efficiency Ratio (SEER), Energy Efficiency Ratio (EER), and/or Heating Seasonal Performance Factor (HSPF) allowed by law and (2) meet all other Duke Energy requirements to achieve designated energy savings.
- The new HVAC system must include a properly matched outdoor unit and inside coil, which must be listed as such by the Air Conditioning, Heating and Refrigeration Institute (AHRI) or any additional certification directory as approved by Duke Energy.
- Qualifying Smart Thermostats (Wi-Fi enabled) must be installed at the time of a qualifying HVAC installation and may be subject to Duke Energy requirements regarding installation, installer, programming, functionality, and square footage of conditioned space.
- Duke Energy will establish performance requirements deemed necessary to ensure achievement of minimum energy savings for other equipment, products, and services offered for incentives. Parameters related to these performance requirements may include, but are not limited to, diagnostic testing, size of conditioned area, building/structure type, energy reduction achievement, installer/installation, and product selection.
- All improvements eligible for payment under this program must be installed based on manufacturer's recommendations and the Company's specifications, including installation by a Company approved contractor, unless otherwise noted in program requirements. Detailed requirements are available on the Company's website at www.duke-energy.com.
- The Company may vary the incentive by type of equipment and differences in efficiency to induce customers to purchase greater levels of efficiency at the minimum necessary incentive amount. The Company may offer multiple levels of incentives corresponding to varied efficiency levels of equipment or service.
- The Company reserves the right to adjust the incentive on a periodic basis, as appropriate, to reflect changes to efficiency standards and market conditions.
- The Company reserves the right to limit the availability of incentives by the type of residential structures required to ensure achievement of energy savings.
- The current amount of the incentive payment for eligible equipment, products, and services will be posted to the Company's website at www.duke-energy.com.

North Carolina First Revised Leaf No. 168

Effective for service on and after _____

NCUC Docket No. E-7, Sub 1032

Order dated _____

Duke Energy Carolinas, LLC

Electricity No. 4
North Carolina First Revised Leaf No. 168
Superseding North Carolina Original Leaf No. 168

RESIDENTIAL - SMART \$AVER® ENERGY EFFICIENCY PROGRAM

- Incentives may be limited to one of any product, per residence, under all Company Energy Efficiency Programs.
- With Company approval, the owner or customer may designate that incentive be provided to a third-party.
- To qualify for payment under this program, qualifying improvements must be made on or after January 1, 2019 and the application for payment must be made as noted on Company's website.
- All energy conservation measures installed shall be subject to inspection by Company for the purposes of program evaluation, measurement, and verification.

PAYMENT

The Company's incentives, for individual equipment, products, and services may be offered in a variety of ways, including, but not limited to, point-of-sale discounts, checks, and prepaid credit card options.

COMPANY RETENTION OF PROGRAM BENEFITS

Incentives and other considerations offered under the terms of this Program are understood to be an essential element in the recipient's decision to participate in the Program. Upon payment of these considerations, Company will be entitled to any and all environmental, energy efficiency, and demand reduction benefits and attributes, including all reporting and compliance rights, associated with participation in the Program.