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March 7, 2018

VIA ELECTRONIC FILING AND OVERNIGHT DELIVERY

M. Lynn Jarvis, Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

RE: Duke Energy Carolinas, LLC's Application for Approval of Demand-Side Management and Energy Efficiency Cost Recovery Rider Docket No. E-7, Sub 1164

Dear Ms. Jarvis:

I enclose Duke Energy Carolinas, LLC's Application for Approval of Demand-Side Management and Energy Efficiency Cost Recovery Rider, together with Direct Testimonies and Exhibits of Robert P. Evans and Carolyn T. Miller, for filing in connection with the referenced matter.

I will deliver fifteen (15) paper copies of the Application, Direct Testimonies and Exhibits, as well as four (4) flash drives containing the accompanying work papers and Evaluation, Measurement & Verification reports (Evans Exhibits A through L) to the Clerk's Office by close of business on March 8, 2018, via overnight delivery.

Thank you for your attention to this matter. If you have any questions, please let me know.

Respectfully submitted,

Electronically submitted
s/ Molly McIntosh Jagannathan
molly.jagannathan@troutmansanders.com

Enclosure

Copy: Parties of Record

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-7, SUB 1164

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	))))))	**APPLICATION OF DUKE ENERGY CAROLINAS, LLC FOR APPROVAL OF RIDER 10**

Duke Energy Carolinas, LLC ("DEC," "Company," or "Applicant"), pursuant to North Carolina General Statutes ("N.C. Gen. Stat.") § 62-133.9 and North Carolina Utilities Commission (the "Commission") Rule R8-69, hereby applies to the Commission for approval of its demand-side management ("DSM") and energy efficiency ("EE") cost recovery rider, Rider EE, for 2019 ("Rider 10"). Rider 10 has been calculated in accordance with the Company's DSM/EE cost recovery mechanism approved by the Commission in Docket No. E-7, Sub 1032, as revised in Docket No. E-7, Sub 1130. The prospective components of Rider 10 include estimates of the revenue requirements for Vintage 2019[1] DSM and EE programs, as well as an estimate of the second year of net lost revenues for Vintage 2018 EE programs, and the third year of net lost revenues for Vintage 2017 EE programs. The Rider 10 Experience Modification Factor ("EMF") includes the following true-ups: a true-up of Vintage 2014 DSM/EE programs, a true-up of Vintage 2015 DSM/EE programs, a true-up of Vintage 2016 DSM/EE programs, and a true-up of Vintage

[1] A vintage year is the twelve-month period in which a specific DSM or EE measure is installed for an individual participant or a group of participants. Each vintage is referred to by the calendar year of its respective rate period (*e.g.*, Vintage 2019).

2017 DSM/EE programs.

In support of this Application, DEC respectfully shows the Commission the following:

1. The Applicant's general offices are located at 550 South Tryon Street, Charlotte, North Carolina, and its mailing address is:

Duke Energy Carolinas, LLC
P. O. Box 1006
Charlotte, North Carolina 28201-1006

2. The names and addresses of Applicant's attorneys are:

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3. N.C. Gen. Stat. § 62-133.9(d) authorizes the Commission to approve an annual rider to the rates of electric public utilities to recover all reasonable and prudent costs incurred for the adoption and implementation of new DSM/EE programs. Recoverable costs include, but are not limited to, all capital costs, including cost of capital and depreciation expense, administrative costs, implementation costs, incentive payments to program participants, and operating costs. Such rider shall consist of the utility's forecasted cost during the rate period and an EMF rider to collect the difference between the utility's actual reasonable and

prudent costs incurred during the test period and actual revenues realized during the test period. The Commission is also authorized to approve incentives for adopting and implementing new DSM/EE programs, including appropriate rewards based on capitalization of a percentage of avoided costs achieved by DSM/EE measures.

4. The Company's cost recovery mechanism is described in the Agreement and Stipulation of Settlement DEC reached with the Public Staff, the North Carolina Sustainable Energy Association, Environmental Defense Fund, Southern Alliance for Clean Energy, the South Carolina Coastal Conservation League, Natural Resources Defense Council, and the Sierra Club filed with the Commission on August 19, 2013 (the "Stipulation"). The Commission approved the cost recovery mechanism as described in the Stipulation, as well as DEC's portfolio of DSM/EE programs, in its *Order Approving DSM/EE Programs and Stipulation of Settlement* issued October 29, 2013 ("Sub 1032 Order"). In addition, the Commission approved certain revisions to the cost recovery mechanism in its *Order Approving DSM/EE Rider, Revising DSM/EE Mechanism, and Requiring Filing of Proposed Customer Notice* issued August 23, 2017 in Docket No. E-7, Sub 1130. The approved cost recovery mechanism is designed to allow DEC to collect revenue equal to its incurred program costs for a rate period plus a Portfolio Performance Incentive based on shared savings achieved by DEC's DSM/EE programs, and to recover net lost revenues for EE programs only.

5. Rule R8-69(b) provides that the Commission will each year conduct a proceeding for each electric public utility to establish an annual DSM/EE rider to recover DSM/EE related costs.

6. Pursuant to the provisions of N.C. Gen. Stat. § 62-133.9 and Rule R8-69, DEC requests the establishment of Rider 10 to recover: (1) a prospective component consisting of the estimated revenue requirements associated with Vintage 2019 of DEC's current portfolio of DSM/EE programs, the second year of net lost revenues for Vintage 2018 of DEC's EE programs, and the third year of net lost revenues for Vintage 2017 of DEC's EE programs; and (2) an EMF component truing up Vintage 2014, Vintage 2015, Vintage 2016 and Vintage 2017 of DEC's DSM/EE programs.

7. Pursuant to the provisions of N.C. Gen. Stat. § 62-133.9 and Rule R8-69, the Company requests Commission approval of the following annual billing factors (all shown on a cents per kilowatt hour ("¢/kWh") basis, including gross receipts tax and regulatory fee):

Residential Billing Factors	**¢/kWh**
Residential Billing Factor for Rider 10 Prospective Components	0.4229
Residential Billing Factor for Rider 10 EMF Components	0.1091

Non-Residential Billing Factors for Rider 10 Prospective Components	**¢/kWh**
Vintage 2017 EE participant	0.0831
Vintage 2018 EE participant	0.0723
Vintage 2018 DSM participant	0.0031
Vintage 2019 EE participant	0.3283
Vintage 2019 DSM participant	0.0910

Non-Residential Billing Factors for Rider 10 EMF Components	¢/kWh
Vintage 2014 EE participant	(0.0063)
Vintage 2014 DSM participant	(0.0002)
Vintage 2015 EE participant	0.0025
Vintage 2015 DSM participant	(0.0025)
Vintage 2016 EE participant	(0.0131)
Vintage 2016 DSM participant	(0.0015)
Vintage 2017 EE participant	0.3032
Vintage 2017 DSM participant	0.0005

Consistent with the Commission's *Order on Motions for Reconsideration* issued on June 3, 2010 in Docket No. E-7, Sub 938 and the Sub 1032 Order, Rider 10 will be in effect for the twelve-month period January 1, 2019 through December 31, 2019. Also in accordance with these Orders, the test period for the Vintage 2017 EMF component is the period January 1, 2017 through December 31, 2017; the test period for the Vintage 2016 EMF component is the period January 1, 2016 through December 31, 2016; the test period for the Vintage 2015 EMF component is the period January 1, 2015 through December 31, 2015; the test period for the Vintage 2014 EMF component is the period January 1, 2014 through December 31, 2014.

8. The Company has attached hereto, as required by Rule R8-69, the direct testimony and exhibits of witnesses Carolyn T. Miller and Robert P. Evans in support of the requested change in rates.

WHEREFORE, the Company respectfully prays:

That consistent with this Application, the Commission approve the changes to

its rates as set forth in paragraph 7 above.

Respectfully submitted, this the 7th day of March 2018.

By: Molly M. Jagannathan

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ATTORNEYS FOR DUKE ENERGY CAROLINAS, LLC

VERIFICATION

STATE OF NORTH CAROLINA)
)
COUNTY OF MECKLENBURG)

DOCKET NO. E-7, SUB 1164

Carolyn T. Miller, being first duly sworn, deposes and says:

That she is MANAGER, RATES AND REGULATORY STRATEGY for Duke Energy Carolinas, LLC, applicant in the above-titled action; that she has read the foregoing Application and knows the contents thereof; that the same is true except as to those matters stated on information and belief; and as to those matters, she believes them to be true.

Carolyn T. Miller

Carolyn T. Miller

Sworn to and subscribed before me
this the 5 day of March, 2018.

Notary Public

My Commission Expires: 7-30-22

THOMAS J. REED-HALL NOTARY PUBLIC GASTON COUNTY, NC

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-7, SUB 1164

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 CAROLYN T. MILLER FOR DUKE ENERGY CAROLINAS, LLC**

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Carolyn T. Miller, and my business address is 550 South Tryon Street, Charlotte, North Carolina, 28202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am a Rates Manager for Duke Energy Corporation ("Duke Energy") supporting both Duke Energy Progress, LLC ("DEP") and Duke Energy Carolinas, LLC ("DEC" or the "Company").

Q. PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL QUALIFICATIONS.

A. I graduated from the College of New Jersey in Trenton, New Jersey with a Bachelor of Science in Accountancy. I am a certified public accountant licensed in the State of North Carolina. I began my career in 1994 with Ernst & Young as a staff auditor. In 1997, I began working with Duke Energy as a Senior Business Analyst and have held a variety of positions in the Finance organization. I joined the Rates Department in 2014 as Manager, Rates and Regulatory Strategy.

Q. WHAT ARE YOUR PRESENT RESPONSIBILITIES FOR DEC?

A. I am responsible for providing regulatory support and guidance on DEC's demand-side management ("DSM") and energy efficiency ("EE") cost recovery process.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A. Yes. I have provided testimony in support of DEC's previous applications for approval of its DSM/EE cost recovery riders as well as DEP's applications for approval of its DSM/EE cost recovery riders.

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

A. The purpose of my testimony is to explain and support DEC's proposed DSM/EE cost recovery rider (Rider 10), including prospective and Experience Modification Factor ("EMF") components, and provide information required by Commission Rule R8-69.

Q. PLEASE DESCRIBE THE EXHIBITS ATTACHED TO YOUR TESTIMONY.

A. Miller Exhibit 1 summarizes the individual rider components for which DEC requests approval in this filing. Miller Exhibit 2 shows the calculation of revenue requirements for each vintage, with separate calculations for non-residential DSM and EE programs within each vintage. Miller Exhibit 3 presents the return calculations for Vintages 2014, 2015, 2016 and 2017. Miller Exhibit 4 shows the actual and estimated prospective amounts collected from customers via Riders 5-9 pertaining to Vintages 2014 through 2018. Miller Exhibit 5 provides the calculation of the allocation factors used to allocate system DSM and EE costs to DEC's North Carolina retail jurisdiction. Miller Exhibit 6 presents the forecasted sales for the rate period (2019), and the estimated sales related to customers that have opted out of various vintages. These amounts are used to determine the forecasted sales to

which the Rider 10 amounts will apply. Miller Exhibit 7 shows the revised forecasted revenue to be collected as part of Rider 9 in accordance with the Commission's *Order Approving DSM/EE Rider, Revising DSM/EE Mechanism, and Requiring Filing of Proposed Customer Notice* issued on August 23, 2017 in Docket No. E-7, Sub 1130 ("Sub 1130 Order"). Consistent with this Order, this revision will be incorporated into Rider 10. Miller Exhibit 8 is the proposed tariff sheet for Rider 10.

Q. WERE MILLER EXHIBITS 1-8 PREPARED BY YOU OR AT YOUR DIRECTION AND SUPERVISION?

A. Yes.

II. GENERAL STRUCTURE OF RIDERS

Q. PLEASE DESCRIBE THE STRUCTURE OF RIDER 10.

A. Rider 10 was calculated in accordance with the Company's cost recovery mechanism described in the Agreement and Stipulation of Settlement DEC reached with the Public Staff, the North Carolina Sustainable Energy Association, Environmental Defense Fund, Southern Alliance for Clean Energy ("SACE"), the South Carolina Coastal Conservation League, Natural Resources Defense Council, and the Sierra Club, which was filed with the Commission on August 19, 2013 (the "Stipulation"), and approved in the Commission's *Order Approving DSM/EE Programs and Stipulation of Settlement* issued on October 29, 2013 ("Sub 1032 Order").

The approved cost recovery mechanism is designed to allow DEC to

collect revenue equal to its incurred program costs[1] for a rate period plus a Portfolio Performance Incentive ("PPI") based on shared savings achieved by DEC's DSM/EE programs, and to recover net lost revenues for EE programs only.

The Company is allowed to recover net lost revenues associated with a particular vintage of an EE measure for the lesser of 36 months or the life of the measure, and provided that the recovery of net lost revenues shall cease upon the implementation of new rates in a general rate case to the extent that the new rates are set to recover net lost revenues.

The Company's cost recovery mechanism employs a vintage year concept based on the calendar year.[2] In each of its annual rider filings, DEC performs an annual true-up process for the prior calendar year vintages. The true-up will reflect actual participation and verified Evaluation, Measurement and Verification ("EM&V") results for completed vintages, applied in the same manner as agreed upon by DEC, SACE, and the Public Staff, and approved by the Commission in its *Order Approving DSM/EE Rider and Requiring Filing of Proposed Customer Notice* issued on November 8, 2011, in Docket No. E-7, Sub 979 ("EM&V Agreement").

The Company has implemented deferral accounting for over- and under-recoveries of costs that are eligible for recovery through the annual DSM/EE rider. Under the Stipulation, the balance in the deferral account(s),

[1] Program costs are defined under Rule R8-68(b)(1) as all reasonable and prudent expenses expected to be incurred by the electric public utility, during a rate period, for the purpose of adopting and implementing new DSM and EE measures previously approved pursuant to Rule R8-68.

[2] Each vintage is referred to by the calendar year of its respective rate period (*e.g.*, Vintage 2019).

net of deferred income taxes, may accrue a return at the net-of-tax rate of return rate approved in DEC's then most recent general rate case. The methodology used for the calculation of interest shall be the same as that typically utilized for DEC's Existing DSM Program rider proceedings. Pursuant to Commission Rule R8-69(c)(3), DEC will not accrue a return on net lost revenues or the PPI. Miller Exhibit 3, pages 1 through 16, shows the calculation performed as part of the true-up of Vintage 2014, Vintage 2015, Vintage 2016 and Vintage 2017.

The Company expects that most EM&V will be available in the time frame needed to true-up each vintage in the following calendar year. If any EM&V results for a vintage are not available in time for inclusion in DEC's annual rider filing, however, then the Company will make an appropriate adjustment in the next annual filing.

DEC calculates one integrated (prospective) DSM/EE rider and one integrated DSM/EE EMF rider for the residential class, to be effective each rate period. The integrated residential DSM/EE EMF rider includes all true-ups for each applicable vintage year. Given that qualifying non-residential customers can opt out of DSM and/or EE programs, DEC calculates separate DSM and EE billing factors for the non-residential class. Additionally, the non-residential DSM and EE EMF billing factors are determined separately for each applicable vintage year, so that the factors can be appropriately charged to non-residential customers based on their opt-in/out status and participation for each vintage year.

Finally, the following revisions to the cost recovery mechanism were approved effective January 1, 2018 per the Sub 1130 Order:

1. For the purposes of calculating PPI for Vintage Years 2019 and afterwards, the program-specific per kW avoided capacity benefits and per kWh avoided energy benefits used for the initial estimate of the PPI and any PPI true-up will be derived from the underlying resource plan, production cost model, and cost inputs that generated the avoided capacity and avoided energy credits reflected in the most recent Commission-approved Biennial Determination of Avoided Cost Rates for Electric Utility Purchases from Qualifying Facilities as of December 31 of the year immediately preceding the date of the annual DSM/EE rider filing. However, for the calculation of the underlying avoided energy credits to be used to derive the program-specific avoided energy benefits, the calculation will be based on the projected EE portfolio hourly shape, rather than the assumed 24x7 MW reduction typically used to represent a qualifying facility.

2. For purposes of calculating prospective cost-effectiveness in each DSM/EE rider proceeding to be used to determine whether a program should remain in the portfolio, the Company shall assess each program by:

a. Using projected avoided capacity and energy benefits specifically calculated for each program, as derived from the underlying resource plan, production cost model, and cost inputs that generated the avoided capacity and avoided energy credits reflected in the most recent Commission-approved Biennial Determination of Avoided Cost Rates for

Electric Utility Purchases from Qualifying Facilities as of December 31 of the year immediately preceding the date of the annual DSM/EE rider filing. However, for the calculation of the underlying avoided energy credits to be used to derive the program-specific avoided energy benefits, the calculation will be based on the projected EE portfolio hourly shape, rather than the assumed 24x7 100 MW reduction typically used to represent a qualifying facility; and

b. Evaluating each cost-effectiveness test using a projection of participation, savings, costs and benefits for the upcoming vintage year.

c. For any program that initially demonstrates a Total Resource Cost ("TRC") calculated as described above of less than 1.00, the Company shall include a discussion in its annual DSM/EE rider proceeding of the actions being taken to maintain or improve cost-effectiveness, or alternatively, its plan to terminate the program.

d. For programs that demonstrate a prospective TRC calculated as described above, of less than 1.00 in a second DSM/EE rider proceeding, the Company shall include a discussion of what action it has taken to improve cost-effectiveness.

e. For programs that demonstrate a prospective TRC of less than 1.00 in a third DSM/EE rider proceeding, the Company shall terminate the program effective at the end of the year following the DSM/EE rider order, unless otherwise ordered by the Commission.

Q. WHAT ARE THE COMPONENTS OF RIDER 10?

A. The prospective components of Rider 10 include: (1) a prospective Vintage 2019 component designed to collect program costs and the PPI for DEC's 2019 vintage of DSM programs; (2) a prospective Vintage 2019 component to collect program costs, PPI, and the first year of net lost revenues for DEC's 2019 vintage of EE programs; (3) a prospective Vintage 2018 component designed to collect the second year of estimated net lost revenues for DEC's 2018 vintage of EE programs; and (4) a prospective Vintage 2017 component designed to collect the third year of estimated net lost revenues for DEC's 2017 vintage of EE programs. The EMF components of Rider 10 include: (1) a true-up of Vintage 2014 PPI and participation for DSM/EE programs based on additional EM&V results received; (2) a true-up of Vintage 2015 PPI and participation for DSM/EE programs based on additional EM&V results received; (3) a true-up of Vintage 2016 PPI and participation for DSM/EE programs based on additional EM&V results received; (4) a true-up of Vintage 2017 program costs, PPI and participation for DSM/EE programs.

Q. HOW DOES DEC CALCULATE THE PROPOSED BILLING FACTORS?

A. The billing factor for residential customers is computed by dividing the combined revenue requirements for DSM and EE programs by the forecasted sales for the rate period. For non-residential rates, the billing factors are computed by dividing the revenue requirements for DSM and EE programs separately by forecasted sales for the rate period. The forecasted sales exclude the estimated sales to customers who have elected to opt out of Rider

EE. Because non-residential customers are allowed to opt out of DSM and/or EE programs separately in an annual election, non-residential billing factors are computed separately for each vintage.

III. COST ALLOCATION METHODOLOGY

Q. HOW DOES DEC ALLOCATE REVENUE REQUIREMENTS TO THE NORTH CAROLINA RETAIL JURISDICTION AND TO THE RESIDENTIAL AND NON-RESIDENTIAL RATE CLASSES?

A. The Company allocates the revenue requirements related to program costs and incentives for EE programs targeted at retail residential customers across North Carolina and South Carolina to its North Carolina retail jurisdiction based on the ratio of North Carolina retail kWh sales (grossed up for line losses) to total retail kWh sales (grossed up for line losses), and then recovers them only from North Carolina residential customers. The revenue requirements related to EE programs targeted at retail non-residential customers across North Carolina and South Carolina are allocated to the North Carolina retail jurisdiction based on the ratio of North Carolina retail kWh sales (grossed up for line losses) to total retail kWh sales (grossed up for line losses), and then recovered from only North Carolina retail non-residential customers. The portion of revenue requirements related to net lost revenues for EE programs is not allocated to the North Carolina retail jurisdiction, but rather is specifically computed based on the kW and kWh savings of North Carolina retail customers.

For DSM programs, because residential and non-residential programs are similar in nature, the aggregated revenue requirement for all retail DSM programs targeted at both residential and non-residential customers across North Carolina and South Carolina are allocated to the North Carolina retail jurisdiction based on North Carolina's contribution to total retail peak demand. Both residential and non-residential customer classes are allocated a share of total system DSM revenue requirements based on each group's contribution to total retail peak demand.

The allocation factors used in DSM/EE EMF true-up calculations for each vintage are based on DEC's most recently filed Cost of Service studies at the time that the Rider EE filing incorporating the initial true-up for each vintage is made. If there are subsequent true-ups for a vintage, DEC will use the same allocation factors as those used in the original DSM/EE EMF true-up calculations.

IV. UTILITY INCENTIVES AND NET LOST REVENUES

Q. HOW DOES DEC CALCULATE THE PPI?

A. Pursuant to the Stipulation, DEC calculates the dollar amount of PPI by multiplying the shared savings achieved by the system portfolio of DSM/EE programs by 11.5%. Company witness Evans further describes the specifics of the PPI calculation in his testimony. In addition, Evans Exhibit 1, pages 1 through 4, show the revised PPI for Vintage 2014, Vintage 2015, Vintage 2016 and Vintage 2017, respectively, based on updated EM&V results, and Evans Exhibit 1, page 5, shows the estimated PPI by program type and

customer class for Vintage 2019. The system amount of PPI is then allocated to North Carolina retail customer classes in order to derive customer rates.

Q. HOW DOES DEC CALCULATE THE NET LOST REVENUES FOR THE PROSPECTIVE COMPONENTS OF RIDER EE?

A. For the prospective components of Rider EE, net lost revenues are estimated by multiplying the portion of DEC's tariff rates that represent the recovery of fixed costs by the estimated North Carolina retail kW and kWh reductions applicable to EE programs by rate schedule, and reducing this amount by estimated found revenues. The Company calculates the portion of North Carolina retail tariff rates (including certain riders) representing the recovery of fixed costs by deducting the recovery of fuel and variable operation and maintenance ("O&M") costs from its tariff rates. The lost revenues totals for residential and non-residential customers are then reduced by North Carolina retail found revenues computed using the weighted average lost revenue rates for each customer class. The testimony and exhibits of Company witness Evans provide information on the actual and estimated found revenues which offset lost revenues.

Lost revenues associated with vintages through the test period of the Company's current general rate case proceeding in Docket No. E-7, Sub 1146, have been removed from the prospective period as of May 1, 2018, assuming new base rates recover the net lost revenues associated with those kWh sales reductions. All amounts will be trued up during the next EMF period pending resolution of the DEC rate case in Docket No. E-7, Sub 1146.

Q. HOW DOES DEC CALCULATE THE NET LOST REVENUES FOR THE EMF COMPONENTS OF RIDER EE?

A. For the EMF components of Rider EE, DEC calculates the net lost revenues by multiplying the portion of its tariff rates that represent the recovery of fixed costs by the actual and verified North Carolina retail kW and kWh reductions applicable to EE programs by rate schedule, then reducing this amount by actual found revenues.

V. OPT-OUT PROVISIONS

Q. PLEASE EXPLAIN THE OPT-OUT PROCESS FOR NON-RESIDENTIAL CUSTOMERS.

A. Pursuant to the Commission's *Order Granting Waiver, in Part, and Denying Waiver, in Part* ("Waiver Order") issued April 6, 2010, in Docket No. E-7, Sub 938 and the Sub 1032 Order, the Company is allowed to permit qualifying non-residential customers[3] to opt out of the DSM and/or EE portion of Rider EE during annual election periods. If a customer opts into a DSM program (or never opted out), the customer is required to participate for three years in the approved DSM programs and rider. If a customer chooses to participate in an EE program (or never opted out), that customer is required to pay the EE-related program costs, shared savings incentive and the net lost revenues for the corresponding vintage of the programs in which it participated. Customers that opt out of DEC's DSM and/or EE programs remain opted-out unless they choose to opt back in during any of the

[3] Individual commercial customer accounts with annual energy usage of not less than 1,000,000 kWh and any industrial customer account.

succeeding annual election periods, which occur from November 1 to December 31 each year, or any of the succeeding annual opt-in periods in March as described below. If a customer participates in any vintage of programs, the customer is subject to all true-up provisions of the approved Rider EE for any vintage in which the customer participates.

DEC provides an additional opportunity for qualifying customers to opt in to DEC's DSM and/or EE programs during the first five business days of March. Customers who choose to begin participating in DEC's EE and DSM programs during the special "opt-in period" during March of each year will be retroactively billed the applicable Rider EE amounts back to January 1 of the vintage year, such that they will pay the appropriate Rider EE amounts for the full rate period.

Q. DOES DEC ADJUST THE RATE FOR NON-RESIDENTIAL CUSTOMERS TO ACCOUNT FOR THE IMPACT OF "OPT-OUT" CUSTOMERS?

A. Yes. The impact of opt-out results is considered in the development of the Rider EE billing rates for non-residential customers. Since the revenue requirements will not be recovered from non-residential customers that opt out of DEC's programs, the forecasted sales used to compute the rate per kWh for non-residential rates exclude sales to customers that have opted out of the vintage to which the rate applies. This adjustment is shown on Miller Exhibit 6.

VI. PROSPECTIVE COMPONENTS

Q. WHAT IS THE RATE PERIOD FOR THE PROSPECTIVE COMPONENTS OF RIDER 10?

A. In accordance with the Commission's *Order on Motions for Reconsideration* issued on June 3, 2010, in Docket No. E-7, Sub 938 ("Second Waiver Order") and the Sub 1032 Order, DEC has calculated the prospective components of Rider 10 using the rate period January 1, 2019 through December 31, 2019.

Q. PLEASE EXPLAIN WHY THERE IS NO PROSPECTIVE COMPONENT FOR REVENUE REQUIREMENTS RELATING TO VINTAGE 2016.

A. Net lost revenues associated with eligible kWh sales reductions shall cease being eligible for use in calculating net lost revenues as of the effective date of the implementation of new rates approved by the Commission in a general rate case or comparable proceeding. The test year for the Company's pending rate case in Docket No. E-7, Sub 1146 is the calendar year January 1, 2016 through December 31, 2016. At this time, the Company is projecting that new rates will go into effect May 1, 2018. Therefore, lost revenues associated with Vintage Year 2016 and prior would not earn lost revenues after May 1, 2018. Vintage Year 2016 would normally have one last ½ year of lost revenues to collect in calendar year 2019; however, these lost revenues have not been included based on the assumption new rates will go into effect May 1, 2018. Any differences between the Company's actual experience and projected experience will be trued up in an upcoming EMF period.

Q. PLEASE DESCRIBE THE BASIS FOR THE RATE PERIOD REVENUE REQUIREMENTS RELATING TO VINTAGE 2017.

A. The Company determines the estimated revenue requirements for Vintage 2017 separately for residential and non-residential customer classes and bases them on the third year of net lost revenues for its Vintage 2017 EE programs. The amount of lost revenue earned is based on estimated North Carolina retail kW and kWh reductions and DEC's rates approved in its most recent general rate case, which became effective September 25, 2013, adjusted as described above to recover only the fixed cost component. These rates will be trued up during the EMF period to reflect the rates approved in Docket No. E-7, Sub 1146.

Q. PLEASE DESCRIBE THE BASIS FOR THE RATE PERIOD REVENUE REQUIREMENTS RELATING TO VINTAGE 2018.

A. The Company determines the estimated revenue requirements for Vintage 2018 separately for residential and non-residential customer classes and bases them on the second year of net lost revenues for its Vintage 2018 EE programs. The amounts are based on estimated North Carolina retail kW and kWh reductions and DEC's rates approved in its most recent general rate case, which became effective September 25, 2013, adjusted as described above to only recover the fixed cost component. These rates will be trued up during the EMF period to reflect the rates approved in Docket No. E-7, Sub 1146.

Q. PLEASE DESCRIBE THE BASIS FOR THE RATE PERIOD REVENUE REQUIREMENTS RELATING TO VINTAGE 2019.

A. The estimated revenue requirements for Vintage 2019 EE programs include program costs, PPI, and the first year of net lost revenues determined separately for residential and non-residential customer classes. The estimated revenue requirements for Vintage 2019 DSM programs include program costs and PPI. The program costs and shared savings incentive are computed at the system level and allocated to North Carolina based on the allocation methodologies discussed earlier in my testimony. The net lost revenues for EE programs are based on estimated North Carolina retail kW and kWh reductions and the rates approved in DEC's most recent general rate case, which became effective September 25, 2013. These rates will be trued up during the EMF period to reflect the rates approved in Docket No. E-7, Sub 1146.

VII. EMF

Q. WHAT IS THE TEST PERIOD FOR THE EMF COMPONENT?

A. Pursuant to the Second Waiver Order and Sub 1032 Order, the test period for the EMF component is defined as the most recently completed vintage year at the time of DEC's Rider EE cost recovery application filing date, which in this case is Vintage 2017 (January 1, 2017 through December 31, 2017). In addition, the Second Waiver Order allows the EMF component to cover multiple test periods, so the EMF component for 2019 includes Vintage 2014 (January 2014 through December 2014), Vintage 2015 (January 2015 through December 2015), and Vintage 2016 (January 2016 through December 2016) as well.

Q. WHAT IS BEING TRUED UP FOR VINTAGE 2017?

A. The chart below demonstrates which components of the Vintage 2017 estimate filed in 2016 are being trued up in the Vintage 2017 EMF component of Rider 10. Miller Exhibit 2, page 4 contains the calculation of the true-up for Vintage 2017. The second year of net lost revenues for Vintage 2017, which are a component of Rider 9 billings during 2018, will be trued-up to actual amounts during the next rider filing.

	Vintage 2017 Estimate (2017) As Filed (Filed 2016)	**Vintage 2017 True-Up (2017) (Filed March 2018)**
	Rider 8	**Rider 10 EMF**
Participation	Estimated participation assuming January 1, 2017 sign-up date	Update for actual participation for January – December 2017
EM&V	Initial assumptions of load impacts	Updated according to Commission-approved EM&V Agreement
Lost Revenues	Estimated 2017 participation using half-year convention	Update for actual participation for January – December 2017 and actual 2017 lost revenue rates
Found Revenues	Estimated according to Commission-approved guidelines	Update for actual according to Commission-approved guidelines
New Programs	Only includes programs approved prior to estimated filing	Update for any new programs and pilots approved and implemented since estimated filing

In addition, DEC has implemented deferral accounting for the under/over collection of program costs and calculated a return at the net-of-tax rate of return rate approved in DEC's most recent general rate case. The methodology used for the calculation of return is the same as that typically utilized for DEC's Existing DSM Program rider proceedings. Pursuant to

Commission Rule R8-69(c)(3), DEC is not accruing a return on net lost revenues or the PPI. Please see Miller Exhibit 3, pages 1 through 16 for the calculation performed as part of the true-up of Vintage 2014, Vintage 2015 Vintage 2016 and Vintage 2017.

Q. HOW WERE THE LOAD IMPACTS UPDATED?

A. For DSM programs, the contracted amounts of kW reduction capability from participants are considered to be components of actual participation. As a result, the Vintage 2017 true-up reflects the actual quantity of demand reduction capability for the Vintage 2017 period. The load impacts for EE programs were updated in accordance with the Commission-approved EM&V Agreement.

Q. HOW WERE ACTUAL NET LOST REVENUES COMPUTED FOR THE VINTAGE 2017 TRUE-UP?

A. Net lost revenues for year one (2017) of Vintage 2017 were calculated using actual kW and kWh savings by North Carolina retail participants by customer class based on actual participation and load impacts reflecting EM&V results applied according to the EM&V Agreement. The actual kW and kWh savings were as experienced during the period January 1, 2017 through December 31, 2017. The rates applied to the kW and kWh savings are the retail rates that were in effect for the period January 1, 2017 through December 31, 2017, reduced by fuel and other variable costs. The lost revenues were then offset by actual found revenues for year one of Vintage 2017 as explained by

Company witness Evans. The calculation of net lost revenues was performed by rate schedule within the residential and non-residential customer classes.

Q. WHAT IS BEING TRUED UP FOR VINTAGE 2016?

A. Avoided costs for Vintage 2016 DSM programs are being trued up to update EM&V participation results. Avoided costs for Vintage 2016 EE programs are also being trued up based on updated EM&V results and projected impacts of Docket No. E-7, Sub 1146. Net lost revenues for all years were trued up for updated EM&V participation results. The actual kW and kWh savings were as experienced during the period January 1, 2016 through December 31, 2016. The rates applied to the kW and kWh savings are the retail rates that were in effect during each period the lost revenues were earned, reduced by fuel and other variable costs.

Q. WHAT IS BEING TRUED UP FOR VINTAGE 2015?

A. Avoided costs for Vintage 2015 EE programs are being trued up based on updated EM&V results. Net lost revenues for all years were trued up for updated EM&V results and projected impacts of Docket No. E-7, Sub 1146. The actual kW and kWh savings were as experienced during the period January 1, 2015 through December 31, 2015. The rates applied to the kW and kWh savings are the retail rates that were in effect during each period the lost revenues were earned, reduced by fuel and other variable costs.

Q. WHAT IS BEING TRUED UP FOR VINTAGE 2014?

A. Avoided costs for Vintage 2014 EE programs are being trued up based on updated EM&V results. Net lost revenues for all years were trued up for

updated EM&V results. The actual kW and kWh savings were as experienced during the period January 1, 2014 through December 31, 2014. The rates applied to the kW and kWh savings are the retail rates that were in effect during each period the lost revenues were earned, reduced by fuel and other variable costs.

VIII. PROPOSED RATES

Q. WHAT ARE DEC'S PROPOSED INITIAL BILLING FACTORS APPLICABLE TO NORTH CAROLINA ELECTRIC CUSTOMERS FOR THE PROSPECTIVE COMPONENTS OF RIDER 10?

A. The Company's proposed initial billing factor for the Rider 10 prospective components is 0.4229 cents per kWh for DEC's North Carolina retail residential customers. For non-residential customers, the amounts differ depending upon customer elections of participation. The following chart depicts the options and rider amounts:

Non-Residential Billing Factors for Rider 10 Prospective Components	¢/kWh
Vintage 2017 EE participant	0.0831
Vintage 2018 EE participant	0.0723
Vintage 2018 DSM participant	0.0031
Vintage 2019 EE participant	0.3283
Vintage 2019 DSM participant	0.0910

Q. WHAT ARE DEC'S PROPOSED EMF BILLING FACTORS APPLICABLE TO NORTH CAROLINA ELECTRIC CUSTOMERS FOR THE TRUE-UP COMPONENTS OF RIDER 10?

A. The Company's proposed EMF billing factor for the true-up components of Rider 10 is 0.1091 cents per kWh for DEC's North Carolina retail residential customers. For non-residential customers, the amounts differ depending upon customer elections of participation. The following chart depicts the options and rider amounts:

Non-Residential Billing Factors for Rider 10 EMF Components	**¢/kWh**
Vintage 2017 EE Participant	0.3032
Vintage 2017 DSM Participant	0.0005
Vintage 2016 EE participant	(0.0131)
Vintage 2016 DSM participant	(0.0015)
Vintage 2015 EE participant	0.0025
Vintage 2015 DSM participant	(0.0025)
Vintage 2014 EE participant	(0.0063)
Vintage 2014 DSM participant	(0.0002)

IX. CONCLUSION

Q. PLEASE SUMMARIZE THE SPECIFIC RATE MAKING APPROVAL REQUESTED BY DEC.

A. DEC seeks approval of the Rider 10 billing factors to be effective for 2019. As discussed above, Rider 10 contains (1) a prospective component, which includes the third year of net lost revenues for Vintage 2017, the second year of net lost revenues for Vintage 2018, and the revenue requirements for Vintage 2019; and (2) an EMF component which represents a true-up of

Vintage 2014, Vintage 2015, Vintage 2016, and Vintage 2017. Consistent with the Stipulation, for DEC's North Carolina residential customers, the Company calculated one integrated prospective billing factor and one integrated EMF billing factor for Rider 10. Also in accordance with the Stipulation, the non-residential DSM and EE billing factors have been determined separately for each vintage year and will be charged to non-residential customers based on their opt-in/out status and participation for each vintage year.

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

A. Yes.

Duke Energy Carolinas, LLC
DSM/EE Cost Recovery Rider 10
Docket Number E-7 Sub 1164
Exhibit Summary for Rider EE Exhibits and Factors

Residential Billing Factors

Residential Billing Factor for Rider 10 True-up (EMF) Components

Line			Adjusted
1	Year 2014 EE/DSM True-Up (EMF) Revenue Requirement	Miller Exhibit 2 pg. 1 Line 15	501,324
2	Year 2015 EE/DSM True-Up (EMF) Revenue Requirement	Miller Exhibit 2 pg. 2 Line 15	(1,014,271)
3	Year 2016 EE/DSM True-Up (EMF) Revenue Requirement	Miller Exhibit 2 pg. 3 Line 15	(2,560,305)
4	Year 2017 EE/DSM True-Up (EMF) Revenue Requirement	Miller Exhibit 2 pg. 4 Line 15	26,865,491
5	Total True-up (EMF) Revenue Requirement	Sum Lines 1-4	$ 23,792,240
6	Projected NC Residential Sales (kWh) for rate period	Miller Exhibit 6 pg. 1, Line 1	21,806,637,265
7	*EE/DSM Revenue Requirement EMF Residential Rider EE (cents per kWh)*	Line 5 / Line 6 * 100	**0.1091**

Residential Billing Factor for Rider 10 Prospective Components

8	Vintage 2017 Total EE/DSM Prospective Amounts Revenue Requirement	Miller Exhibit 2 pg. 4, Line 1	8,904,587
9	Vintage 2018 Total EE/DSM Prospective Amounts Revenue Requirement	Miller Exhibit 2 pg. 5, Line 1	6,294,025
10	Vintage 2019 Total EE/DSM Prospective Amounts Revenue Requirement	Miller Exhibit 2 pg. 6, Line 11	77,019,869
11	Total Prospective Revenue Requirement	Sum Lines 8-11	$ 92,218,481
12	Projected NC Residential Sales (kWh) for rate period	Miller Exhibit 6 pg. 1, Line 1	21,806,637,265
13	*EE/DSM Revenue Requirement Prospective Residential Rider EE (cents per kWh)*	Line 12 / Line 13 * 100	**0.4229**

Total Revenue Requirements in Rider 10 from Residential Customers

14	Total True-up (EMF) Revenue Requirement	Line 5	$ 23,792,240
15	Total Prospective Revenue Requirement	Line 12	92,218,481
16	***Total EE/DSM Revenue Requirement for Residential Rider EE***	Line 15 + Line 16	**$ 116,010,721**
17	***Total EE/DSM Revenue Requirement for Residential Rider EE (cents per kWh)***	Line 7 + Line 14	**0.5320**

Non-Residential Billing Factors for Rider 10 True-up (EMF) Components

18	Vintage Year 2014 EE True-up (EMF) Revenue Requirement	Miller Exhibit 2 pg. 1, Line 25	$ (1,154,814)
19	Projected Year 2014 EE Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 6 pg. 1, Line 4	18,259,714,025
20	*EE Revenue Requirement Year 2014 EMF Non-Residential Rider EE (cents per kWh)*	Line 19/Line 20 * 100	**(0.0063)**
21	Vintage Year 2014 DSM True-up (EMF) Revenue Requirement	Miller Exhibit 2 pg. 1, Line 35	$ (39,246)
22	Projected Year 2014 DSM Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 6 pg. 1, Line 5	18,062,882,364
23	*DSM Revenue Requirement Year 2014 EMF Non-Residential Rider EE (cents per kWh)*	Line 22/Line 23 * 100	**(0.0002)**
24	Vintage Year 2015 EE True-up (EMF) Revenue Requirement	Miller Exhibit 2 pg. 2, Line 25	$ 456,319
25	Projected Year 2015 EE Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 6 pg. 1, Line 6	18,134,510,475
26	*EE Revenue Requirement Year 2015 EMF Non-Residential Rider EE (cents per kWh)*	Line 25/Line 26 * 100	**0.0025**
27	Vintage Year 2015 DSM True-up (EMF) Revenue Requirement	Miller Exhibit 2 pg. 2, Line 35	$ (451,445)
28	Projected Year 2015 DSM Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 6 pg. 1, Line 7	17,851,357,712
29	*DSM Revenue Requirement Year 2015 EMF Non-Residential Rider EE (cents per kWh)*	Line 28/Line 29 * 100	**(0.0025)**
30	*Vintage Year 2016 EE True-up (EMF) Revenue Requirement*	Miller Exhibit 2 pg. 3, Line 35	$ (2,329,721)
31	*Projected Year 2016 EE Participants NC Non-Residential Sales (kwh) for rate period*	Miller Exhibit 6 pg. 1, Line 8	17,849,972,518
32	*EE Revenue Requirement Year 2016 EMF Non-Residential Rider EE (cents per kWh)*	Line 31/Line 32 * 100	**(0.0131)**
33	*Vintage Year 2016 DSM True-up (EMF) Revenue Requirement*	Miller Exhibit 2 pg. 3, Line 35	$ (267,721)
34	*Projected Year 2016 DSM Participants NC Non-Residential Sales (kwh) for rate period*	Miller Exhibit 6 pg. 1, Line 9	17,559,238,943
35	*DSM Revenue Requirement Year 2016 EMF Non-Residential Rider EE (cents per kWh)*	Line 34/Line 35 * 100	**(0.0015)**

36	*Vintage Year 2017 EE True-up (EMF) Revenue Requirement*	Miller Exhibit 2 pg. 3, Line 35	$	53,163,097
37	*Projected Year 2017 EE Participants NC Non-Residential Sales (kwh) for rate period*	Miller Exhibit 6 pg. 1, Line 8		17,531,615,286
38	*EE Revenue Requirement Year 2017 EMF Non-Residential Rider EE (cents per kWh)*	Line 37/Line 38 * 100		**0.3032**
39	*Vintage Year 2017 DSM True-up (EMF) Revenue Requirement*	Miller Exhibit 2 pg. 3, Line 35	$	86,311
40	*Projected Year 2017 DSM Participants NC Non-Residential Sales (kwh) for rate period*	Miller Exhibit 6 pg. 1, Line 9		17,525,161,418
41	*DSM Revenue Requirement Year 2017 EMF Non-Residential Rider EE (cents per kWh)*	Line 40/Line 41 * 100		**0.0005**

Non-Residential Billing Factors for Rider 10 Prospective Components

42	Vintage Year 2017 EE Prospective Amounts Revenue Requirement	Miller Exhibit 2 pg. 4, Line 18	$	14,570,381
43	Projected Program Year 2017 EE Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 6 pg. 1, Line 10		17,531,615,286
44	*EE Revenue Requirement Vintage 2017 Prospective Component for Non-Residential Rider EE (cents per kWh)*	Line 42/Line 43 * 100		**0.0831**
45	Vintage Year 2018 EE Prospective Amounts Revenue Requirement	Miller Exhibit 2 pg. 5, Line 25	$	12,285,044
46	Projected Vintage 2018 EE Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 6 pg. 1, Line 12		16,997,418,314
47	*EE Revenue Requirement Vintage 2018 Prospective Component for Non-Residential Rider EE (cents per kWh)*	Line 45/Line 46 * 100		**0.0723**
48	Vintage Year 2018 DSM Prospective Amounts Revenue Requirement	Miller Exhibit 2 pg. 5, Line 25	$	534,763
49	Projected Vintage 2018 DSM Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 6 pg. 1, Line 12		17,422,191,737
50	*DSM Revenue Requirement Vintage 2018 Prospective Component for Non-Residential Rider EE (cents per kWh)*	Line 48/Line 49 * 100		**0.0031**
51	Vintage Year 2019 EE Prospective Amounts Revenue Requirement	Miller Exhibit 2 pg. 6, Line 25	$	55,797,199
52	Projected Vintage 2019 EE Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 6 pg. 1, Line 13		16,997,418,314
53	*EE Revenue Requirement Vintage 2019 Prospective Component for Non-Residential Rider EE (cents per kWh)*	Line 51/Line 52 * 100		**0.3283**
54	Vintage Year 2019 DSM Prospective Amounts Revenue Requirement	Miller Exhibit 2 pg. 6, Line 25	$	15,847,512
55	Projected Vintage 2019 DSM Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 6 pg. 1, Line 13		17,422,191,737
56	*DSM Revenue Requirement Vintage 2019 Prospective Component for Non-Residential Rider EE (cents per kWh)*	Line 54/Line 55 * 100		**0.0910**
	Total EMF Rate			**0.2826**
	Total Prospective Rate			**0.5778**

Total Revenue Requirements in Rider 10 from Non-Residential Customers

57	Vintage Year 2014 EE True-up (EMF) Revenue Requirement	Line 18		(1,154,814)
58	Vintage Year 2014 DSM True-up (EMF) Revenue Requirement	Line 21		(39,246)
59	Vintage Year 2015 EE True-up (EMF) Revenue Requirement	Line 24		456,319
60	Vintage Year 2015 DSM True-up (EMF) Revenue Requirement	Line 27		(451,445)
61	Vintage Year 2016 EE True-up (EMF) Revenue Requirement	Line 30		(2,329,721)
62	Vintage Year 2016 DSM True-up (EMF) Revenue Requirement	Line 33		(267,721)
63	Vintage Year 2017 EE True-up (EMF) Revenue Requirement	Line 36		53,163,097
64	Vintage Year 2017 DSM True-up (EMF) Revenue Requirement	line 39		86,311
65	Vintage Year 2017 EE Prospective Amounts Revenue Requirement	Line 42		14,570,381
66	Vintage Year 2018 EE Prospective Amounts Revenue Requirement	Line 45		12,285,044
67	Vintage Year 2018 DSM Prospective Amounts Revenue Requirement	Line 48		534,763
67	Vintage Year 2019 EE Prospective Amounts Revenue Requirement	Line 51		55,797,199
68	Vintage Year 2019 DSM Prospective Amounts Revenue Requirement	Line 54		15,847,512
	Total Non-Residential Revenue Requirement in Rider 10	Sum (Lines 57-68)	**$**	**148,497,678**

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
True up Year 1, 2, 3 and 4 for Vintage Year 2014

RESIDENTIAL
Energy Efficiency Programs

Line		Reference	E-7 Sub 1031 Rider 5 Original Estimate	E-7 Sub 1050 Rider 6 Year 2 Lost Revenue Estimate	E-7 1073 Rider 7 - True up of Year 1	E-7 Sub 1073 Rider 7 - Estimate of Year 3 Lost Revenue	E-7 Sub 1105 Rider 8 - True up of Lost Revenues and EM&V	E-7 Sub 1105 Rider 8 - Estimate of Year 4 Lost Revenues	E-7 Sub 1130 Rider 9 True up	E-7 Sub 1164 Rider 10 True up	Year 2014
1	Residential EE Program Cost	Evans Exhibit 1 pg. 1, Line 10 * NC Alloc. Factor	$ 29,754,660		$ (1,844,170)		$ 1		$ (0)	$ -	$ 27,910,491
2	Residential EE Earned Utility Incentive	Evans Exhibit 1 pg. 1, Line 10 * NC Alloc. Factor	2,242,156		2,715,537		88,645		274	(273)	5,046,339
3	Return on undercollection of Residential EE Program Costs	Miller Exhibit 3 pg 1			53,935		140,851		71,702	(706)	265,782
4	Total EE Program Cost and Incentive Components	Line 1 + Line 2 + line 3	31,996,816		925,302		229,497		71,976	(979)	33,222,612
5	Residential DSM Program Cost	Evans Exhibit 1 pg. 1, Line 11 * NC Alloc. Factor	13,143,935		(2,535,104)		(0)		-	-	10,608,831
6	Residential DSM Earned Utility Incentive	Evans Exhibit 1 pg. 1, Line 11 * NC Alloc. Factor	3,240,520		(12,767)		(25,251)		(0)	-	3,202,502
7	Return on overcollection of Residential DSM Program Costs	Miller Exhibit 3 pg 2			(69,597)		(136,468)		(64,670)	10,071	(260,664)
8	Total DSM Program Cost and Incentive Components	Line 5 + Line 6 + Line 7	16,384,455		(2,617,468)		(161,719)		(64,670)	10,071	13,550,668
9	Total EE/DSM Program Cost and Incentive Components	Line 4 + Line 8	48,381,271		(1,692,166)		67,778		7,306	9,091	46,773,280
10	Revenue-related taxes and regulatory fees factor	Miller Exhibit 2, pg. 7	1.017953		1.001442		1.001402		1.001402	1.001402	
11	Total EE/DSM Program Cost and Incentive Revenue Requirement	Line 9 * Line 10	49,249,860		(1,694,606)		67,873		7,316	9,104	47,639,547
12	Residential Net Lost Revenues	Evans Exhibit 2 pg. 1	8,435,982	3,810,949	3,065,327	9,895,892	6,287,758	5,005,380	217,145	207,005	36,925,438
13	Total Residential EE/DSM Revenue Requirement	Line 11 + Line 12	57,685,842	3,810,949	1,370,721	9,895,892	6,355,631	5,005,380	224,462	216,109	84,564,985
14	Total Collected for Vintage Year 2014 (through estimated Rider 9)	Miller Exhibit 4 Line 1									84,063,661
15	**Total Residential EE/DSM Revenue Requirement**	Line 11 + Line 12									$ 501,324

See Miller Exhibit A for rate

NON-RESIDENTIAL
Energy Efficiency Programs

		Reference	E-7 Sub 1031 Rider 5 Original Estimate	E-7 Sub 1050 Rider 6 Year 2 Lost Revenue Estimate	E-7 1073 Rider 7 - True up of Year 1	E-7 Sub 1073 Rider 7 - Estimate of Year 3 Lost Revenue	E-7 Sub 1105 Rider 8 - True up of Lost Revenues & EM&V	E-7 Sub 1105 Rider 8 - Estimate of Year 4 Lost Revenues	E-7 Sub 1130 Rider 9 True up	E-7 Sub 1164 Rider 10 True up	Year 2014
16	Non- Residential EE Program Cost	Evans Exhibit 1 pg. 1, Line 24 * NC Alloc. Factor	16,206,358		(1,398,648)		-		1	-	14,807,711
17	Non-Residential EE Earned Utility Incentive	Evans Exhibit 1 pg. 1, Line 24 * NC Alloc. Factor	5,782,942		2,021,277		35,872		45,754	(121,883)	7,763,962
18	Return on undercollection of Non-residential EE Program Costs	Miller Exhibit 3 page 3A			94,850		130,948		73,379	(7,112)	292,065
19	Total EE Program Cost and Incentive Components	Line 16 + Line 17 + Line 18	21,989,300		717,479		166,820		119,134	(128,995)	22,863,738
20	Revenue-related taxes and regulatory fees factor	Miller Exhibit 2, pg. 7	1.017953		1.001442		1.001402		1.001402	1.001402	
21	Total Non-Residential EE Program Cost and Incentive Revenue Requirements	Line 19 * Line 20	22,384,074		718,514		167,054		119,301	(129,176)	23,259,766
22	Non-Residential Net Lost Revenues	Evans Exhibit 2 pg. 1	1,831,641	4,837,353	1,222,389	6,094,150	1,203,734	3,150,271	(853,990)	(1,483,604)	16,001,944
23	Total Non-Residential EE Revenue Requirement	Line 21 + Line 22	24,215,715	4,837,353	1,940,903	6,094,150	1,370,788	3,150,271	(734,689)	(1,612,780)	39,261,710
24	Total Collected for Year 2014 (through Estimated Rider 9)	Miller Exhibit 4 Line 7									40,416,525
25	Non-Residential EE Revenue Requirement True-Up Amount	Line 23 - Line 24									(1,154,814)
26	Projected NC Residential Sales (kWh)	Miller Exhibit 6, pg. 1, Line 4									18,259,714,025
27	**NC Non-Residential EE billing factor (Cents/kWh)**	Line 25/Line 26*100									**(0.0063)**

DSM Programs

		Reference	E-7 Sub 1031 Rider 5 Original Estimate	E-7 1073 Rider 7 - True up of Year 1	E-7 Sub 1105 Rider 8 - True up	E-7 Sub 1130 Rider 9 True up	E-7 Sub 1164 Rider 10 True up	Year 2014
28	Non-Residential DSM Program Cost	Evans Exhibit 1, pg. 1 Line 25 * NC Alloc. Factor	15,046,160	(2,195,319)	(0)	-		12,850,841
29	Non-Residential DSM Earned Utility Incentive	Evans Exhibit 1, pg. 1 Line 25 * NC Alloc. Factor	3,709,497	200,391	(30,588)	-		3,879,300
30	Return on overcollection of Non-residential DSM Program Costs	Miller Exhibit 3 page 4		(19,939)	(82,394)	(52,597)	(18,476)	(173,406)
31	Total Non-Residential DSM Program Cost and Incentive Components	Line 28 + Line 29 + Line 30	18,755,657	(2,014,867)	(112,982)	(52,597)	(18,476)	16,556,735
32	Revenue-related taxes and regulatory fees factor	Miller Exhibit 2, pg. 7	1.017953	1.001442	1.001402	1.001402	1.001402	
33	Total Non-Residential DSM Revenue Requirement	Line 31 * Line 32	19,092,377	(2,017,772)	(113,141)	(52,671)	(18,502)	16,890,292
34	Total Collected for Year 2014 (through Estimated Rider 9)	Miller Exhibit 4 Line 12						16,929,538
35	Non-Residential DSM Revenue Requirement True up Amount	Line 33- Line 34						(39,246)
36	Projected NC Non-Residential Sales (kWh)	Miller Exhibit 6 pg. 2, Line 5						18,062,882,364
37	**NC Non-Residential DSM billing factor**	Line 35/Line 36*100						**(0.0002)**

** Actual regulatory fee rate in effect in year of collection. May differ from original filed estimates.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
True Up of Year 1, 2 and 3 of Vintage Year 2015

RESIDENTIAL
Energy Efficiency Programs

Line		Reference	E-7 Sub 1050 Rider 6 Original Estimate	E-7 Sub 1073 Rider 7 Year 2 Lost Revenues	E-7 Sub 1105 Rider 8 True up of Year 1	E-7 Sub 1105 Rider 8 Year 3 Lost Revenues	E-7 Sub 1130 Rider 9 True up of Lost Revenues & EM&V	E-7 Sub 1130 Rider 9 Year 4 LR Estimate	E-7 Sub 1164 Rider 10 True up	Year 2015 Year 1
1	Residential EE Program Cost	Evans Exhibit 1 pg. 2, Line 10 * NC Alloc. Factor	$ 30,685,449		$ (2,726,335)		$ -		$ -	$ 27,959,114
2	Residential EE Earned Utility Incentive	Evans Exhibit 1 pg. 2, Line 10 * NC Alloc. Factor	2,374,641		2,431,922		125,671		(0)	4,932,234
3	Return on undercollection of Residential EE Program Costs	Miller Exhibit 3 pg 5			49,064		77,792		35,939	162,795
4	Total EE Program Cost and Incentive Components	Line 1 + Line 2 + line 3	33,060,090		(245,348)		203,463		35,938	33,054,143
5	Residential DSM Program Cost	Evans Exhibit 1 pg. 2, Line 11 * NC Alloc. Factor	12,532,432		(2,137,589)		(1,252)		(0)	10,393,591
6	Residential DSM Earned Utility Incentive	Evans Exhibit 1 pg. 2, Line 11 * NC Alloc. Factor	3,275,217		(676,007)		(12,280)		(532)	2,586,398
7	Return on undercollection of Residential DSM Program Costs	Miller Exhibit 3 pg 6			(10,786)		23,451		11,838	24,503
8	Total DSM Program Cost and Incentive Components	Line 5 + Line 6 + Line 7	15,807,649		(2,824,381)		9,919		11,305	13,004,492
9	Total EE/DSM Program Cost and Incentive Components	Line 4 + Line 8	48,867,739		(3,069,730)		213,382		47,244	46,058,635
10	Revenue-related taxes and regulatory fees factor **	Miller Exhibit 2, pg. 7	1.001417		1.001402		1.001402		1.001402	
11	Total EE/DSM Program Cost and Incentive Revenue Requirement	Line 9 * Line 10	48,936,985		(3,074,034)		213,681		47,310	46,123,942
12	Residential Net Lost Revenues	Evans Exhibit 2 pg. 1	9,169,840	4,071,955	5,563,184	8,090,365	4,191,232	3,431,636	(1,336,510)	33,181,702
13	Total Residential EE/DSM Revenue Requirement	Line 11 + Line 12	58,106,825	4,071,955	2,489,151	8,090,365	4,404,913	3,431,636	(1,289,200)	79,305,645
14	Total Collected for Vintage Year 2015 (through estimated Rider 9)	Miller Exhibit 4 Line 2								80,319,916
15	**Total Residential EE/DSM Revenue Requirement**	Line 11 + Line 12								$ (1,014,271)

See Miller Exhibit A for rate

NON-RESIDENTIAL
Energy Efficiency Programs

		Reference	E-7 Sub 1050 Rider 6 Original Estimate	E-7 Sub 1073 Rider 7 Year 2 Lost Revenues	E-7 Sub 1105 Rider 8 True up of Year 1	E-7 Sub 1105 Rider 8 Year 3 Lost Revenues	E-7 Sub 1130 Rider 9 True up of Lost Revenues & EM&V	E-7 Sub 1130 Year 2015 Year 4 LR Estimate	E-7 Sub 1164 Rider 10 True Up	Year 2015 Year 1
16	Non- Residential EE Program Cost	Evans Exhibit 1 pg. 2, Line 24 * NC Alloc. Factor	17,348,807		11,904,051		0		-	29,252,858
17	Non-Residential EE Earned Utility Incentive	Evans Exhibit 1 pg. 2, Line 24 * NC Alloc. Factor	6,214,226		3,351,028		846,899		(594,998)	9,817,155
18	Return on undercollection of Non-residential EE Program Costs	Miller Exhibit 3 page 7			457,891		838,299		448,315	1,744,505
19	Total EE Program Cost and Incentive Components	Line 16 + Line 17 + Line 18	23,563,033		15,712,970		1,685,198		(146,683)	40,814,518
20	Revenue-related taxes and regulatory fees factor	Miller Exhibit 2, pg. 7	1.001417		1.001402		1.001402		1.001402	
21	Total Non-Residential EE Program Cost and Incentive Revenue Requirements	Line 19 * Line 20	23,596,422		15,735,000		1,687,561		(146,889)	40,872,094
22	Non-Residential Net Lost Revenues	Evans Exhibit 2 pg. 4	2,523,480	8,194,003	2,547,914	9,483,428	2,426,543	4,183,188	(3,671,147)	25,687,409
23	Total Non-Residential EE Revenue Requirement	Line 21 + Line 22	26,119,902	8,194,003	18,282,914	9,483,428	4,114,104	4,183,188	(3,818,036)	66,559,503
24	Total Collected for Year 2015 (through estimated Rider 9)	Miller Exhibit 4 Line 6								66,103,184
25	Non-Residential EE Revenue Requirement	Line 23 - Line 24								456,319
26	Projected NC Residential Sales (kWh)	Miller Exhibit 6, pg. 2, Line 6								18,134,510,475
27	**NC Non-Residential EE billing factor (Cents/kWh)**	Line 25/Line 26*100								**0.0025**

DSM Programs

		Reference	E-7 Sub 1050 Rider 6 Original Estimate	E-7 Sub 1005 Rider 8 Original True Up	E-7 Sub 1130 Rider 9 True Up	E-7 Sub 1164 Rider 10 True Up	Year 2015 Year 1
28	Non-Residential DSM Program Cost	Evans Exhibit 1, pg. 2 Line 25 * NC Alloc. Factor	16,493,488	(2,925,873)	(1,635)		13,565,981
29	Non-Residential DSM Earned Utility Incentive	Evans Exhibit 1, pg. 2 Line 25 * NC Alloc. Factor	4,310,397	(917,841)	(16,029)	(693)	3,375,833
30	Return on overcollection of Non-residential DSM Program Costs	Miller Exhibit 3 page 8		(107,297)	(203,069)	(128,531)	(438,897)
31	Total Non-Residential DSM Program Cost and Incentive Components	Line 28 + Line 29 + Line 30	20,803,885	(3,951,011)	(220,733)	(129,225)	16,502,917
32	Revenue-related taxes and regulatory fees factor	Miller Exhibit 2, pg. 7	1.001417	1.001402	1.001402	1.001402	
33	Total Non-Residential DSM Revenue Requirement	Line 31 * Line 32	20,833,364	(3,956,550)	(221,042)	(129,406)	16,526,366
34	Total Revenue Collected for DSM Programs Year 2015 (through estimated Rider 9)	Miller Exhibit 4 Line 10					16,977,811
35	Non-Residential EE Revenue Requirement True-up Amount	Line 33- Line 34					(451,445)
36	Projected NC Non-Residential Sales (kWh)	Miller Exhibit 6 pg. 1, Line 7					17,851,357,712
37	**NC Non-Residential DSM billing factor**	Line 35/Line 36*100					**(0.0025)**

** Actual regulatory fee rate in effect in year of collection. May differ from original filed estimates.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Year 4 Lost Revenue and True Up of Year 1 and 2 for Vintage Year 2016

RESIDENTIAL
Energy Efficiency Programs

Line		Reference	E-7 Sub 1073 Rider 7 Original Estimate	E-7 Sub 1105 Rider 8 Year 2 Lost Revenues	E-7 Sub 1130 Rider 9 True up	E-7 Sub 1130 Year 2016 Yr 3 LR Estimate	E-7 Sub 1164 Rider 10 True up	Year 2016 Year 1
1	Residential EE Program Cost	Evans Exhibit 1 pg. 3, Line 10 * NC Alloc. Factor	$ 31,056,079		$ 8,965,024		$ (2)	$ 40,021,101
2	Residential EE Earned Utility Incentive	Evans Exhibit 1 pg. 3, Line 10 * NC Alloc. Factor	2,392,652		4,361,799		(52,098)	6,702,353
3	Return on undercollection of Residential EE Program Costs	Miller Exhibit 3 pg 5			272,476		710,786	983,262
4	Total EE Program Cost and Incentive Components	Line 1 + Line 2 + line 3	33,448,731		13,599,299		658,686	47,706,716
5	Residential DSM Program Cost	Evans Exhibit 1 pg. 3, Line 11 * NC Alloc. Factor	10,613,016		(1,012,441)		0	9,600,575
6	Residential DSM Earned Utility Incentive	Evans Exhibit 1 pg. 3, Line 11 * NC Alloc. Factor	2,887,418		(129,612)		(27,890)	2,729,916
7	Return on overcollection of Residential DSM Program Costs	Miller Exhibit 3 pg 6			(26,322)		(46,199)	(72,521)
8	Total DSM Program Cost and Incentive Components	Line 5 + Line 6 + Line 7	13,500,434		(1,168,375)		(74,088)	12,257,971
9	Total EE/DSM Program Cost and Incentive Components	Line 4 + Line 8	46,949,165		12,430,924		584,598	59,964,687
10	Revenue-related taxes and regulatory fees factor **	Miller Exhibit 2, pg. 7	1.001442		1.001402		1.001402	
11	Total EE/DSM Program Cost and Incentive Revenue Requirement	Line 9 * Line 10	47,016,866		12,448,352		585,417	60,050,635
12	Residential Net Lost Revenues	Evans Exhibit 2 pg. 4	11,873,767	5,723,916	4,795,359	7,765,323	(3,299,616)	26,858,749
13	Total Residential EE/DSM Revenue Requirement	Line 11 + Line 12	58,890,633	5,723,916	17,243,711	7,765,323	(2,714,199)	86,909,384
14	Total Collected for Vintage Year 2016 (through estimated Rider 9)	Miller Exhibit 4 Line 2						89,469,689
15	**Total Residential EE/DSM Revenue Requirement**	Line 11 + Line 12						$ (2,560,305)

See Miller Exhibit A for rate

NON-RESIDENTIAL
Energy Efficiency Programs

		Reference	E-7 Sub 1073 Rider 7 Original Estimate	E-7 Sub 1105 Rider 8 Year 2 Lost Revenues	E-7 Sub 1130 True up	E-7 Sub 1130 Year 2016 Yr 3 LR Estimate	E-7 Sub 1164 Rider 10 True up	Year 2016 Year 1
16	Non- Residential EE Program Cost	Evans Exhibit 1 pg. 3, Line 25 * NC Alloc. Factor	36,494,611		13,515,376		1	50,009,988
17	Non-Residential EE Earned Utility Incentive	Evans Exhibit 1 pg. 3, Line 25 * NC Alloc. Factor	10,105,721		4,261,607		(353,368)	14,013,960
18	Return on undercollection of Non-residential EE Program Costs	Miller Exhibit 3 page 7			378,293		1,051,375	1,429,668
19	Total EE Program Cost and Incentive Components	Line 16 + Line 17 + Line 18	46,600,332		18,155,276		698,008	65,453,616
20	Revenue-related taxes and regulatory fees factor	Miller Exhibit 2, pg. 7	1.001442		1.001402		1.001402	
21	Total Non-Residential EE Program Cost and Incentive Revenue Requirements	Line 19 * Line 20	46,667,530		18,180,730		698,987	65,547,246
22	Non-Residential Net Lost Revenues	Evans Exhibit 2 pg. 4	4,745,315	8,309,444	2,524,047	13,375,187	(4,085,026)	24,868,967
23	Total Non-Residential EE Revenue Requirement	Line 21 + Line 22	51,412,845	8,309,444	20,704,776	13,375,187	(3,386,039)	90,416,213
24	Total Collected for Vintage Year 2016 (through estimated Rider 9)	Miller Exhibit 4 Line 6						92,745,934
25	Non-Residential EE Revenue Requirement	Line 23 - Line 24						(2,329,721)
26	Projected NC Residential Sales (kWh)	Miller Exhibit 6, pg. 1, Line 8						17,849,972,518
27	**NC Non-Residential EE billing factor (Cents/kWh)**	Line 25/Line 26*100						**(0.0131)**

DSM Programs

		Reference	E-7 Sub 1073 Rider 7 Original Estimate	E-7 Sub 1130 Rider 9 True up	E-7 Sub 1164 Rider 10 True Up	Year 2016 Year 1
28	Non-Residential DSM Program Cost	Evans Exhibit 1, pg. 3 Line 26 * NC Alloc. Factor	12,855,910	(1,261,413)	0	11,594,497
29	Non-Residential DSM Earned Utility Incentive	Evans Exhibit 1, pg. 3 Line 26 * NC Alloc. Factor	3,497,628	(167,059)	(33,683)	3,296,886
30	Return on undercollection of Non-residential DSM Program Costs	Miller Exhibit 3 page 8		1,759	3,420	5,179
31	Total Non-Residential DSM Program Cost and Incentive Components	Line 28 + Line 29 + Line 30	16,353,538	(1,426,713)	(30,262)	14,896,563
32	Revenue-related taxes and regulatory fees factor	Miller Exhibit 2, pg. 7	1.001442	1.001402	1.001402	
33	Total Non-Residential DSM Revenue Requirement	Line 31 * Line 32	16,377,120	(1,428,713)	(30,305)	14,918,102
34	Total Collected for Vintage Year 2016 (through estimated Rider 9)	Miller Exhibit 4 Line 10				15,185,823
35	Non-Residential EE Revenue Requirement True-up Amount	Line 33- Line 34				(267,721)
36	Projected NC Non-Residential Sales (kWh)	Miller Exhibit 6 pg. 1, Line 9				17,559,238,943
37	**NC Non-Residential DSM billing factor**	Line 35/Line 36*100				**(0.0015)**

* Year 4 Projected Lost Revenue is not being requested in this filing because lost revenue through the test period of Docket E7 Sub XXXX was requested as part of base rates.

** Actual regulatory fee rate in effect in year of collection. May differ from original filed estimates.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Year 3 Lost Revenue and True Up of Year 1 and 2 for Vintage Year 2017

RESIDENTIAL
Energy Efficiency Programs

Line		Reference	Year 2017 Yr 3 LR Estimate	E-7 Sub 1105 Rider 8 Year 1 Estimate	E-7 Sub 1130 Year 2017 Yr 2 LR Estimate	E-7 Sub 1164 Rider 10 True up	Year 2017 Year 1
1	Residential EE Program Cost	Evans Exhibit 1 pg. 4, Line 10 * NC Alloc. Factor		$ 33,488,974		$ 13,998,885	$ 47,487,859
2	Residential EE Earned Utility Incentive	Evans Exhibit 1 pg. 4, Line 10 * NC Alloc. Factor		4,149,244		4,340,033	8,489,277
3	Return on undercollection of Residential EE Program Costs	Miller Exhibit 3 pg 5				522,611	522,611
4	Total EE Program Cost and Incentive Components	Line 1 + Line 2 + line 3		37,638,218		18,861,529	56,499,747
5	Residential DSM Program Cost	Evans Exhibit 1 pg. 4, Line 11 * NC Alloc. Factor		10,258,751		(176,455)	10,082,296
6	Residential DSM Earned Utility Incentive	Evans Exhibit 1 pg. 4, Line 11 * NC Alloc. Factor		2,837,134		89,061	2,926,195
7	Return on undercollection of Residential DSM Program Costs	Miller Exhibit 3 pg 6				15,015	15,015
8	Total DSM Program Cost and Incentive Components	Line 5 + Line 6 + Line 7		13,095,885		(72,379)	13,023,506
9	Total EE/DSM Program Cost and Incentive Components	Line 4 + Line 8		50,734,103		18,789,151	69,523,254
10	Revenue-related taxes and regulatory fees factor **	Miller Exhibit 2, pg. 7		1.001482		1.001402	
11	Total EE/DSM Program Cost and Incentive Revenue Requirement	Line 9 * Line 10		50,809,291		18,815,493	69,624,784
12	Residential Net Lost Revenues	Evans Exhibit 2 pg. 2	$ 8,904,587	12,699,119	4,202,002	6,456,129	23,357,250
13	Total Residential EE/DSM Revenue Requirement	Line 11 + Line 12	8,904,587	63,508,411	4,202,002	25,271,622	92,982,034
14	Total Collected for Vintage Year 2016 (through estimated Rider 9)	Miller Exhibit 4 Line 2					66,116,542
15	**Total Residential EE/DSM Revenue Requirement**	Line 11 + Line 12	$ 8,904,587				$ 26,865,491

See Miller Exhibit A for rate

NON-RESIDENTIAL
Energy Efficiency Programs

		Reference	Year 2017 Yr 3 LR Estimate	E-7 Sub 1105 Rider 8 Year 1 Estimate	E-7 Sub 1130 Year 2017 Yr 2 LR Estimate	E-7 Sub 1164 Rider 10 True up	Year 2017 Year 1
16	Non- Residential EE Program Cost	Evans Exhibit 1 pg. 4, Line 25 * NC Alloc. Factor		38,791,601		32,155,814	70,947,415
17	Non-Residential EE Earned Utility Incentive	Evans Exhibit 1 pg. 4, Line 25 * NC Alloc. Factor		9,347,504		9,073,243	18,420,747
18	Return on undercollection of Non-residential EE Program Costs	Miller Exhibit 3 page 7				1,588,185	1,588,185
19	Total EE Program Cost and Incentive Components	Line 16 + Line 17 + Line 18		48,139,105		42,817,241	90,956,346
20	Revenue-related taxes and regulatory fees factor	Miller Exhibit 2, pg. 7		1.001482		1.001402	
21	Total Non-Residential EE Program Cost and Incentive Revenue Requirements	Line 19 * Line 20		48,210,447		42,877,271	91,087,718
22	Non-Residential Net Lost Revenues	Evans Exhibit 2 pg. 2	14,570,381	6,039,892	9,466,867	2,627,210	18,133,969
23	Total Non-Residential EE Revenue Requirement	Line 21 + Line 22	14,570,381	54,250,339	9,466,867	45,504,481	109,221,688
24	Total Collected for Vintage Year 2016 (through estimated Rider 9)	Miller Exhibit 4 Line 6					56,058,591
25	Non-Residential EE Revenue Requirement	Line 23 - Line 24	14,570,381				53,163,097
26	Projected NC Residential Sales (kWh)	Miller Exhibit 6, pg. 1, Line 8	17,531,615,286				17,531,615,286
27	**NC Non-Residential EE billing factor (Cents/kWh)**	Line 25/Line 26*100	**0.0831**				**0.3032**

DSM Programs

		Reference	E-7 Sub 1105 Rider 8 Year 1 Estimate		E-7 Sub 1164 Rider 10 True Up	Year 2017 Year 1
28	Non-Residential DSM Program Cost	Evans Exhibit 1, pg. 4 Line 26 * NC Alloc. Factor	13,389,985		(1,438,646)	11,951,339
29	Non-Residential DSM Earned Utility Incentive	Evans Exhibit 1, pg. 4 Line 26 * NC Alloc. Factor	3,703,101		(234,452)	3,468,649
30	Return on undercollection of Non-residential DSM Program Costs	Miller Exhibit 3 page 8	-		4,761	4,761
31	Total Non-Residential DSM Program Cost and Incentive Components	Line 28 + Line 29 + Line 30	17,093,086		(1,668,337)	15,424,749
32	Revenue-related taxes and regulatory fees factor	Miller Exhibit 2, pg. 13	1.001482		1.001402	
33	Total Non-Residential DSM Revenue Requirement	Line 31 * Line 32	17,118,418		(1,670,676)	15,447,742
34	Total Collected for Vintage Year 2016 (through estimated Rider 9)	Miller Exhibit 4 Line 10				15,361,431
35	Non-Residential EE Revenue Requirement True-up Amount	Line 33- Line 34				86,311
36	Projected NC Non-Residential Sales (kWh)	Miller Exhibit 6 pg. 1, Line 9				17,525,161,418
37	**NC Non-Residential DSM billing factor**	Line 35/Line 36*100				**0.0005**

** Actual regulatory fee rate in effect in year of collection. May differ from original filed estimates.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Year 2 Lost Revenues for Vintage Year 2018

RESIDENTIAL

Line		Reference	2018
1	Residential Net Lost Revenues	Evans Exhibit 2 pg. 3 Line 115	6,294,025
2	Projected NC Residential Sales (kWh)	Miller Exhibit 6 pg 1	$ 21,806,637,265
3	**NC Residential EE Billing Factor (Cents/kWh)**	Line 1/Line 2*100	**0.0289**

NON-RESIDENTIAL
Energy Efficiency Programs

		Reference	2018
4	Non-Residential Net Lost Revenues	Evans Exhibit 2 pg. 3 Line 131	10,271,966
5	Impact of Revised Forecast from Rider 9	Miller Exhibit 7 pg 1	2,013,078
6	Total Revenue Requirement	Line 4 + Line 5	12,285,044
7	Projected NC Non-Residential Sales (kWh)	Miller Exhibit 6 pg 1	16,997,418,314
8	**NC Non-Residential EE billing factor (Cents/kWh)**	Line 6/Line 7*100	**0.0723**

Demand Side Management

		Reference	2018
9	Impact of Revised Forecast from Rider 9	Miller Exhibit 7 page 1	534,763
10	Projected NC Non-Residential Sales (kWh)	Miller Exhibit 6 pg 1	17,422,191,737
11	**NC Non-Residential EE billing factor (Cents/kWh)**	Line 9/Line 10*100	**0.0031**

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Program Costs, Earned Incentive and Lost Revenues for Vintage Year 2019

RESIDENTIAL

Line		Reference	2019
1	Residential EE Program Cost	Evans Exhibit 1, pg. 5 * NC Alloc. Factor	$ 41,002,874
2	Residential EE Earned Utility Incentive	Evans Exhibit 1, pg. 5 * NC Alloc. Factor	3,801,819
3	Total EE Program Cost and Incentive Components	Line 1 + Line 2, Evans Exhibit 1, Line 10	44,804,694
4	Residential DSM Program Cost	Evans Exhibit 1, pg. 5 * NC Alloc. Factor	10,577,352
5	Residential DSM Earned Utility Incentive	Evans Exhibit 1, pg. 5 * NC Alloc. Factor	2,773,086
6	Total DSM Program Cost and Incentive Components	Line 4 + Line 5, Evans Exhibit 1, Line 11	13,350,438
7	Total EE/DSM Program Cost and Incentive Components	Line 3 + Line 6	58,155,132
8	Revenue-related taxes and regulatory fees factor	Miller Exhibit 2, pg. 7	1.001402
9	Total EE/DSM Program Cost and Incentive Revenue Requirement	Line 7 * Line 8	58,236,665
10	Residential Net Lost Revenues	Evans Exhibit 2 pg. 3 Line 141	18,783,204
11	**Total Residential EE Revenue Requirement**	**Line 9 + Line 10**	**$ 77,019,869**

See Miller Exhibit 1 for rate

NON-RESIDENTIAL

Energy Efficiency Programs

		Reference	2019
12	Non- Residential EE Program Cost	Evans Exhibit 1, pg. 5 * NC Alloc. Factor	$ 41,671,833
13	Non-Residential EE Earned Utility Incentive	Evans Exhibit 1, pg. 5 * NC Alloc. Factor	8,464,629
14	Total EE Program Cost and Incentive Components	Line 12 + Line 13, Evans Exhibit 1, Line 25	50,136,461
15	Revenue-related taxes and regulatory fees factor	Miller Exhibit 2, pg. 7	1.001402
16	Total Non-Residential EE Program Cost and Incentive Revenue Requirements	Line 14 * Line 15	50,206,753
17	Non-Residential Net Lost Revenues	Evans Exhibit 2 pg. 3 Line 157	5,590,446
18	Total Non-Residential EE Revenue Requirement	Line 16 + Line 17	$ 55,797,199
19	Projected NC Residential Sales (kWh)	Miller Exhibit 6, pg. 1, Line 12	16,997,418,314
20	**NC Non-Residential EE billing factor (Cents/kWh)**	Line 18/Line 19*100	**0.3283**

DSM Programs

			2019
21	Non-Residential DSM Program Cost	Evans Exhibit 1, pg. 5 * NC Alloc. Factor	$ 12,538,168
22	Non-Residential DSM Earned Utility Incentive	Evans Exhibit 1, pg. 5 * NC Alloc. Factor	3,287,157
23	Total Non-Residential DSM Program Cost and Incentive Components	Line 21 + Line 22, Evans Exhibit 1, Line 26	15,825,324
24	Revenue-related taxes and regulatory fees factor	Miller Exhibit 2, pg. 7	1.001402
25	Total Non-Residential DSM Revenue Requirement	Line 23 * Line 24	15,847,512
26	Projected NC Non-Residential Sales (kWh)	Miller Exhibit 6, pg. 1, Line 13	17,422,191,737
27	**NC Non-Residential DSM billing factor**	Line 25/Line 26*100	**0.0910**

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Gross Receipts Tax Years 2014 through estimated 2019

	Year		Actual GRT Rate In Effect
	2014	Jan - June	1.034554
		July - Dec	1.001352
Rider 5	2014	Weighted Average	1.017953
	2015	Jan - June	1.001352
		July - Dec	1.001482
Rider 6	2015	Weighted Average	1.001417
Rider 7	2016	Jan - June	1.001482
		July - Dec	1.001402
		Weighted Average	1.001442
Rider 8	2017		1.001402
Rider 9	2018		1.001402
Rider 10	2019		1.001402

Note: the current rate is used as the estimate for 2018 and 2019. This will be subject to true-up based on actual rates in effect.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation - Residential EE Programs Vintage 2014

updated with formula for Jan.

NC Residential EE		Residential EE Program Costs Incurred	NC Allocation %	NC Allocated EE Program Costs	NC Residential Revenue Collected(EEC2)	NC Residential EE Program Collection %	EE Program Costs Revenue Collected	(Over)/Under Collection
			Miller Exhibit 5 pg. 1, Line 4					
Beginning Balance - source F		**38,254,486**	**72.9600473%**	**27,910,491**			**27,922,190**	**(11,699)**
2017	January		72.9600473%	-	456,980	0.0000000%	-	-
2017	February		72.9600473%	-	894,734	0.0000000%	-	-
2017	March		72.9600473%	-	817,236	0.0000000%	-	-
2017	April		72.9600473%	-	782,342	0.0000000%	-	-
2017	May		72.9600473%	-	725,054	0.0000000%	-	-
2017	June		72.9600473%	-	920,551	0.0000000%	-	-
2017	July		72.9600473%	-	1,138,653	0.0000000%	-	-
2017	August		72.9600473%	-	1,121,938	0.0000000%	-	-
2017	September		72.9600473%	-	974,420	0.0000000%	-	-
2017	October		72.9600473%	-	760,766	0.0000000%	-	-
2017	November		72.9600473%	-	741,359	0.0000000%	-	-
2017	December		72.9600473%	-	1,909,929	0.0000000%	-	-
		-		-	11,243,963			(11,699)

Program Cost Allocation Calculation

At the end of 2016, we still had an overcollected balance of (11,699) in program costs. Therefore, we did not give back that overcollection until Rider 9 (filed at the beginning of 2017) and we will pay that in 2018 and true that up in 2019. Interest continues to be calculated on the beginning balance.

NC Residential EE		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017				7.03%			0.766497 (1-.233503)	
Beginning Balance - Rider 9		**(11,699)**			**(4,001)**	**(7,698)**					
2017	January	(11,699)	0.341957	-	(4,001)	(7,698)	0.005858	(45)	(45)	0.766497	(59)
2017	February	(11,699)	0.341957	-	(4,001)	(7,698)	0.005858	(45)	(90)	0.766497	(118)
2017	March	(11,699)	0.341957	-	(4,001)	(7,698)	0.005858	(45)	(135)	0.766497	(177)
2017	April	(11,699)	0.341957	-	(4,001)	(7,698)	0.005858	(45)	(180)	0.766497	(235)
2017	May	(11,699)	0.341957	-	(4,001)	(7,698)	0.005858	(45)	(225)	0.766497	(294)
2017	June	(11,699)	0.341957	-	(4,001)	(7,698)	0.005858	(45)	(271)	0.766497	(353)
2017	July	(11,699)	0.341957	-	(4,001)	(7,698)	0.005858	(45)	(316)	0.766497	(412)
2017	August	(11,699)	0.341957	-	(4,001)	(7,698)	0.005858	(45)	(361)	0.766497	(471)
2017	September	(11,699)	0.341957	-	(4,001)	(7,698)	0.005858	(45)	(406)	0.766497	(530)
2017	October	(11,699)	0.341957	-	(4,001)	(7,698)	0.005858	(45)	(451)	0.766497	(588)
2017	November	(11,699)	0.341957	-	(4,001)	(7,698)	0.005858	(45)	(496)	0.766497	(647)
2017	December	(11,699)	0.341957	-	(4,001)	(7,698)	0.005858	(45)	(541)	0.766497	(706)
								(541)			(706)

Note 1: Amounts represent all revenue actually collected through 2017.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation - Residential DSM Programs Vintage 2014

NC Residential DSM		Total System NC DSM Program Costs Incurred	NC Residential DSM Allocation %	NC Allocated DSM Residential Program Costs	NC Residential Revenue Collected(EEC2)	NC Residential DSM Program Collection %	DSM Program Costs Revenue Collected	(Over)/Under Collection
			Miller Exhibit 5, pg 1 Line 9					
Beginning Balance - from Ri		**31,183,185**	**34.0209980%**	**10,608,831**			**10,446,933**	**161,898**
2017	January		34.0209980%	-	(7,602)	0.0000000%	-	-
2017	February		34.0209980%	-	(14,885)	0.0000000%	-	-
2017	March		34.0209980%	-	(13,595)	0.0000000%	-	-
2017	April		34.0209980%	-	(13,015)	0.0000000%	-	-
2017	May		34.0209980%	-	(12,062)	0.0000000%	-	-
2017	June		34.0209980%	-	(15,314)	0.0000000%	-	-
2017	July		34.0209980%	-	(18,942)	0.0000000%	-	-
2017	August		34.0209980%	-	(18,664)	0.0000000%	-	-
2017	September		34.0209980%	-	(16,210)	0.0000000%	-	-
2017	October		34.0209980%	-	(12,656)	0.0000000%	-	-
2017	November		34.0209980%	-	(12,333)	0.0000000%	-	-
2017	December		34.0209980%	-	(31,773)	0.0000000%	-	-
		-		-	(187,053)			161,898

Program Cost Allocation Calculation

At the end of 2016, we still had an undercollected balance of 161,898 in program costs. Therefore, we did not request that undercollection until Rider 9 (filed at the beginning of 2017) and we will collect that in 2018 and true that up in 2019. Interest continues to be calculated on the beginning balance.

NC Residential DSM		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017				7.03%			0.766497	
Beginning Balance - from Ri		**161,898**			**55,362**	**184,945**					
2017	January	161,898	0.341957	-	55,362	106,536	0.005858	854	854	0.766497	1,114
2017	February	161,898	0.341957	-	55,362	106,536	0.005858	624	1,478	0.766497	1,928
2017	March	161,898	0.341957	-	55,362	106,536	0.005858	624	2,102	0.766497	2,742
2017	April	161,898	0.341957	-	55,362	106,536	0.005858	624	2,726	0.766497	3,557
2017	May	161,898	0.341957	-	55,362	106,536	0.005858	624	3,350	0.766497	4,371
2017	June	161,898	0.341957	-	55,362	106,536	0.005858	624	3,974	0.766497	5,185
2017	July	161,898	0.341957	-	55,362	106,536	0.005858	624	4,599	0.766497	5,999
2017	August	161,898	0.341957	-	55,362	106,536	0.005858	624	5,223	0.766497	6,814
2017	September	161,898	0.341957	-	55,362	106,536	0.005858	624	5,847	0.766497	7,628
2017	October	161,898	0.341957	-	55,362	106,536	0.005858	624	6,471	0.766497	8,442
2017	November	161,898	0.341957	-	55,362	106,536	0.005858	624	7,095	0.766497	9,256
2017	December	161,898	0.341957	-	55,362	106,536	0.005858	624	7,719	0.766497	10,071
								7,719			10,071

Note 1: Amounts represent all revenue actually collected through 2017.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation - Non- Residential EE Programs Vintage 2014

NC Non-Residential EE		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017				7.03%			0.766497	
Beginning Balance		**194,128**			**66,383**						
2017	January	171,610	0.341957	(7,700)	58,683	112,927	0.005858	331	331	0.766497	432
2017	February	140,866	0.341957	(10,513)	48,170	92,696	0.005858	602	933	0.766497	1,217
2017	March	110,978	0.341957	(10,220)	37,950	73,029	0.005858	485	1,419	0.766497	1,851
2017	April	77,697	0.341957	(11,381)	26,569	51,128	0.005858	364	1,782	0.766497	2,325
2017	May	47,819	0.341957	(10,217)	16,352	31,467	0.005858	242	2,024	0.766497	2,641
2017	June	11,888	0.341957	(12,287)	4,065	7,823	0.005858	115	2,139	0.766497	2,791
2017	July	(26,729)	0.341957	(13,205)	(9,140)	(17,589)	0.005858	(29)	2,111	0.766497	2,754
2017	August	(64,856)	0.341957	(13,038)	(22,178)	(42,678)	0.005858	(177)	1,934	0.766497	2,523
2017	September	(155,821)	0.341957	(31,106)	(53,284)	(102,537)	0.005858	(425)	1,509	0.766497	1,968
2017	October	(437,522)	0.341957	(96,330)	(149,614)	(287,908)	0.005858	(1,144)	365	0.766497	476
2017	November	(731,828)	0.341957	(100,640)	(250,254)	(481,575)	0.005858	(2,254)	(1,889)	0.766497	(2,464)
2017	December	(1,116,422)	0.341957	(131,515)	(381,768)	(734,654)	0.005858	(3,563)	(5,451)	0.766497	(7,112)
								(5,451)			(7,112)

Vintage 2014

Interest Calculation

2016 - Rider 7	Month	NC Program Costs Incurred	Revenue Collected	Undercollected Balance	Lost Revenues	Revenue Collected	Undercollected Balance	PPI	Revenue Collected	Undercollected Balance	**Total Cumulative Under/Over Collected**
	January	1,023,047	496,519	526,529							526,529
	February	574,342	1,083,312	(508,970)							17,558
	March	1,493,558	983,067	510,491							528,049
	April	1,372,563	1,033,183	339,380							867,429
	May	986,529	1,046,209	(59,679)							807,750
	June	2,211,591	1,181,217	1,030,374							1,838,124
	July	1,205,428	1,200,188	5,239							1,843,363
	August	486,228	1,169,999	(683,771)							1,159,592
	September	1,899,376	1,205,640	693,736							1,853,328
	October	1,012,502	1,046,136	(33,634)							1,819,694
	November	1,078,830	969,854	108,975							1,928,669
	December	1,463,718	1,411,342	52,376							1,981,045
		14,807,712	12,826,666	1,981,045	3,054,030	2,645,448	408,582	8,199,835	7,102,823	1,097,012	3,486,639

Interest Calculation

2017 - Rider 8	Month	NC Program Costs Incurred	Revenue Collected	Undercollected Balance	Lost Revenues	Revenue Collected	Undercollected Balance	PPI	Revenue Collected	Undercollected Balance	**Total Cumulative Under/Over Collected**
Beginning Balance		14,807,712	12,826,666	1,981,045	3,054,030	2,645,448	408,582	8,199,835	7,102,823	1,097,012	3,486,639
	January					480,250	(480,250)		2,856	(2,856)	3,003,534
	February					371,319	(371,319)		2,208	(2,208)	2,630,007
	March					369,316	(369,316)		2,196	(2,196)	2,258,494
	April					363,984	(363,984)		2,165	(2,165)	1,892,346
	May					367,725	(367,725)		2,187	(2,187)	1,522,435
	June					493,670	(493,670)		2,936	(2,936)	1,025,829
	July					467,167	(467,167)		2,778	(2,778)	555,884
	August					468,814	(468,814)		2,788	(2,788)	84,283
	September					439,849	(439,849)		2,616	(2,616)	(358,182)
	October					366,098	(366,098)		2,177	(2,177)	(726,457)
	November					396,930	(396,930)		2,360	(2,360)	(1,125,747)
	December				6,041,087	554,214	5,486,873	35,872	3,296	32,576	4,393,701
YTD Balance		-	-	-	6,041,087	5,139,334	901,752	35,872	30,562	5,309	
Cumulative Ending Balance		14,807,712	12,826,666	1,981,045	9,095,117	7,784,782	1,310,334	8,235,706	7,133,385	1,102,321	4,393,701

Interest Calculation

2018 - Rider9	Month	NC Program Costs Incurred	Revenue Collected	Undercollected Balance	Lost Revenues	Revenue Collected	Undercollected Balance	PPI	Revenue Collected	Undercollected Balance	**Total Cumulative Over/Under Collected**
Beginning Balance		14,807,712	12,826,666	1,981,045	9,095,117	7,784,782	1,310,334	8,235,706	7,133,385	1,102,321	4,393,701
	January		43,595	(43,595)		144,181	(144,181)		25,149	(25,149)	4,180,776
	February		142,074	(142,074)		469,880	(469,880)		81,960	(81,960)	3,486,861
	March		140,530	(140,530)		464,773	(464,773)		81,069	(81,069)	2,800,489
	April		136,439	(136,439)		451,243	(451,243)		78,709	(78,709)	2,134,097
	May		141,323	(141,323)		467,397	(467,397)		81,527	(81,527)	1,443,849
	June		159,723	(159,723)		528,249	(528,249)		92,141	(92,141)	663,737
	July		169,432	(169,432)		560,362	(560,362)		97,743	(97,743)	(163,800)
	August		178,218	(178,218)		589,419	(589,419)		102,811	(102,811)	(1,034,249)
	September		182,406	(182,406)		603,269	(603,269)		105,227	(105,227)	(1,925,151)
	October		151,584	(151,584)		501,333	(501,333)		87,446	(87,446)	(2,665,514)
	November		142,012	(142,012)		469,676	(469,676)		81,924	(81,924)	(3,359,127)
	December		199,580	(199,580)	5,240,160	660,070	4,580,090	45,818	115,134	(69,316)	952,066
YTD Balance		-	1,786,918	(1,786,918)	5,240,160	5,909,854	(669,694)	45,818	1,030,841	(985,023)	
Cumulative Ending Balance		14,807,712	14,613,584	194,128	14,335,277	13,694,636	640,640	8,281,524	8,164,227	117,298	

Interest Calculation

2019 - Rider10	Month	NC Program Costs Incurred	Revenue Collected	**Cumulative Undercollected Balance**	Lost Revenues	Revenue Collected	**Cumulative Undercollected Balance**	PPI	Revenue Collected	**Cumulative Undercollected Balance**	**Total Cumulative Under/(Over) Collected Balance**
Beginning Balance		14,807,712	14,613,584	194,128	14,335,277	13,694,636	640,640	8,281,524	8,164,227	117,298	952,066
	January		22,517	171,610	325,395	193,321	772,714	(23,726)	(14,096)	107,668	1,051,992
	February		30,744	140,866	297,791	263,954	806,551	(21,713)	(19,246)	105,200	1,052,617
	March		29,887	110,978	252,849	256,596	802,804	(18,437)	(18,710)	105,473	1,019,256
	April		33,281	77,697	238,855	285,735	755,924	(17,416)	(20,834)	108,892	942,513
	May		29,878	47,819	195,105	256,519	694,510	(14,226)	(18,704)	113,370	855,699
	June		35,931	11,888	141,357	308,483	527,384	(10,307)	(22,493)	125,556	664,828
	July		38,617	(26,729)	100,272	331,539	296,117	(7,311)	(24,174)	142,419	411,807
	August		38,127	(64,856)	73,945	327,340	42,723	(5,392)	(23,868)	160,895	138,761
	September		37,961	(102,817)	49,104	325,908	(234,082)	(3,580)	(23,764)	181,078	(155,821)
	October		32,504	(135,321)	10,262	279,059	(502,879)	(748)	(20,348)	200,678	(437,522)
	November		30,959	(166,280)	(18,268)	265,792	(786,939)	1,332	(19,380)	221,390	(731,828)
	December		42,926	(209,206)	-	368,540	(1,155,478)	-	(26,872)	248,262	(1,116,422)
YTD Balance		-	403,334		1,666,667	3,462,786		(121,525)	(252,490)		
Cumulative Ending Balance		14,807,712	15,016,917	(209,206)	16,001,944	17,157,422	(1,155,478)	8,159,999	7,911,737	248,262	**(1,116,422)**

Reconcilation to Miller Exhibit 2, page 1:

Rider 9 and Rider 10 interest not yet collected/paid	66,267
2018 Revenues estimated but not yet collected	(104,651)
Total per Exhibit 2, page 1	**(1,154,806)**

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation -Non - Residential DSM Programs Vintage 2014

NC Non- Residential DSM		Total System NC DSM Program Costs Incurred	NC Non-Residential DSM Allocation %	NC Allocated DSM Non-Residential Program Costs	Incentives Earned & GRT remitted (Allocated based on WA of Program Costs Incurred)	Total DSM Revenue Requirement	NC Non-Residential DSM Revenue Collected(DS14)	NC Non-Residential DSM Program Collection %	Non-Residential DSM Program Costs Revenue Collected	(Over)/Under Collection
			See Miller Exhibit 5 pg. 1, Line 10		calculated interest on entire balance due to over-collection in total			100% used due to over-collection of entire vintage		
Beginning Balance - revenue req		**31,183,185**	**41.2108021%**	**12,850,841**	**4,213,101**	**17,063,941**	**17,524,152**	**100.0000000%**	**(17,524,152)**	**(460,211)**
2017	January		41.2108021%	-		-	(30,220)	100.0000000%	30,220	30,220
2017	February		41.2108021%	-		-	(22,673)	100.0000000%	22,673	22,673
2017	March		41.2108021%	-		-	(21,993)	100.0000000%	21,993	21,993
2017	April		41.2108021%	-		-	(24,926)	100.0000000%	24,926	24,926
2017	May		41.2108021%	-		-	(22,428)	100.0000000%	22,428	22,428
2017	June		41.2108021%	-		-	(26,675)	100.0000000%	26,675	26,675
2017	July		41.2108021%	-		-	(28,579)	100.0000000%	28,579	28,579
2017	August		41.2108021%	-		-	(29,327)	100.0000000%	29,327	29,327
2017	September		41.2108021%	-		-	(27,894)	100.0000000%	27,894	27,894
2017	October		41.2108021%	-		-	(24,878)	100.0000000%	24,878	24,878
2017	November		41.2108021%	-		-	(23,216)	100.0000000%	23,216	23,216
2017	December		41.2108021%	-		-	(34,412)	100.0000000%	34,412	34,412
						17,063,941	17,206,931			(142,990)

Program Cost Allocation Methodology
No program cost allocation is needed because the vintage was overcollected in total and interest due was calculated on the entire vintage during the entire vintage period.
Therefore, 100% of all revenues offset the overcollected balance.

NC Non-Residential DSM		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017 tax rate				7.03%			0.766497	
Beginning Balance - from Rider 9		**(460,211)**			**(157,372)**	**(302,839)**	**0.005850**				
2017	January	(429,991)	0.341957	10,334	(147,038)	(282,952)	0.005858	(1,716)	(1,716)	0.766497	(2,239)
2017	February	(407,318)	0.341957	7,753	(139,285)	(268,033)	0.005858	(1,614)	(3,330)	0.766497	(4,344)
2017	March	(385,325)	0.341957	7,521	(131,765)	(253,560)	0.005858	(1,528)	(4,858)	0.766497	(6,337)
2017	April	(360,399)	0.341957	8,524	(123,241)	(237,158)	0.005858	(1,437)	(6,295)	0.766497	(8,213)
2017	May	(337,970)	0.341957	7,670	(115,571)	(222,399)	0.005858	(1,346)	(7,641)	0.766497	(9,969)
2017	June	(311,295)	0.341957	9,122	(106,450)	(204,846)	0.005858	(1,251)	(8,893)	0.766497	(11,602)
2017	July	(282,717)	0.341957	9,773	(96,677)	(186,040)	0.005858	(1,145)	(10,038)	0.766497	(13,095)
2017	August	(253,389)	0.341957	10,029	(86,648)	(166,741)	0.005858	(1,033)	(11,071)	0.766497	(14,444)
2017	September	(225,496)	0.341957	9,538	(77,110)	(148,386)	0.005858	(923)	(11,994)	0.766497	(15,648)
2017	October	(200,618)	0.341957	8,507	(68,603)	(132,015)	0.005858	(821)	(12,815)	0.766497	(16,719)
2017	November	(177,402)	0.341957	7,939	(60,664)	(116,738)	0.005858	(729)	(13,544)	0.766497	(17,670)
2017	December	(142,990)	0.341957	11,767	(48,896)	(94,094)	0.005858	(618)	(14,162)	0.766497	(18,476)
								(14,162)			(18,476)

Note 1: Amounts represent all revenue actually collected through 2017.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation - Residential EE Programs Vintage 2015

NC Residential EE		Residential EE Program Costs Incurred	NC Allocation %	NC Allocated EE Program Costs	NC Residential Revenue Collected(EEC2)	NC Residential EE Program Collection %	EE Program Costs Revenue Collected	(Over)/Under Collection
			Miller Exhibit 5 pg. 2, Line 4					
Beginning Balance - source		**38,323,008**	**72.9564706%**	**27,959,114**	45,638,078	**58.8054446%**	26,837,675	1,121,440
2017	January		72.9564706%	-	397,852	**11.1626023%**	44,411	(44,411)
2017	February		72.9564706%	-	778,964	**11.1626023%**	86,953	(86,953)
2017	March		72.9564706%	-	711,494	**11.1626023%**	79,421	(79,421)
2017	April		72.9564706%	-	681,115	**11.1626023%**	76,030	(76,030)
2017	May		72.9564706%	-	631,240	**11.1626023%**	70,463	(70,463)
2017	June		72.9564706%	-	801,441	**11.1626023%**	89,462	(89,462)
2017	July		72.9564706%	-	991,323	**11.1626023%**	110,657	(110,657)
2017	August		72.9564706%	-	976,770	**11.1626023%**	109,033	(109,033)
2017	September		72.9564706%	-	848,339	**11.1626023%**	94,697	(94,697)
2017	October		72.9564706%	-	662,330	**11.1626023%**	73,933	(73,933)
2017	November		72.9564706%	-	645,435	**11.1626023%**	72,047	(72,047)
2017	December		72.9564706%	-	1,662,804	**11.1626023%**	185,612	(185,612)
		-		27,959,114	55,427,185		27,930,394	28,721

Program Costs to be Recovered in Rider 8	**1,121,440**
Revenues to be Collected in Rider 8	10,046,407
% Revenue to be assigned to Program Costs	0.1116

NC Residential EE		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017				7.03%			0.766497	
Beginning Balance - source		**1,121,440**			**383,484**						
2017	January	1,077,029	0.341957	(15,187)	368,298	708,732	0.005858	2,076	2,076	0.766497	2,708
2017	February	990,077	0.341957	(29,734)	338,564	651,513	0.005858	3,984	6,060	0.766497	7,907
2017	March	910,655	0.341957	(27,159)	311,405	599,250	0.005858	3,664	9,724	0.766497	12,686
2017	April	834,625	0.341957	(25,999)	285,406	549,219	0.005858	3,364	13,088	0.766497	17,075
2017	May	764,163	0.341957	(24,095)	261,311	502,852	0.005858	3,082	16,170	0.766497	21,096
2017	June	674,701	0.341957	(30,592)	230,719	443,982	0.005858	2,773	18,943	0.766497	24,714
2017	July	564,043	0.341957	(37,840)	192,879	371,165	0.005858	2,388	21,331	0.766497	27,829
2017	August	455,010	0.341957	(37,285)	155,594	299,416	0.005858	1,964	23,295	0.766497	30,392
2017	September	360,314	0.341957	(32,382)	123,212	237,102	0.005858	1,572	24,867	0.766497	32,442
2017	October	286,380	0.341957	(25,282)	97,930	188,451	0.005858	1,247	26,113	0.766497	34,068
2017	November	214,333	0.341957	(24,637)	73,293	141,040	0.005858	965	27,078	0.766497	35,327
2017	December	28,721	0.341957	(63,471)	9,821	18,900	0.005858	468	27,547	0.766497	35,939
								27,547			35,939

Note 1: Revenues collected represent amounts actually collected through 2017.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation - Residential DSM Programs Vintage 2015

NC Residential DSM		Total System NC DSM Program Costs Incurred	NC Residential DSM Allocation %	NC Allocated DSM Residential Program Costs	NC Residential Revenue Collected(EEC2)	NC Residential DSM Program Collection %	DSM Program Costs Revenue Collected	(Over)/Under Collection
			Miller Exhibit 5, pg 2 Line 9			See calc. at right		
Beginning Balance - from Ri		**31,962,633**	**32.5218612%**	**10,394,843**	**12,589,085**	**79.8848533%**	**10,056,772**	**338,071**
2017	January		32.5218612%	-	16,049	81.9530406%	13,153	(13,153)
2017	February		32.5218612%	-	31,423	81.9530406%	25,752	(25,752)
2017	March		32.5218612%	-	28,701	81.9530406%	23,522	(23,522)
2017	April		32.5218612%	-	27,476	81.9530406%	22,517	(22,517)
2017	May		32.5218612%	-	25,464	81.9530406%	20,869	(20,869)
2017	June		32.5218612%	-	32,330	81.9530406%	26,495	(26,495)
2017	July		32.5218612%	-	39,990	81.9530406%	32,773	(32,773)
2017	August		32.5218612%	-	39,403	81.9530406%	32,292	(32,292)
2017	September		32.5218612%	-	34,222	81.9530406%	28,046	(28,046)
2017	October		32.5218612%	-	26,718	81.9530406%	21,896	(21,896)
2017	November		32.5218612%	-	26,037	81.9530406%	21,338	(21,338)
2017	December		32.5218612%	-	67,077	81.9530406%	54,972	(54,972)
		-		10,394,843	12,983,975		10,380,396	14,447

Program Costs to be recovered in Rider 8	338,071
Revenue Requirement Requested in Rider 8	412,518
Percent of Revenue to be applied to total collections	82%

NC Residential DSM		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017				7.03%			0.766497	
Beginning Balance - from Ri		**338,071**			**115,606**	**222,465**					
2017	January	324,918	0.341957	(4,498)	111,108	213,810	0.005858	1,278	1,278	0.766497	1,667
2017	February	299,166	0.341957	(8,806)	102,302	196,864	0.005858	1,203	2,481	0.766497	3,237
2017	March	275,644	0.341957	(8,043)	94,258	181,386	0.005858	1,108	3,589	0.766497	4,682
2017	April	253,127	0.341957	(7,700)	86,558	166,568	0.005858	1,019	4,608	0.766497	6,012
2017	May	232,258	0.341957	(7,136)	79,422	152,836	0.005858	936	5,544	0.766497	7,232
2017	June	205,763	0.341957	(9,060)	70,362	135,401	0.005858	844	6,388	0.766497	8,334
2017	July	172,990	0.341957	(11,207)	59,155	113,835	0.005858	730	7,118	0.766497	9,286
2017	August	140,699	0.341957	(11,042)	48,113	92,586	0.005858	605	7,723	0.766497	10,075
2017	September	112,653	0.341957	(9,590)	38,522	74,130	0.005858	488	8,211	0.766497	10,712
2017	October	90,756	0.341957	(7,488)	31,035	59,722	0.005858	392	8,603	0.766497	11,224
2017	November	69,419	0.341957	(7,297)	23,738	45,680	0.005858	309	8,912	0.766497	11,627
2017	December	14,447	0.341957	(18,798)	4,940	9,507	0.005858	162	9,073	0.766497	11,838
								9,073			11,838

Note 1: Amounts represent all revenue actually collected through 2017.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation - Non- Residential EE Programs Vintage 2015

NC Non- Residential EE		Non-Residential EE Program Costs Incurred	NC Allocation %	NC Allocated EE Program Costs	NC Residential Revenue Collected(EEC15)	NC Non-Residential EE Program Collection %	Non-Residential EE Program Costs Revenue Collected	(Over)/Under Collection
			Miller Exhibit 5. pg 2, Line 4			See calc. at right		
Beginning Balance - source Rider		**40,096,318**	**72.9564706%**	**29,252,858**	**25,791,031**	**66.566216%**	**17,168,113**	**12,084,745**
2017	January		72.9564706%	-	515,376	43.0115898%	(221,672)	(221,672)
2017	February		72.9564706%	-	1,870,494	43.0115898%	(804,529)	(804,529)
2017	March		72.9564706%	-	1,835,331	43.0115898%	(789,405)	(789,405)
2017	April		72.9564706%	-	2,064,787	43.0115898%	(888,098)	(888,098)
2017	May		72.9564706%	-	1,856,630	43.0115898%	(798,566)	(798,566)
2017	June		72.9564706%	-	2,209,714	43.0115898%	(950,433)	(950,433)
2017	July		72.9564706%	-	2,357,161	43.0115898%	(1,013,852)	(1,013,852)
2017	August		72.9564706%	-	2,372,747	43.0115898%	(1,020,556)	(1,020,556)
2017	September		72.9564706%	-	2,328,313	43.0115898%	(1,001,444)	(1,001,444)
2017	October		72.9564706%	-	2,013,545	43.0115898%	(866,058)	(866,058)
2017	November		72.9564706%	-	1,908,495	43.0115898%	(820,874)	(820,874)
2017	December		72.9564706%	-	2,772,360	43.0115898%	(1,192,436)	(1,192,436)
		-		29,252,858	49,895,986		27,536,038	1,716,821

Program Cost Allocation Calculation	
Non-Res EE Program Costs under collected balance	12,084,745
Non-Res EE Revenue Requirement in Rider 8	28,096,486
% Revenue related to Program Costs	43%
Note: Vintage Year 2015 collections in 2017 stem from Rider 8.	

NC Non-Residential EE		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017				7.03%			0.766497	
Beginning Balance from Rider 9		**12,084,745**			**4,132,463**	**7,952,282**					
2017	January	11,863,074	0.341957	(75,802.13)	4,056,661	7,806,413	0.005858	46,160	46,160	0.766497	60,222
2017	February	11,058,544	0.341957	(275,114.44)	3,781,547	7,276,998	0.005858	44,182	90,342	0.766497	117,863
2017	March	10,269,139	0.341957	(269,942.58)	3,511,604	6,757,535	0.005858	41,109	131,451	0.766497	171,496
2017	April	9,381,042	0.341957	(303,691.26)	3,207,913	6,173,129	0.005858	37,876	169,327	0.766497	220,910
2017	May	8,582,475	0.341957	(273,075.28)	2,934,838	5,647,638	0.005858	34,625	203,952	0.766497	266,084
2017	June	7,632,042	0.341957	(325,007.24)	2,609,830	5,022,212	0.005858	31,254	235,206	0.766497	306,858
2017	July	6,618,190	0.341957	(346,693.95)	2,263,136	4,355,054	0.005858	27,468	262,674	0.766497	342,694
2017	August	5,597,633	0.341957	(348,986.40)	1,914,150	3,683,484	0.005858	23,546	286,220	0.766497	373,413
2017	September	4,596,189	0.341957	(342,450.88)	1,571,699	3,024,490	0.005858	19,649	305,869	0.766497	399,047
2017	October	3,730,131	0.341957	(296,154.57)	1,275,545	2,454,587	0.005858	16,049	321,918	0.766497	419,986
2017	November	2,909,257	0.341957	(280,703.66)	994,841	1,914,416	0.005858	12,798	334,715	0.766497	436,682
2017	December	1,716,821	0.341957	(407,761.94)	587,079	1,129,742	0.005858	8,917	343,632	0.766497	448,315
								343,632			448,315

Note 1: Amounts represent all revenue actually collected through 2017.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation -Non - Residential DSM Programs Vintage 2015

NC Non- Residential DSM		Total System NC DSM Program Costs Incurred	NC Non-Residential DSM Allocation %	NC Allocated DSM Non-Residential Program Costs	Incentives Earned & GRT remitted (Allocated based on WA of Program Costs Incurred)	Total DSM Revenue Requirement	NC Non-Residential DSM Revenue Collected(DS15)	NC Non-Residential DSM Program Collection %	Non-Residential DSM Program Costs Revenue Collected	(Over)/Under Collection
			See Miller Exhibit 5 pg. 2, Line 10		calculated interest on entire balance due to over-collection in total			100% used due to over-collection of entire vintage		
Beginning Balance - revenue rec		**31,958,782**	**42.4483655%**	**13,565,981**	**3,399,898**	**16,965,879**	**20,170,831**	**100.000000%**	**20,170,831**	**(3,204,953)**
2017	January	-	42.4483655%	-		-	(47,737)	100.000000%	(47,737)	47,737
2017	February	-	42.4483655%	-		-	(185,758)	100.000000%	(185,758)	185,758
2017	March	-	42.4483655%	-		-	(182,828)	100.000000%	(182,828)	182,828
2017	April	-	42.4483655%	-		-	(205,754)	100.000000%	(205,754)	205,754
2017	May	-	42.4483655%	-		-	(184,460)	100.000000%	(184,460)	184,460
2017	June	-	42.4483655%	-		-	(219,617)	100.000000%	(219,617)	219,617
2017	July	-	42.4483655%	-		-	(235,112)	100.000000%	(235,112)	235,112
2017	August	-	42.4483655%	-		-	(239,081)	100.000000%	(239,081)	239,081
2017	September	-	42.4483655%	-		-	(229,504)	100.000000%	(229,504)	229,504
2017	October	-	42.4483655%	-		-	(204,689)	100.000000%	(204,689)	204,689
2017	November	-	42.4483655%	-		-	(191,309)	100.000000%	(191,309)	191,309
2017	December	-	42.4483655%	-		-	(272,919)	100.000000%	(272,919)	272,919
		-		-		16,965,879	17,772,063			(806,185)

Program Cost Allocation Methodology
No program cost allocation is needed because the vintage was overcollected in total and interest due was calculated on the entire vintage.

Therefore, 100% of all revenues offset the overcollected balance.

NC Non-Residential DSM		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017 tax rate				7.03%			0.766497	
Beginning Balance - from Rider		**(3,204,953)**			**(1,095,956)**	**(2,108,997)**					
2017	January	(3,157,216)	0.341957	16,324	(1,079,632)	(2,077,584)	0.005858	(12,263)	(12,263)	0.766497	(15,999)
2017	February	(2,971,458)	0.341957	63,521	(1,016,111)	(1,955,347)	0.005858	(11,813)	(24,076)	0.766497	(31,411)
2017	March	(2,788,631)	0.341957	62,519	(953,592)	(1,835,039)	0.005858	(11,103)	(35,179)	0.766497	(45,896)
2017	April	(2,582,876)	0.341957	70,359	(883,233)	(1,699,644)	0.005858	(10,354)	(45,533)	0.766497	(59,404)
2017	May	(2,398,416)	0.341957	63,077	(820,155)	(1,578,261)	0.005858	(9,602)	(55,134)	0.766497	(71,930)
2017	June	(2,178,799)	0.341957	75,100	(745,055)	(1,433,743)	0.005858	(8,823)	(63,957)	0.766497	(83,440)
2017	July	(1,943,687)	0.341957	80,398	(664,657)	(1,279,029)	0.005858	(7,946)	(71,903)	0.766497	(93,807)
2017	August	(1,704,605)	0.341957	81,756	(582,902)	(1,121,703)	0.005858	(7,032)	(78,935)	0.766497	(102,982)
2017	September	(1,475,102)	0.341957	78,480	(504,421)	(970,680)	0.005858	(6,129)	(85,064)	0.766497	(110,978)
2017	October	(1,270,413)	0.341957	69,995	(434,426)	(835,986)	0.005858	(5,292)	(90,356)	0.766497	(117,882)
2017	November	(1,079,104)	0.341957	65,419	(369,007)	(710,097)	0.005858	(4,529)	(94,885)	0.766497	(123,790)
2017	December	(806,185)	0.341957	93,327	(275,680)	(530,504)	0.005858	(3,634)	(98,519)	0.766497	(128,531)
								(98,519)			(128,531)

Note 1: Revenues collected represent cash received as of Decmeber 31, 2017.

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Estimated Return Calculation - Residential EE Programs Vintage 2016

NC Residential EE		Residential EE Program Costs Incurred	NC Allocation %	NC Allocated EE Program Costs	NC Residential Revenue Collected	NC Residential EE Program Collection %	EE Program Costs Revenue Collected	(Over)/Under Collection
			Miller Exhibit 5 pg. 3, Line 4			see calc. at right		
Beginning Balance - source		54,751,215	73.0962827%	40,021,103	44,821,836	63.0138%	28,243,964	11,777,138
2017	January		73.0962827%	-		0.0000%	-	-
2017	February		73.0962827%	-		0.0000%	-	-
2017	March		73.0962827%	-		0.0000%	-	-
2017	April		73.0962827%	-		0.0000%	-	-
2017	May		73.0962827%	-		0.0000%	-	-
2017	June		73.0962827%	-		0.0000%	-	-
2017	July		73.0962827%	-		0.0000%	-	-
2017	August		73.0962827%	-		0.0000%	-	-
2017	September		73.0962827%	-		0.0000%	-	-
2017	October		73.0962827%	-		0.0000%	-	-
2017	November		73.0962827%	-		0.0000%	-	-
2017	December		73.0962827%	-		0.0000%	-	-
		-		40,021,103	44,821,836		28,243,964	11,777,138

Note: All revenues collected in Rider 8 were to collect Y2 of lost revenue. Therefore, no revenue received in 2017 would offset the under collected balance of program costs and a return would still be earned.

Although from a 2019 recovery standpoint, we anticipate being over-collected in total, those revenues have not yet been received and therefore interest due could not be accurately calculated.

NC Residential EE		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017 tax rate				7.03%			0.766497	
Beginning Balance - source		11,777,138			4,027,275	7,749,863					
2017	January	11,777,138	0.341957		4,027,275	7,749,863	0.005858	45,401	45,401	0.766497	59,232
2017	February	11,777,138	0.341957	-	4,027,275	7,749,863	0.005858	45,401	90,803	0.766497	118,464
2017	March	11,777,138	0.341957	-	4,027,275	7,749,863	0.005858	45,401	136,204	0.766497	177,697
2017	April	11,777,138	0.341957	-	4,027,275	7,749,863	0.005858	45,401	181,605	0.766497	236,929
2017	May	11,777,138	0.341957	-	4,027,275	7,749,863	0.005858	45,401	227,006	0.766497	296,161
2017	June	11,777,138	0.341957	-	4,027,275	7,749,863	0.005858	45,401	272,408	0.766497	355,393
2017	July	11,777,138	0.341957	-	4,027,275	7,749,863	0.005858	45,401	317,809	0.766497	414,625
2017	August	11,777,138	0.341957	-	4,027,275	7,749,863	0.005858	45,401	363,210	0.766497	473,857
2017	September	11,777,138	0.341957	-	4,027,275	7,749,863	0.005858	45,401	408,612	0.766497	533,090
2017	October	11,777,138	0.341957	-	4,027,275	7,749,863	0.005858	45,401	454,013	0.766497	592,322
2017	November	11,777,138	0.341957	-	4,027,275	7,749,863	0.005858	45,401	499,414	0.766497	651,554
2017	December	11,777,138	0.341957	-	4,027,275	7,749,863	0.005858	45,401	544,815	0.766497	710,786
								544,815			710,786

Note 1: Amounts represent all revenue actually collected through 2017.

Duke Energy Carolinas, LLC
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Estimated Return Calculation - Residential DSM Programs Vintage 2016

NC Residential DSM		Total System NC DSM Program Costs Incurred	NC Residential DSM Allocation %	NC Allocated DSM Residential Program Costs	NC Residential Revenue Collected	NC Residential DSM Program Collection %	DSM Program Costs Revenue Collected	(Over)/Under Collection
			Miller Exhibit 5, pg 3 Line 9			See calc. at right		
Beginning Balance - Source		28,406,298	33.7973480%	9,600,575	13,363,032	77.572582%	10,366,049	(765,474)
2017	January		33.7973480%	-		0.0000000%	-	-
2017	February		33.7973480%	-		0.0000000%	-	-
2017	March		33.7973480%	-		0.0000000%	-	-
2017	April		33.7973480%	-		0.0000000%	-	-
2017	May		33.7973480%	-		0.0000000%	-	-
2017	June		33.7973480%	-		0.0000000%	-	-
2017	July		33.7973480%	-		0.0000000%	-	-
2017	August		33.7973480%	-		0.0000000%	-	-
2017	September		33.7973480%	-		0.0000000%	-	-
2017	October		33.7973480%	-		0.0000000%	-	-
2017	November		33.7973480%	-		0.0000000%	-	-
2017	December		33.7973480%	-		0.0000000%	-	-
		28,406,298		9,600,575	13,363,032		10,366,049	(765,474)

Note: All revenues collected in Rider 8 were to collect Y2 of lost revenue. Therefore, no revenue received in 2017 would offset the over collected balance of program costs and interest would still be earned.

Although from a 2019 recovery standpoint, we anticipate being over-collected in total, those revenues have not yet been received and therefore interest due could not be accurately calculated.

NC Residential DSM		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017				7.03%			0.766497	
Beginning Balance - source		(765,474)			(261,759)	(503,715)					
2017	January	(765,474)	0.341957	-	(261,759)	(503,715)	0.005858	(2,951)	(2,951)	0.766497	(3,850)
2017	February	(765,474)	0.341957	-	(261,759)	(503,715)	0.005858	(2,951)	(5,902)	0.766497	(7,700)
2017	March	(765,474)	0.341957	-	(261,759)	(503,715)	0.005858	(2,951)	(8,853)	0.766497	(11,550)
2017	April	(765,474)	0.341957	-	(261,759)	(503,715)	0.005858	(2,951)	(11,804)	0.766497	(15,400)
2017	May	(765,474)	0.341957	-	(261,759)	(503,715)	0.005858	(2,951)	(14,755)	0.766497	(19,249)
2017	June	(765,474)	0.341957	-	(261,759)	(503,715)	0.005858	(2,951)	(17,706)	0.766497	(23,099)
2017	July	(765,474)	0.341957	-	(261,759)	(503,715)	0.005858	(2,951)	(20,656)	0.766497	(26,949)
2017	August	(765,474)	0.341957	-	(261,759)	(503,715)	0.005858	(2,951)	(23,607)	0.766497	(30,799)
2017	September	(765,474)	0.341957	-	(261,759)	(503,715)	0.005858	(2,951)	(26,558)	0.766497	(34,649)
2017	October	(765,474)	0.341957	-	(261,759)	(503,715)	0.005858	(2,951)	(29,509)	0.766497	(38,499)
2017	November	(765,474)	0.341957	-	(261,759)	(503,715)	0.005858	(2,951)	(32,460)	0.766497	(42,349)
2017	December	(765,474)	0.341957	-	(261,759)	(503,715)	0.005858	(2,951)	(35,411)	0.766497	(46,199)
								(35,411)			(46,199)

Note 1: Amounts represent all revenue actually collected through 2017.

Duke Energy Carolinas, LLC
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Estimated Return Calculation - Non- Residential EE Programs Vintage 2016

NC Non- Residential EE		Non-Residential EE Program Costs Incurred	NC Allocation %	NC Allocated EE Program Costs	Total Revenue Collected	Percent Attributable to Program Costs	NC Residential Revenue Collected	(Over)/Under Collection
			Miller Exhibit 5. pg 3, Line 4					
Beginning Balance - Source Rider		68,416,594		50,009,987	45,662,897	69.71121%	31,832,160	18,177,827
2017	January		73.0962827%	-				-
2017	February		73.0962827%	-				-
2017	March		73.0962827%	-				-
2017	April		73.0962827%	-				-
2017	May		73.0962827%	-				-
2017	June		73.0962827%	-				-
2017	July		73.0962827%	-				-
2017	August		73.0962827%	-				-
2017	September		73.0962827%	-				-
2017	October		73.0962827%	-				-
2017	November		73.0962827%	-				-
2017	December		73.0962827%	-				-
		-		50,009,987	45,662,897		31,832,160	18,177,827

Note: All revenues collected in Rider 8 were to collect Y2 of lost revenue. Therefore, no revenue received in 2017 would offset the under collected balance of program costs and a return would still be earned.

Although from a 2019 recovery standpoint, we anticipate being over-collected in total, those revenues have not yet been received and therefore interest due could not be accurately calculated.

NC Non-Residential EE		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017				7.03%			0.766497	
Beginning Balance - Source Rider		18,177,827			6,216,035						
2017	January	18,177,827	0.341957	-	6,216,035	11,961,792	0.005858	35,038	35,038	0.766497	45,712
2017	February	18,177,827	0.341957	-	6,216,035	11,961,792	0.005858	70,076	105,114	0.766497	137,136
2017	March	18,177,827	0.341957	-	6,216,035	11,961,792	0.005858	70,076	175,190	0.766497	228,560
2017	April	18,177,827	0.341957	-	6,216,035	11,961,792	0.005858	70,076	245,267	0.766497	319,984
2017	May	18,177,827	0.341957	-	6,216,035	11,961,792	0.005858	70,076	315,343	0.766497	411,408
2017	June	18,177,827	0.341957	-	6,216,035	11,961,792	0.005858	70,076	385,419	0.766497	502,832
2017	July	18,177,827	0.341957	-	6,216,035	11,961,792	0.005858	70,076	455,495	0.766497	594,256
2017	August	18,177,827	0.341957	-	6,216,035	11,961,792	0.005858	70,076	525,571	0.766497	685,679
2017	September	18,177,827	0.341957	-	6,216,035	11,961,792	0.005858	70,076	595,647	0.766497	777,103
2017	October	18,177,827	0.341957	-	6,216,035	11,961,792	0.005858	70,076	665,724	0.766497	868,527
2017	November	18,177,827	0.341957	-	6,216,035	11,961,792	0.005858	70,076	735,800	0.766497	959,951
2017	December	18,177,827	0.341957	-	6,216,035	11,961,792	0.005858	70,076	805,876	0.766497	1,051,375
								805,876			1,051,375

Note 1: Amounts represent all revenue actually collected through 2017.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation -Non - Residential DSM Programs Vintage 2016

NC Non- Residential DSM		Total System NC DSM Program Costs Incurred	NC Non-Residential DSM Allocation %	NC Allocated DSM Non-Residential Program Costs	Total Revenue Collected	% Revenue Attributable to Program Costs	NC Non-Residential DSM Revenue Collected	(Over)/Under Collection
			See Miller Exhibit 5 pg. 3, Line 10					
Beginning Balance - Source Rid		28,406,297	40.8166437%	11,594,497	14,637,127	77.57257%	11,354,396	240,101
2017	January		40.8166437%	-	248,261	77.57257%	192,582	(192,581)
2017	February		40.8166437%	-	2,328	77.57257%	1,806	(1,805)
2017	March		40.8166437%	-	(2,674)	77.57257%	(2,074)	2,075
2017	April		40.8166437%	-	(379)	77.57257%	(294)	295
2017	May		40.8166437%	-	26	77.57257%	20	(19)
2017	June		40.8166437%	-	(8)	77.57257%	(7)	7
2017	July		40.8166437%	-	(6)	77.57257%	(4)	5
2017	August		40.8166437%	-	(2,926)	77.57257%	(2,270)	2,271
2017	September		40.8166437%	-	(40)	77.57257%	(31)	32
2017	October		40.8166437%	-	10	77.57257%	8	(7)
2017	November		40.8166437%	-	(10)	77.57257%	(8)	8
2017	December		40.8166437%	-	(10)	77.57257%	(8)	9
		-		-	14,881,698			50,390

Note: There was no true up of the DSM Rider in Rider 8, therefore all revenue collections relate to the prior year whether through timing or billing corrections.

All revenue collected in 2017 will be allocated using the same percentage attributable to program costs as in Rider 9.

DSM Program Costs	11,594,497
DSM Revenue Requirement	14,946,646
% Revenue related to Program Costs	77.573%

NC Non-Residential DSM		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017 tax rate				7.03%			0.766497	
Beginning Balance - Source Rid		240,101			82,104	157,997					
2017	January	47,520	0.341957	(65,855)	16,250	31,270	0.005858	554	554	0.766497	723
2017	February	45,715	0.341957	(617)	15,633	30,082	0.005858	180	734	0.766497	958
2017	March	47,790	0.341957	710	16,342	31,448	0.005858	180	914	0.766497	1,193
2017	April	48,085	0.341957	101	16,443	31,642	0.005858	185	1,099	0.766497	1,434
2017	May	48,066	0.341957	(7)	16,436	31,629	0.005858	185	1,284	0.766497	1,676
2017	June	48,073	0.341957	3	16,439	31,634	0.005858	185	1,470	0.766497	1,918
2017	July	48,078	0.341957	2	16,441	31,637	0.005858	185	1,655	0.766497	2,159
2017	August	50,349	0.341957	776	17,217	33,132	0.005858	190	1,845	0.766497	2,407
2017	September	50,381	0.341957	11	17,228	33,153	0.005858	194	2,039	0.766497	2,660
2017	October	50,373	0.341957	(2)	17,226	33,148	0.005858	194	2,233	0.766497	2,914
2017	November	50,382	0.341957	3	17,228	33,153	0.005858	194	2,427	0.766497	3,167
2017	December	50,390	0.341957	3	17,231	33,159	0.005858	194	2,622	0.766497	3,420
								2,622			3,420

Note 1: Amounts represent all revenue actually collected through 2017.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation - Residential EE Programs Vintage 2017

NC Residential EE		Residential EE Program Costs Incurred	NC Allocation %	NC Allocated EE Program Costs	NC Residential Revenue Collected	NC Residential EE Program Collection %	EE Program Costs Revenue Collected	(Over)/Under Collection
			Miller Exhibit 5 pg. 4, Line 4			see calc. at right		
2017	January	3,951,450	72.8087506%	2,877,001	1,996,861	59.7964%	(1,194,051)	1,682,950
2017	February	3,156,018	72.8087506%	2,297,857	3,909,707	59.7964%	(2,337,865)	(40,008)
2017	March	5,539,541	72.8087506%	4,033,271	3,571,065	59.7964%	(2,135,370)	1,897,901
2017	April	5,860,111	72.8087506%	4,266,674	3,418,589	59.7964%	(2,044,194)	2,222,479
2017	May	5,434,589	72.8087506%	3,956,856	3,168,260	59.7964%	(1,894,506)	2,062,350
2017	June	3,881,110	72.8087506%	2,825,788	4,022,519	59.7964%	(2,405,323)	420,465
2017	July	6,137,644	72.8087506%	4,468,742	4,975,556	59.7964%	(2,975,205)	1,493,537
2017	August	6,299,458	72.8087506%	4,586,557	4,902,516	59.7964%	(2,931,529)	1,655,027
2017	September	6,442,152	72.8087506%	4,690,450	4,257,908	59.7964%	(2,546,077)	2,144,374
2017	October	4,072,457	72.8087506%	2,965,105	3,324,307	59.7964%	(1,987,817)	977,288
2017	November	6,023,635	72.8087506%	4,385,733	3,239,508	59.7964%	(1,937,110)	2,448,623
2017	December	8,424,569	72.8087506%	6,133,823	8,345,791	59.7964%	(4,990,485)	1,143,338
		65,222,734		47,487,858	49,132,586			18,108,325

EE Program Costs	47,487,859
EE Revenue Requirement	79,415,877
% Revenue related to Program Costs	59.7964%

NC Residential EE		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017 tax rate				7.03%			0.766497	
2017	January	1,682,950	0.341957	575,497	575,497	1,107,453	0.005858	3,244	3,244	0.766497	4,232
2017	February	1,642,942	0.341957	(13,681)	561,816	1,081,127	0.005858	6,411	9,655	0.766497	12,596
2017	March	3,540,843	0.341957	649,001	1,210,816	2,330,027	0.005858	9,992	19,646	0.766497	25,632
2017	April	5,763,322	0.341957	759,992	1,970,808	3,792,514	0.005858	17,934	37,580	0.766497	49,029
2017	May	7,825,673	0.341957	705,235	2,676,044	5,149,629	0.005858	26,193	63,773	0.766497	83,201
2017	June	8,246,138	0.341957	143,781	2,819,824	5,426,313	0.005858	30,979	94,752	0.766497	123,617
2017	July	9,739,675	0.341957	510,725	3,330,550	6,409,125	0.005858	34,668	129,420	0.766497	168,846
2017	August	11,394,702	0.341957	565,948	3,896,498	7,498,204	0.005858	40,737	170,157	0.766497	221,993
2017	September	13,539,076	0.341957	733,284	4,629,782	8,909,294	0.005858	48,060	218,217	0.766497	284,694
2017	October	14,516,364	0.341957	334,191	4,963,972	9,552,392	0.005858	54,077	272,295	0.766497	355,246
2017	November	16,964,987	0.341957	837,324	5,801,296	11,163,691	0.005858	60,681	332,975	0.766497	434,412
2017	December	18,108,325	0.341957	390,973	6,192,269	11,916,057	0.005858	67,604	400,580	0.766497	522,611
								400,580			522,611

Note 1: Amounts represent all revenue actually collected through 2017.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation - Residential DSM Programs Vintage 2017

NC Residential DSM		Total System NC DSM Program Costs Incurred	NC Residential DSM Allocation %	NC Allocated DSM Residential Program Costs	NC Residential Revenue Collected	NC Residential DSM Program Collection %	DSM Program Costs Revenue Collected	(Over)/Under Collection
			Miller Exhibit 5, pg 4 Line 9			See calc. at right		
2017	January	1,633,196	33.8075104%	552,143	519,488	77.3907656%	(402,036)	150,107
2017	February	1,772,850	33.8075104%	599,356	1,017,119	77.3907656%	(787,156)	(187,800)
2017	March	1,805,428	33.8075104%	610,370	929,021	77.3907656%	(718,976)	(108,606)
2017	April	2,139,454	33.8075104%	723,296	889,354	77.3907656%	(688,278)	35,018
2017	May	2,105,003	33.8075104%	711,649	824,230	77.3907656%	(637,878)	73,771
2017	June	2,212,929	33.8075104%	748,136	1,046,468	77.3907656%	(809,869)	(61,733)
2017	July	3,457,756	33.8075104%	1,168,981	1,294,402	77.3907656%	(1,001,748)	167,233
2017	August	3,721,393	33.8075104%	1,258,110	1,275,401	77.3907656%	(987,042)	271,068
2017	September	3,547,993	33.8075104%	1,199,488	1,107,704	77.3907656%	(857,261)	342,227
2017	October	3,114,895	33.8075104%	1,053,068	864,826	77.3907656%	(669,295)	383,773
2017	November	1,792,385	33.8075104%	605,961	842,765	77.3907656%	(652,223)	(46,262)
2017	December	2,519,371	33.8075104%	851,737	2,171,177	77.3907656%	(1,680,290)	(828,554)
		29,822,653		10,082,297	12,781,955		(9,892,052)	190,244

DSM Program Costs	10,082,296
DSM Revenue Requirement	13,027,777
% Revenue related to Program Costs	77%

NC Residential DSM		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017				7.03%			0.766497	
2017	January	150,107	0.341957	51,330	51,330	98,777	0.005858	289	289	0.766497	377
2017	February	(37,693)	0.341957	(64,219)	(12,889)	(24,803)	0.005858	217	506	0.766497	660
2017	March	(146,299)	0.341957	(37,139)	(50,028)	(96,271)	0.005858	(355)	151	0.766497	197
2017	April	(111,280)	0.341957	11,975	(38,053)	(73,227)	0.005858	(496)	(345)	0.766497	(450)
2017	May	(37,509)	0.341957	25,227	(12,826)	(24,683)	0.005858	(287)	(632)	0.766497	(824)
2017	June	(99,242)	0.341957	(21,110)	(33,937)	(65,306)	0.005858	(264)	(896)	0.766497	(1,168)
2017	July	67,991	0.341957	57,187	23,250	44,741	0.005858	(60)	(956)	0.766497	(1,247)
2017	August	339,059	0.341957	92,694	115,944	223,116	0.005858	785	(171)	0.766497	(223)
2017	September	681,287	0.341957	117,027	232,971	448,316	0.005858	1,967	1,796	0.766497	2,343
2017	October	1,065,059	0.341957	131,234	364,205	700,855	0.005858	3,366	5,162	0.766497	6,734
2017	November	1,018,798	0.341957	(15,820)	348,385	670,413	0.005858	4,017	9,178	0.766497	11,974
2017	December	190,244	0.341957	(283,330)	65,055	125,189	0.005858	2,330	11,509	0.766497	15,015
								11,509			15,015

Note 1: Amounts represent all revenue actually collected through 2017.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation - Non- Residential EE Programs Vintage 2017

NC Non- Residential EE		Non-Residential EE Program Costs Incurred	NC Allocation %	NC Allocated EE Program Costs	NC Residential Revenue Collected	NC Non-Residential EE Program Collection %	Non-Residential EE Program Costs Revenue Collected	(Over)/Under Collection
			Miller Exhibit 5. pg 4, Line 4			See calc. at right		
2017	January	7,765,034	72.8087506%	5,653,624	1,788,547	65.9170988%	(1,178,958)	4,474,666
2017	February	8,808,014	72.8087506%	6,413,005	3,571,027	65.9170988%	(2,353,917)	4,059,088
2017	March	9,879,807	72.8087506%	7,193,364	3,539,962	65.9170988%	(2,333,440)	4,859,924
2017	April	23,608,754	72.8087506%	17,189,239	3,940,432	65.9170988%	(2,597,419)	14,591,820
2017	May	7,844,571	72.8087506%	5,711,534	3,588,359	65.9170988%	(2,365,342)	3,346,192
2017	June	7,360,362	72.8087506%	5,358,988	4,246,626	65.9170988%	(2,799,253)	2,559,735
2017	July	5,200,887	72.8087506%	3,786,701	4,554,076	65.9170988%	(3,001,915)	784,786
2017	August	4,726,565	72.8087506%	3,441,353	4,558,676	65.9170988%	(3,004,947)	436,406
2017	September	3,115,532	72.8087506%	2,268,380	4,446,215	65.9170988%	(2,930,816)	(662,436)
2017	October	4,927,656	72.8087506%	3,587,765	3,864,800	65.9170988%	(2,547,564)	1,040,201
2017	November	4,602,929	72.8087506%	3,351,335	3,655,747	65.9170988%	(2,409,763)	941,573
2017	December	9,603,416	72.8087506%	6,992,127	5,173,662	65.9170988%	(3,410,328)	3,581,799
		97,443,527		70,947,415	46,928,129		(30,933,661)	40,013,754

Non-Res EE Program Costs	70,947,415
Non-Res EE Revenue Requirement	107,631,276
% Revenue related to Program Costs	66%

NC Non-Residential EE		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017				7.03%			0.766497	
2017	January	4,474,666	0.341957	1,530,143.33	1,530,143	2,944,523	0.005858	8,625	8,625	0.766497	11,252
2017	February	8,533,754	0.341957	1,388,033.51	2,918,177	5,615,577	0.005858	25,074	33,699	0.766497	43,965
2017	March	13,393,678	0.341957	1,661,885.03	4,580,062	8,813,616	0.005858	42,266	75,964	0.766497	99,106
2017	April	27,985,498	0.341957	4,989,775.08	9,569,837	18,415,661	0.005858	79,759	155,724	0.766497	203,163
2017	May	31,331,690	0.341957	1,144,253.67	10,714,091	20,617,599	0.005858	114,335	270,058	0.766497	352,328
2017	June	33,891,425	0.341957	875,319.29	11,589,410	22,302,015	0.005858	125,719	395,777	0.766497	516,345
2017	July	34,676,211	0.341957	268,363.16	11,857,773	22,818,438	0.005858	132,165	527,943	0.766497	688,773
2017	August	35,112,617	0.341957	149,232.04	12,007,005	23,105,612	0.005858	134,519	662,462	0.766497	864,272
2017	September	34,450,181	0.341957	(226,524.55)	11,780,481	22,669,700	0.005858	134,084	796,545	0.766497	1,039,202
2017	October	35,490,382	0.341957	355,703.86	12,136,184	23,354,197	0.005858	134,812	931,357	0.766497	1,215,082
2017	November	36,431,954	0.341957	321,977.31	12,458,162	23,973,792	0.005858	138,632	1,069,988	0.766497	1,395,946
2017	December	40,013,754	0.341957	1,224,821.40	13,682,983	26,330,770	0.005858	147,350	1,217,339	0.766497	1,588,185
								1,217,339			1,588,185

Note 1: Amounts represent all revenue actually collected through 2017.

Duke Energy Carolinas, LLC
Docket No. E-7, Sub 1164
Estimated Return Calculation -Non - Residential DSM Programs Vintage 2017

NC Non- Residential DSM		Total System NC DSM Program Costs Incurred	NC Non-Residential DSM Allocation %	NC Allocated DSM Non-Residential Program Costs	NC Non-Residential DSM Revenue Collected	NC Non-Residential DSM Program Collection %	Non-Residential DSM Program Costs Revenue Collected	(Over)/Under Collection
			See Miller Exhibit 5 pg. 4, Line 10					
2017	January	1,633,196	40.0747013%	654,498	548,946	77.3901377%	(424,830)	229,669
2017	February	1,772,850	40.0747013%	710,464	1,153,427	77.3901377%	(892,639)	(182,174)
2017	March	1,805,428	40.0747013%	723,520	1,136,471	77.3901377%	(879,516)	(155,997)
2017	April	2,139,454	40.0747013%	857,380	1,266,921	77.3901377%	(980,472)	(123,092)
2017	May	2,105,003	40.0747013%	843,574	1,156,729	77.3901377%	(895,195)	(51,621)
2017	June	2,212,929	40.0747013%	886,825	1,365,063	77.3901377%	(1,056,424)	(169,599)
2017	July	3,457,756	40.0747013%	1,385,685	1,459,627	77.3901377%	(1,129,608)	256,078
2017	August	3,721,393	40.0747013%	1,491,337	1,471,285	77.3901377%	(1,138,629)	352,708
2017	September	3,547,993	40.0747013%	1,421,848	1,424,894	77.3901377%	(1,102,727)	319,120
2017	October	3,114,895	40.0747013%	1,248,285	1,270,748	77.3901377%	(983,433)	264,852
2017	November	1,792,385	40.0747013%	718,293	1,186,725	77.3901377%	(918,408)	(200,115)
2017	December	2,519,371	40.0747013%	1,009,630	1,920,596	77.3901377%	(1,486,352)	(476,721)
		29,822,653		11,951,339	15,361,431		(11,888,233)	63,106

DSM Program Costs	11,951,339
DSM Revenue Requirement	15,442,974
% Revenue related to Program Costs	77%

NC Non-Residential DSM		Cumulative (Over)/Under Recovery	Current Income Tax Rate	Monthly Deferred Income Tax	Cumulative Deferred Income Tax	Net Deferred After Tax Balance	Monthly Return	Monthly A/T Return on Deferral	YTD After Tax Interest	Gross up of Return to Pretax Rate	Gross up of Return to Pretax
			2017 tax rate				7.03%			0.766497	
2017	January	229,669	0.341957	78,537	78,537	151,132	0.005858	443	443	0.766497	578
2017	February	47,494	0.341957	(62,296)	16,241	31,253	0.005858	534	977	0.766497	1,275
2017	March	(108,502)	0.341957	(53,344)	(37,103)	(71,399)	0.005858	(118)	859	0.766497	1,121
2017	April	(231,595)	0.341957	(42,092)	(79,195)	(152,399)	0.005858	(656)	204	0.766497	266
2017	May	(283,216)	0.341957	(17,652)	(96,848)	(186,368)	0.005858	(992)	(789)	0.766497	(1,029)
2017	June	(452,815)	0.341957	(57,996)	(154,843)	(297,972)	0.005858	(1,419)	(2,207)	0.766497	(2,880)
2017	July	(196,737)	0.341957	87,568	(67,276)	(129,461)	0.005858	(1,252)	(3,459)	0.766497	(4,513)
2017	August	155,971	0.341957	120,611	53,335	102,636	0.005858	(79)	(3,538)	0.766497	(4,616)
2017	September	475,091	0.341957	109,125	162,461	312,630	0.005858	1,216	(2,321)	0.766497	(3,029)
2017	October	739,943	0.341957	90,568	253,029	486,914	0.005858	2,342	21	0.766497	27
2017	November	539,827	0.341957	(68,431)	184,598	355,230	0.005858	2,467	2,487	0.766497	3,245
2017	December	63,106	0.341957	(163,018)	21,580	41,527	0.005858	1,162	3,649	0.766497	4,761
								3,649			4,761

Note 1: Amounts represent all revenue actually collected through 2017.

Miller Exhibit 4

Duke Energy Carolinas, LLC
DSM/EE Actual Revenues Collected from Years 2014-2017 (By Vintage)
and Estimated 2018 Collections from revised forecast of Rider 9 (by Vintage)
Docket Number E-7, Sub 1164
For Vintage Year 2014-2018 Estimate and True Up Calculations

Line		Vintage	Actual 2014 Rider 5	Actual 2015 Rider 6	Actual 2016 Rider 7	Actual 2017 Rider 8	Estimated 2018 Rider 9 [1]	Total
	Residential							
1	EE/DSM	Year 2014	58,390,274	3,829,621	10,429,161	11,056,910	357,695	84,063,661
2		Year 2015		58,227,163	4,026,042	10,183,996	7,882,715	80,319,916
3		Year 2016			58,184,868	5,570,022	25,714,799	89,469,689
4		Year 2017				61,914,541	4,202,002	66,116,542
5		Year 2018					79,304,216	79,304,216
6	**Total Residential**		$ 58,390,274	$ 62,056,784	$ 72,640,070	$ 88,725,470	$ 117,461,426	$ 319,969,808
	Non-Residential							
7	EE	Year 2014	22,574,937	5,169,897	8,822,463	3,744,578	104,651	40,416,525
8		Year 2015	-	25,791,031	8,194,784	24,104,955	8,012,414	66,103,184
9		Year 2016			45,662,897	8,632,771	38,450,266	92,745,934
10		Year 2017				46,928,129	9,130,462	56,058,591
11		Year 2018					55,443,530	55,443,530
12	DSM	Year 2014	18,087,702	210,549	(929,247)	(317,221)	(122,245)	16,929,538
13		Year 2015		19,579,477	280,553	(2,398,768)	(483,451)	16,977,811
14		Year 2016			14,637,127	251,004	297,692	15,185,823
15		Year 2017				15,361,431	-	15,361,431
16		Year 2018					14,549,912	14,549,912
17	**Total Non-Residential**		$ 40,662,639	$ 50,750,953	$ 76,668,577	$ 96,306,880	$ 125,383,230	$ 359,860,936
18	**Total Revenue**		**$ 99,052,912**	**$ 112,807,737**	**$ 149,308,648**	**$ 185,032,349**	**$ 242,844,656**	**$ 679,830,743**

[1] Rider 9 estimates are based on Miller Exhibit 7, page 1 and page 2

Duke Energy Carolinas, LLC
Vintage Year 2014 Allocation for the Period January 1, 2014
Docket Number E-7, Sub 1164
Allocation Factors

Line			MWH
	New Mechanism Sales Allocator at Generator		
1	NC Retail MWH Sales Allocation	Company Records	58,149,791
2	SC Retail MWH Sales Allocation	Company Records	21,551,077
3	Total Retail	Line 1 + Line 2	79,700,868
	Allocation 1 to state based on kWh sales		
4	NC Retail	Line 1 / Line 3	**72.9600473%**

	Demand Allocators		**NC**	**SC**	**Total**
5	Residential	Company Records	5,051,778	1,502,084	6,553,862
6	Non Residential	Company Records	6,119,392	2,175,746	8,295,138
7	Total	Line 5 + Line 6	11,171,170	3,677,830	14,849,000
	Allocation 2 to state based on peak demand				
8	NC Retail	Line 7, NC / Line 7 Total	**75.2318001%**		
	Allocation 3 NC res vs non-res Peak Demand to retail system peak				
9	NC Residential	Line 5 NC/ Line 7 Total	**34.0209980%**		
10	NC Non-residential	Line 6 NC/ Line 7 Total	**41.2108021%**		

Duke Energy Carolinas, LLC
Vintage Year 2015 Allocation Factors for the Period January 1, 2015 to December 31, 2015
Docket Number E-7, Sub 1164
Allocation Factors

Line			MWH
	New Mechanism Sales Allocator at Generator		
1	NC Retail MWH Sales Allocation	Company Records	59,567,575
2	SC Retail MWH Sales Allocation	Company Records	22,080,529
3	Total Retail	Line 1 + Line 2	81,648,104
	Allocation 1 to state based on kWh sales		
4	NC Retail	Line 1 / Line 3	**72.9564706%**

	Demand Allocators		**NC**	**SC**	**Total**
5	Residential	Company Records	4,994,057	1,469,714	6,463,771
6	Non Residential	Company Records	6,518,371	2,373,858	8,892,229
7	Total	Line 5 + Line 6	11,512,428	3,843,572	15,356,000
	Allocation 2 to state based on peak demand				
8	NC Retail	Line 7, NC / Line 7 Total	**74.9702266%**		
	Allocation 3 NC res vs non-res Peak Demand to retail system peak				
9	NC Residential	Line 5 NC/ Line 7 Total	**32.5218612%**		
10	NC Non-residential	Line 6 NC/ Line 7 Total	**42.4483655%**		

Duke Energy Carolinas, LLC
Vintage Year 2016 Allocation Factors for the Period January 1, 2016
Docket Number E-7, Sub 1164
Allocation Factors

Line			MWH
	New Mechanism Sales Allocator at Generator		
1	NC Retail MWH Sales Allocation	Company Records	60,762,752
2	SC Retail MWH Sales Allocation	Company Records	22,364,255
3	Total Retail	Line 1 + Line 2	83,127,007
	Allocation 1 to state based on kWh sales		
4	NC Retail	Line 1 / Line 3	**73.0962827%**

	Demand Allocators		**NC**	**SC**	**Total**
5	Residential	Company Records	5,403,520	1,714,752	7,118,272
6	Non Residential	Company Records	6,525,765	2,343,963	8,869,728
7	Total	Line 5 + Line 6	11,929,285	4,058,715	15,988,000
	Allocation 2 to state based on peak demand				
8	NC Retail	Line 7, NC / Line 7 Total	**74.6139917%**		
	Allocation 3 NC res vs non-res Peak Demand to retail system peak				
9	NC Residential	Line 5 NC/ Line 7 Total	**33.7973480%**		
10	NC Non-residential	Line 6 NC/ Line 7 Total	**40.8166437%**		

Duke Energy Carolinas, LLC
Vintage Year 201 Allocation Factors for the Period January 1, 2017 - December 31, 2019
Docket Number E-7, Sub 1164
Allocation Factors

Line			MWH		
	New Mechanism Sales Allocator at Generator				
1	NC Retail MWH Sales Allocation	Company Records	60,219,051		
2	SC Retail MWH Sales Allocation	Company Records	22,489,484		
3	Total Retail	Line 1 + Line 2	82,708,535		
	Allocation 1 to state based on kWh sales				
4	NC Retail	Line 1 / Line 3	**72.8087506%**		
	Demand Allocators		**NC**	**SC**	**Total**
5	Residential	Company Records	5,545,784	1,803,958	7,349,742
6	Non Residential	Company Records	6,573,854	2,480,404	9,054,258
7	Total	Line 5 + Line 6	12,119,638	4,284,362	16,404,000
	Allocation 2 to state based on peak demand				
8	NC Retail	Line 7, NC / Line 7 Total	**73.8822117%**		
	Allocation 3 NC res vs non-res Peak Demand to retail system peak				
9	NC Residential	Line 5 NC/ Line 7 Total	**33.8075104%**		
10	NC Non-residential	Line 6 NC/ Line 7 Total	**40.0747013%**		

Duke Energy Carolinas, LLC
DSM/EE Cost Recovery Rider 10
Docket Number E-7 Sub 1164
Forecasted 2019 kWh Sales for Rate Period for Vintage Years 2014-2019

	Fall 2017 Sales Forecast - kWhs	**Forecasted 2019 sales**
	North Carolina Retail:	
Line		
1	Residential	**21,806,637,265**
2	Non-Residential	**34,250,780,653**
3	Total Retail	**56,057,417,918**

	NC Opt Out Sales	**Total Usage**	**Opt-Outs**	**Net Usage**
	Vintage 2014 Actual Opt Out			
4	EE	34,250,780,653	15,991,066,628	18,259,714,025
5	DSM	34,250,780,653	16,187,898,289	18,062,882,364
	Vintage 2015 Actual Opt Out			
6	EE	34,250,780,653	16,116,270,178	18,134,510,475
7	DSM	34,250,780,653	16,399,422,941	17,851,357,712
	Vintage 2016 Actual Opt Out			
8	EE	34,250,780,653	16,400,808,135	17,849,972,518
9	DSM	34,250,780,653	16,691,541,710	17,559,238,943
	Vintage 2017 Actual Opt Out			
10	EE	34,250,780,653	16,719,165,367	17,531,615,286
11	DSM	34,250,780,653	16,725,619,235	17,525,161,418
	Vintage 2018 Estimated Opt Out			
12	EE	34,250,780,653	17,253,362,339	16,997,418,314
13	DSM	34,250,780,653	16,828,588,916	17,422,191,737
	Vintage 2019 Estimated Opt Out			
14	EE	34,250,780,653	17,253,362,339	16,997,418,314
15	DSM	34,250,780,653	16,828,588,916	17,422,191,737

Duke Energy Carolinas, LLC
DSM/EE Cost Recovery Rider 10
Docket Number E-7 Sub 1164
Revised Exhibit Summary for Rider 9 EE Exhibits and Estimated Revenue

Residential Billing Factors

Residential Billing Factor for Rider 9 True-up (EMF) Components

Line			Adjusted	As filed	Difference
1	Year 2014 EE/DSM True-Up (EMF) Revenue Requirement	R9 Miller Exhibit 2 pg. 1 Line 15	357,695	357,695	
2	Year 2015 EE/DSM True-Up (EMF) Revenue Requirement	R9 Miller Exhibit 2 pg. 2 Line 15	4,451,079	4,451,079	
3	Year 2016 EE/DSM True-Up (EMF Revenue Requirement	R9 Miller Exhibit 2 pg. 3 Line 15	17,949,476	17,949,476	
4	Total True-up (EMF) Revenue Requirement	Sum Lines 1-3	$ 22,758,250	$ 22,758,250	
5	Projected NC Residential Sales (kWh) for rate period	Miller Exhibit 7 pg. 3, Line 1	21,243,226,519	21,243,226,519	
6	*EE/DSM Revenue Requirement EMF Residential Rider EE (cents per kWh)*	Line 4 / Line 5 * 100	**0.1071**	**0.1071**	

Residential Billing Factor for Rider 9 Prospective Components

7	Vintage 2015 Total EE/DSM Prospective Amounts Revenue Requirement	R9 Miller Exhibit 2 pg. 2, Line 15	3,431,636	3,431,636	
8	Vintage 2016 Total EE/DSM Prospective Amounts Revenue Requirement	R9 Miller Exhibit 2 pg. 3, Line 1	7,765,323	7,765,323	
9	Vintage 2017 Total EE/DSM Prospective Amounts Revenue Requirement	R9 Miller Exhibit 2 pg. 4, Line 1	4,202,002	4,202,002	
10	Vintage 2018 Total EE/DSM Prospective Amounts Revenue Requirement	R9 Miller Exhibit 2 pg. 5, Line 11	79,304,216	79,304,216	
11	Total Prospective Revenue Requirement	Sum Lines 7-10	$ 94,703,176	$ 94,703,176	
12	Projected NC Residential Sales (kWh) for rate period	Miller Exhibit 7 pg. 3, Line 1	21,243,226,519	21,243,226,519	
13	*EE/DSM Revenue Requirement Prospective Residential Rider EE (cents per kWh)*	Line 11 / Line 12 * 100	**0.4458**	**0.4458**	

Total Revenue Requirements in Rider 9 from Residential Customers

14	Total True-up (EMF) Revenue Requirement	Line 4	$ 22,758,250	22,758,250	
15	Total Prospective Revenue Requirement	Line 11	94,703,176	94,703,176	
16	***Total EE/DSM Revenue Requirement for Residential Rider EE***	Line 14 + Line 15	**$ 117,461,426**	$ 117,461,426	
17	***Total EE/DSM Revenue Requirement for Residential Rider EE (cents per kWh)***	Line 6 + Line 13	**0.5529**	0.5529	

Non-Residential Billing Factors for Rider 9 True-up (EMF) Components

18	Vintage Year 2014 EE True-up (EMF) Revenue Requirement	R9 Miller Exhibit 2 pg. 1, Line 25	$ 104,651	118,573	(13,922.17)
19	Projected Year 2014 EE Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 7 pg. 3, Line 4	20,930,100,094	21,655,074,211	
20	*EE Revenue Requirement Year 2014 EMF Non-Residential Rider EE (cents per kWh)*	Line 25/Line 26 * 100	**0.0005**	**0.0005**	
21	Vintage Year 2014 DSM True-up (EMF) Revenue Requirement	R9 Miller Exhibit 2 pg. 1, Line 35	$ (122,245)	(136,250)	14,004.77
22	Projected Year 2014 DSM Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 7 pg. 3, Line 5	20,374,180,987	21,099,155,104	
23	*DSM Revenue Requirement Year 2014 EMF Non-Residential Rider EE (cents per kWh)*	Line 28/Line 29 * 100	**(0.0006)**	**(0.0006)**	
24	Vintage Year 2015 EE True-up (EMF) Revenue Requirement	R9 Miller Exhibit 2 pg. 2, Line 25	$ 3,965,118	4,112,049	(146,931.24)
25	Projected Year 2015 EE Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 7 pg. 3, Line 6	20,544,651,200	21,269,625,317	
26	*EE Revenue Requirement Year 2015 EMF Non-Residential Rider EE (cents per kWh)*	Line 30/Line 31 * 100	**0.0193**	**0.0193**	
27	Vintage Year 2015 DSM True-up (EMF) Revenue Requirement	R9 Miller Exhibit 2 pg. 2, Line 35	$ (483,451)	(501,279)	17,828.32
28	Projected Year 2015 DSM Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 7 pg. 3, Line 7	20,143,794,641	20,868,768,758	
29	*DSM Revenue Requirement Year 2015 EMF Non-Residential Rider EE (cents per kWh)*	Line 34/Line 35 * 100	**(0.0024)**	**(0.0024)**	
30	Vintage Year 2016 EE True-up (EMF) Revenue Requirement	R9 Miller Exhibit 2 pg. 3, Line 35	$ 25,532,272	26,454,724	(922,451.79)
31	Projected Year 2016 EE Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 7 pg. 3, Line 8	20,247,638,573	20,972,612,690	
32	*EE Revenue Requirement Year 2016 EMF Non-Residential Rider EE (cents per kWh)*	Line 34/Line 35 * 100	**0.1261**	0.1261	
33	Vintage Year 2016 DSM True-up (EMF) Revenue Requirement	R9 Miller Exhibit 2 pg. 3, Line 35	$ 297,692	311,281	(13,589.00)
34	Projected Year 2016 DSM Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 7 pg. 3, Line 9	19,846,124,458	20,571,098,575	
35	*DSM Revenue Requirement Year 2016 EMF Non-Residential Rider EE (cents per kWh)*	Line 34/Line 35 * 100	**0.0015**	0.0015	

Non-Residential Billing Factors for Rider 9 Prospective Components

36	Vintage Year 2015 EE Prospective Amounts Revenue Requirement	R9 Miller Exhibit 2 pg. 2, Line 25	$ 4,047,296	4,183,188	(135,891.89)
37	Projected Program Year 2015 EE Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 7 pg. 3, Line 6	20,544,651,200	21,269,625,317	
38	*EE Revenue Requirement Vintage 2015 Prospective Component for Non-Residential Rider EE (cents per kWh)*	Line 40/Line 41 * 100	**0.0197**	**0.0197**	
39	Vintage Year 2016 EE Prospective Amounts Revenue Requirement	R9 Miller Exhibit 2 pg. 3, Line 4	$ 12,917,993	13,375,187	(457,193.62)
40	Projected Program Year 2016 EE Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 7 pg. 3, Line 8	20,247,638,573	20,972,612,690	
41	*EE Revenue Requirement Vintage 2016 Prospective Component for Non-Residential Rider EE (cents per kWh)*	Line 43/Line 44 * 100	**0.0638**	**0.0638**	
42	Vintage Year 2017 EE Prospective Amounts Revenue Requirement	R9 Miller Exhibit 2 pg. 4, Line 18	$ 9,130,462	**9,466,867**	(336,404.81)
43	Projected Program Year 2017 EE Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 7 pg. 3, Line 10	20,022,943,371	**20,747,917,488**	
44	*EE Revenue Requirement Vintage 2017 Prospective Component for Non-Residential Rider EE (cents per kWh)*	Line 46/Line 47 * 100	**0.0456**	**0.0456**	
45	Vintage Year 2018 EE Prospective Amounts Revenue Requirement	R9 Miller Exhibit 2 pg. 5, Line 25	$ 55,443,530	57,456,609	(2,013,078.37)
46	Projected Vintage 2018 EE Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 7 pg. 3, Line 12	20,022,943,371	20,747,917,488	
47	*EE Revenue Requirement Vintage 2018 Prospective Component for Non-Residential Rider EE (cents per kWh)*	Line 49/Line 50 * 100	**0.2769**	**0.2769**	
48	Vintage Year 2018 DSM Prospective Amounts Revenue Requirement	R9 Miller Exhibit 2 pg. 5, Line 25	$ 14,549,912	15,084,675	(534,762.98)
49	Projected Vintage 2018 DSM Participants NC Non-Residential Sales (kwh) for rate period	Miller Exhibit 7 pg. 3, Line 13	19,822,767,932	20,547,742,049	
50	*DSM Revenue Requirement Vintage 2018 Prospective Component for Non-Residential Rider EE (cents per kWh)*	Line 49/Line 50 * 100	**0.0734**	**0.0734**	
	Total EMF Rate		**0.1444**	**0.1444**	(4,542,392.77)
	Total Prospective Rate		**0.4794**	**0.4794**	

Total Revenue Requirements in Rider 9 from Non-Residential Customers

51	Vintage Year 2014 EE True-up (EMF) Revenue Requirement	Line 18	104,651	118,573
52	Vintage Year 2014 DSM True-up (EMF) Revenue Requirement	Line 21	(122,245)	(136,250)
53	Vintage Year 2015 EE True-up (EMF) Revenue Requirement	Line 24	3,965,118	4,112,049
54	Vintage Year 2015 DSM True-up (EMF) Revenue Requirement	Line 27	(483,451)	(501,279)
55	Vintage Year 2016 EE True-up (EMF) Revenue Requirement	Line 30	25,532,272	26,454,724
56	Vintage Year 2016 DSM True-up (EMF) Revenue Requirement	Line 33	297,692	311,281
57	Vintage Year 2015 EE Prospective Amounts Revenue Requirement	Line 36	4,047,296	4,183,188
58	Vintage Year 2016 EE Prospective Amounts Revenue Requirement	Line 39	12,917,993	13,375,187
59	Vintage Year 2017 EE Prospective Amounts Revenue Requirement	Line 42	9,130,462	9,466,867
60	Vintage Year 2018 EE Prospective Amounts Revenue Requirement	Line 45	55,443,530	57,456,609
61	Vintage Year 2018 DSM Prospective Amounts Revenue Requirement	Line 48	14,549,912	15,084,675
	Total Non-Residential Revenue Requirement in Rider 9	Sum (Lines 51-61)	**$ 125,383,230**	**$ 129,925,623**

Duke Energy Carolinas, LLC
DSM/EE Cost Recovery Rider 10
Docket Number E-7 Sub 1164
Revised Forecasted 2018 kWh Sales for Rate Period for Vintage Years 2014-2018

	Fall 2016 Sales Forecast - kWhs	**Forecasted 2018 Sales**
	North Carolina Retail:	
Line		
1	Residential	**21,243,226,519**
2	Non-Residential	**35,641,166,806**
3	Total Retail	**56,884,393,325**

	NC Opt Out Sales	**Total Usage**	**Opt-Outs**	**Net Usage**
	Vintage 2014 Actual Opt Out			
4	EE	35,641,166,806	14,711,066,712	20,930,100,094
5	DSM	35,641,166,806	15,266,985,819	20,374,180,987
	Vintage 2015 Actual Opt Out			
6	EE	35,641,166,806	15,096,515,606	20,544,651,200
7	DSM	35,641,166,806	15,497,372,165	20,143,794,641
	Vintage 2016 Actual Opt Out			
8	EE	35,641,166,806	15,393,528,233	20,247,638,573
9	DSM	35,641,166,806	15,795,042,348	19,846,124,458
	Vintage 2017 Estimated Opt Out			
10	EE	35,641,166,806	15,618,223,435	20,022,943,371
11	DSM	35,641,166,806	15,818,398,874	19,822,767,932
	Vintage 2018 Estimated Opt Out			
12	EE	35,641,166,806	15,618,223,435	20,022,943,371
13	DSM	35,641,166,806	15,818,398,874	19,822,767,932

Note: In the original Rider 9 filing, lighting kWh was not excluded from non-residential . This revised forecast excludes lighting kWh. Since we are collecting approved rates over a reduced amount of kWh, we will not be collecting the original revenue requirement as approved. The true-up to collect this revenue will be collected in Rider 10 through a revised estimate of revenue collected.

Duke Energy Carolinas, LLC

Electricity No. 4
North Carolina Thirteenth Revised Leaf No. 62
Superseding North Carolina Twelfth Revised Leaf No. 62

Rider EE (NC)
ENERGY EFFICIENCY RIDER

APPLICABILITY (North Carolina Only)

Service supplied under the Company's rate schedules is subject to approved adjustments for new energy efficiency and demand-side management programs approved by the North Carolina Utilities Commission (NCUC). The Rider Adjustments are not included in the Rate Schedules of the Company and therefore, must be applied to the bill as calculated under the applicable rate.

As of January 1, 2019, cost recovery under Rider EE consists of the four year term program, years 2014-2017, as well as rates under the continuation of that program for years 2018 -2019 as outlined below. This Rider applies to service supplied under all rate schedules, except rate schedules OL, FL, PL, GL and NL for program years 2014-2019.

GENERAL PROVISIONS

This Rider will recover the cost of new energy efficiency and demand-side management programs beginning January 1, 2014, using the method approved by the NCUC as set forth in Docket No. E-7, Sub 1032, Order dated October 29, 2013, as revised by Docket No. E-7, Sub 1130, Order dated August 23, 2017.

TRUE-UP PROVISIONS

Rider amounts will initially be determined based on estimated kW and kWh impacts related to expected customer participation in the programs, and will be trued-up as actual customer participation and actual kW and kWh impacts are verified. If a customer participates in any vintage of programs, the customer is subject to the true-ups as discussed in this section for any vintage of programs in which the customer participated.

RIDER EE OPT OUT PROVISION FOR QUALIFYING NON-RESIDENTIAL CUSTOMERS

The Rider EE increment applicable to energy efficiency programs and/or demand-side management programs will not be applied to the energy charge of the applicable rate schedule for customers qualified to opt out of the programs where:

a. The customer has notified the Company that it has implemented, or has plans for implementing, alternative energy efficiency measures in accordance with quantifiable goals.
b. Electric service to the customer must be provided under:
    1. An electric service agreement where the establishment is classified as a "manufacturing industry" by the Standard Industrial Classification Manual published by the United States Government and where more than 50% of the electric energy consumption of such establishment is used for its manufacturing processes. Additionally, all other agreements billed to the same entity associated with the manufacturing industry located on the same or contiguous properties are also eligible to opt out.
    2. An electric service agreement for general service as provided for under the Company's rate schedules where the customer's annual energy use is 1,000,000 kilowatt hours or more. Additionally, all other agreements billed to the same entity with lesser annual usage located on the same or contiguous properties are also eligible to opt out.

The following additional provisions apply for qualifying customers who elect to opt out:

For customers who elect to opt out of energy efficiency programs, the following provisions also apply:

- Qualifying customers may opt out of the Company's energy efficiency programs each calendar year only during the annual two-month enrollment period between November 1 and December 31 immediately prior to a new Rider EE becoming effective on January 1. (Qualifying new customers have sixty days after beginning service to opt out).
- Customers may not opt out of individual energy efficiency programs offered by the Company. The choice to opt out applies to the Company's entire portfolio of energy efficiency programs.
- If a customer participates in any vintage of energy efficiency programs, the customer, irrespective of future opt out decisions, remains obligated to pay the remaining portion of the lost revenues for each vintage of energy efficiency programs in which the customer participated.
- Customers who elect to opt out during the two-month annual enrollment period immediately prior to the new Rider EE becoming effective may elect to opt in to the Company's energy efficiency programs during the first 5 business days of March each calendar year. Customers making this election will be back-billed retroactively to the effective date of the new Rider EE.

For customers who elect to opt out of demand-side management programs, the following provisions also apply:

- Qualifying customers may opt out of the Company's demand-side management program during the enrollment period between November 1 and December 31 immediately prior to a new Rider EE becoming effective on January 1 of the applicable year. (Qualifying new customers have sixty days after beginning service to opt out).

Rider EE (NC)
ENERGY EFFICIENCY RIDER

- If a customer elects to participate in a demand-side management program, the customer may not subsequently choose to opt out of demand-side management programs for three years.
- Customers who elect to opt out during the two-month annual enrollment period immediately prior to the new Rider EE becoming effective may elect to opt in to the Company's demand-side management program during the first 5 business days of March each calendar year. Customers making this election will be back-billed to the effective date of the new Rider EE.

Any qualifying non-residential customer that has not participated in an energy efficiency or demand-side management program may opt out during any enrollment period, and has no further responsibility to pay Rider EE amounts associated with the customer's opt out election for energy efficiency and/or demand-side management programs.

ENERGY EFFICIENCY RIDER ADJUSTMENTS (EEA) FOR ALL PROGRAM YEARS

The Rider EE amounts applicable to the residential and nonresidential rate schedules for the period January 1, 2019 through December 31, 2019 including utility assessments are as follows:

Residential	Vintage 2014, 2015[1], 2016[1], 2017[1]	0.1091¢ per kWh
	Vintage 2017[2], 2018[2], 2019[2]	0.4229¢ per kWh
	Total Residential Rate	0.5320¢ per kWh
Nonresidential		
Vintage 2014[3]		
	Energy Efficiency	(0.0063)¢ per kWh
	Demand Side Management	(0.0002)¢ per kWh
Vintage 2015[3]		
	Energy Efficiency	0.0025¢ per kWh
	Demand Side Management	(0.0025)¢ per kWh
Vintage 2016[3]		
	Energy Efficiency	(0.0131)¢ per kWh
	Demand Side Management	(0.0015)¢ per kWh
Vintage 2017[3]		
	Energy Efficiency	0.3863¢ per kWh
	Demand Side Management	0.0005¢ per kWh
Vintage 2018[3]		
	Energy Efficiency	0.0723¢ per kWh
	Demand Side Management	0.0031¢ per kWh
Vintage 2019[3]		
	Energy Efficiency	0.3283¢ per kWh
	Demand Side Management	0.0910¢ per kWh
Total Nonresidential		0.8604¢ per kWh

[1] Includes the true-up of program costs, shared savings and lost revenues from Year 1 of Vintage 2017 and Year 2 of Vintage 2016, and Year 3 of 2015.
[2] Includes prospective component of Vintage 2017, 2018 and 2019.
[3] Not Applicable to Rate Schedules OL, FL, PL, GL, and NL.

Each factor listed under Nonresidential is applicable to nonresidential customers who are not eligible to opt out and to eligible customers who have not opted out. If a nonresidential customer has opted out of a Vintage(s), then the applicable energy efficiency and/or demand-side management charge(s) shown above for the Vintage(s) during which the customer has opted out, will not apply to the bill.

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-7, SUB 1164

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**

I. INTRODUCTION AND PURPOSE

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

A. My name is Robert P. Evans, and my business address is 150 Fayetteville Street, Raleigh, North Carolina 27602. I am employed by Duke Energy Corporation ("Duke Energy") as Senior Manager-Strategy and Collaboration for the Carolinas in the Market Solutions Regulatory Strategy and Evaluation group.

Q. PLEASE BRIEFLY STATE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

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

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

NCNG's Planning and Regulatory Compliance Department. In that position, I performed a variety of work associated with financial, regulatory, and statistical analysis and presented testimony on several issues brought before the North Carolina Utilities Commission ("Commission"). I held that position until the closing of NCNG's merger with Carolina Power and Light Company, the predecessor of Progress Energy, Inc. ("Progress"), on July 15, 1999.

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

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

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

Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES?

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

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

A. My testimony supports DEC's Application for approval of its DSM/EE Cost Recovery Rider, Rider EE, for 2019 ("Rider 10"), which encompasses the Company's currently effective cost recovery and incentive mechanism ("Mechanism") and portfolio of programs approved in the Commission's *Order Approving DSM/EE Programs and Stipulation of Settlement* issued October 29, 2013, in Docket No. E-7, Sub 1032 ("Sub 1032 Order"). My testimony provides (1) a discussion of items the Commission specifically directed the Company to address in this proceeding; (2) an overview of the Commission's Rule R8-69 filing requirements; (3) a synopsis of the DSM/EE programs included in this filing; (4) a discussion of program results; (5) an explanation of how these results have affected the Rider 10 calculations; (6) information on DEC's Evaluation Measurement & Verification ("EM&V") activities; (7) an overview of the calculation of the Portfolio Performance Incentive ("PPI"); and (8) review of the Mechanism approved in the Sub 1032 Order.

Q. PLEASE DESCRIBE THE EXHIBITS ATTACHED TO YOUR TESTIMONY.

A. Evans Exhibit 1 supplies, for each program, load impacts and avoided cost revenue requirements by vintage. Evans Exhibit 2 contains a summary of net lost revenues for the period January 1, 2014 through December 31, 2019. Evans Exhibit 3 contains the actual program costs for North Carolina for the period January 1, 2014 through December 31, 2017. Evans Exhibit 4 contains the found revenues used in the net lost revenues calculations. Evans Exhibit 5 supplies evaluations of event-based programs. Evans Exhibit 6 contains information about and the results of DEC's programs and a comparison of actual impacts to previous estimates. Evans Exhibit 7 contains the projected program and portfolio cost-effectiveness results for the Company's current portfolio of programs. Evans Exhibit 8 contains a summary of 2017 program performance and an explanation of the variances between the forecasted program results and the actual results. Evans Exhibit 9 is a list of DEC's industrial and large commercial customers that have opted out of participation in its DSM or EE programs and a listing of those customers that have elected to opt in to DEC's DSM or EE programs after having initially notified the Company that they declined to participate, as required by Commission Rule R8-69(d)(2). Evans Exhibit 10 contains the projected shared savings incentive (PPI) associated with Vintage 2019. Evans Exhibit 11 provides a summary of 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 L provide the detailed completed EM&V reports or

updates for the following programs: PowerShare® Program 2016 (Evans Exhibit A); Non-Residential Smart $aver® Energy Efficient Products and Assessment – Custom 2014-2015 (Evans Exhibit B); My Home Energy Report Program ("MyHER") 2015-2016 (Evans Exhibit C); Power Manager Load Control Service 2016 (Evans Exhibit D); Small Business Energy Saver 2014-2016 (Evans Exhibit E); Non-Residential Smart $aver® Energy Efficient Products and Assessment – Assessment 2014-2016 (Evans Exhibit F); EnergyWise for Business 2016 (Evans Exhibit G); Multi-Family EE 2014-2016 (Evans Exhibit H); Non-Residential Smart $aver® Energy Efficient Products and Assessment – Prescriptive 2013-2015 (Evans Exhibit I); Residential Energy Efficient Appliances and Devices – Save Energy and Water Kit: 2016 (Evans Exhibit J); Energy Efficient Appliances and Devices – Free LED 2016-2017 (Evans Exhibit K); and Smart Energy in Offices 2014-2016 (Evans Exhibit L).

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

A. Yes, they were.

II. ACTIONS ORDERED BY THE COMMISSION

Q. PLEASE DESCRIBE THE ACTIONS THE COMMISSION DIRECTED DEC TO TAKE IN THE COMMISSION'S ORDER IN DOCKET NO. E-7, SUB 1130.

A. In its August 23, 2017 *Order Approving DSM/EE Rider, Revising Mechanism, and Requiring Filing of Proposed Customer Notice* in Docket No. E-7, Sub

1130 ("Sub 1130") Order, the Commission ordered: (1) that DEC's Appliance Recycling and PowerShare® Call Option programs be canceled and that DEC not incur further expenses for either program unless DEC were to provide sufficient justification for their continuance; (2) address the continuing cost-effectiveness of the Non-Residential Smart $aver® Performance Incentive Program and the Residential HVAC EE Program, and if either is not cost-effective provide details of plans to modify or close the program; and (3) that the Company shall incorporate the recommendations made by Public Staff witness Jack Floyd into future EM&V reports filed with the Commission in subsequent DSM/EE rider proceedings. The Commission also directed DEC to leverage its Collaborative to: (a) continue collaborative working group discussions for low-income, multi-family, manufactured housing and industrial programs, and include a narrative of these discussions in its next rider filing; (b) discuss how DEC's behavioral and lighting programs can be used to encourage and improve cross-participation with other programs; (c) discuss the potential inclusion in DEC's portfolio of any new programs based on best practices from around the country, including strategic energy management for industrial customers, comprehensive whole house retrofit programs, an enhanced multi-family affordable housing program, a multi-family new construction program, a manufactured housing program, and additional low-income residential EE programs, with parties proposing these programs providing sufficient and applicable information for DEC to evaluate the cost-effectiveness of the programs; and (d) continue to discuss how to

increase program participation and impacts with an emphasis on increasing the participation of opt-out eligible customers as discussed in the testimony of North Carolina Justice Center ("NCJC") and Southern Alliance for Clean Energy ("SACE") witness Jennifer Weiss.

Q. HAVE THE COMPANY'S APPLIANCE RECYCLING AND POWERSHARE CALL OPTION PROGRAMS BEEN TERMINATED?

A. Yes. The Appliance Recycling Program was terminated effective December 31, 2017, and the PowerShare® Call Option Program was discontinued effective January 31, 2018.

Q. HAS THE COMPANY INCURRED FURTHER EXPENSES FOR THESE PROGRAMS SUBSEQUENT TO THEIR CLOSURE?

A. No. The Company has not incurred additional expenses for these programs after their closure.

Q. PLEASE ADDRESS THE COST-EFFECTIVENESS OF THE COMPANY'S NON-RESIDENTIAL SMART $AVER PERFORMANCE INCENTIVE PROGRAM.

A. DEC's Non-Residential Smart $aver® Performance Incentive Program is not expected to have a Total Resource Cost ("TRC") cost-effectiveness score exceeding 1.0 in 2019. The forecasted 2019 TRC score is 0.81 and the Utility Cost Test score is 2.70. While the TRC score may be viewed as less than optimal in isolation, it is important to note that this program is largely an extension of the custom portion of the Non-Residential Smart $aver® Program. In particular, the Performance Incentive Program encompasses

energy saving measures related to new technologies, unknown building conditions and system constraints, as well as uncertain operating circumstances, occupancy, or production schedules. In these cases, energy savings are difficult, if not impossible, to project with any level of accuracy. Due to the scope of projects envisioned, the Company also believes that the program could impact a customer's decision to opt into the EE portion of Rider EE; in other words, if this program were no longer offered as part of the Company's EE portfolio, additional customers may choose to opt out as a result. Another important element of this program is that it limits the prospects of overcompensating participants, at the expense of other customers, or undercompensating participants for their EE improvements. The Company believes that this program is an essential element of its EE portfolio and that its cost-effectiveness results will improve.

Q. PLEASE ADDRESS THE COST EFFECTIVENESS OF THE COMPANY'S RESIDENTIAL HVAC EE PROGRAM.

A. DEC's Residential HVAC EE Program has been renamed "Residential Smart $aver® EE Program," and modified in several ways. However, this program continues to struggle to maintain cost-effectiveness. During 2016 and 2017, the Company made a number of changes to the program to address the erosion in the program's cost-effectiveness caused by advancement in efficiency standards and the associated lower incremental savings associated with exceeding the new standards. These program changes, which were highlighted by the redesign of the program to include a referral channel that

reduced program costs, proved successful in returning the program to cost-effectiveness in 2017 and 2018. Unfortunately, with the application of the new lower avoided costs in 2019, the program is again projecting to no longer be cost effective. For this reason, the Company is actively working to evaluate additional programmatic changes, such as the Public Staff's recommendation to eliminate all non-referral channel measures, that would offset the decline in avoided costs and make this critical residential program cost-effective in 2019 and beyond.

III. PUBLIC STAFF'S EM&V RECOMMENDATIONS

Q. PLEASE DESCRIBE PUBLIC STAFF WITNESS FLOYD'S RECOMMENDATIONS THAT THE COMMISSION ORDERED DEC TO INCORPORATE INTO FUTURE EM&V REPORTS.

A. In the Sub 1130 proceeding, Public Staff witness Floyd recommended that the Company implement certain recommendations in its future EM&V studies, subject to the consideration of whether the cost would outweigh the benefit. These recommendations were as follows:

(1) That future evaluations of the Residential Multi-Family EE program include a billing analysis and more specific data on bulbs being replaced. If it is not feasible to provide this analysis or data, the evaluator should explain why it is not feasible.

(2) If the evaluator continues to rely on an engineering analysis to calculate measure impacts for the Save Energy and Water Kits, the evaluator should address the technological limits of water heaters when assessing

the length of showers used to calculate impacts. Future engineering analyses should either discard outliers or incorporate an assessment of the limitations of water heaters to produce savings.

(3) Future evaluations of the Small Business Energy Saver program should:

(a) incorporate HVAC interactive effects and update the coincidence factors for lighting measures, and

(b) begin tracking the heating and cooling types of participants to improve estimates of the HVAC interaction factors.

(4) Future evaluations of the Non-Residential Smart $aver® Energy Efficient Products and Assessments – Prescriptive program should rely on metering studies in determining the hours-of-use for lighting measures installed in commercial buildings consistent with the Uniform Methods Project.

(5) The EM&V reports for the Multi-Family EE Program, the Smart $aver® Prescriptive Incentive Program, and the Small Business Energy Saver Program should be revised as discussed by Public Staff witness Floyd and refiled in the next rider proceeding.

Q. HAS DEC HAD THE OPPORTUNITY TO ADDRESS WITNESS FLOYD'S EM&V RECOMMENDATIONS?

A. Yes. The Company has communicated witness Floyd's recommendations to its independent third-party evaluators. His recommendations have been and are being adopted to the extent that the additional costs associated with his recommendations are outweighed by the benefits.

Q. WILL FUTURE EVALUATIONS OF THE RESIDENTIAL MULTI-FAMILY EE PROGRAM INCLUDE A BILLING ANALYSIS AND MORE SPECIFIC DATA ON BULBS BEING REPLACED?

A. The Company has not yet developed the evaluation plan for the next evaluation cycle of the Residential Multi-Family EE Program; however, future evaluations will include a billing analysis, if feasible. If the evaluator determines that a billing analysis is not feasible, the evaluator will explain its rationale as to why a billing analysis is not the appropriate methodology to measure impacts. With respect to providing more data on bulbs being replaced, the Company is currently tracking the overall wattage of these bulbs and has started to track specific bulb wattages.

Q. WITH RESPECT TO WITNESS FLOYD'S RECOMMENDATION REGARDING THE ANALYSIS OF THE SAVE ENERGY AND WATER KITS, WILL OUTLIERS OR WATER HEATER LIMITATIONS BE RECOGNIZED IN THE DETERMINATION OF SAVINGS?

A. Yes. The outliers are recognized and removed by the evaluator in its engineering analyses of the Save Energy and Water Kits. Upon review, the evaluator discards those cases that are considered outliers in the course of its analysis. As to the technological limitations of water heaters, the evaluator has indicated that there is a correlation between these limitations and outlying data points. As a result of discarding the outlying data points, there are no impacts relating to technological limitations of water heaters used in the

determination of savings. In future evaluation reports, the evaluator will specifically call out cases for which they removed outlying information.

Q. HAS DEC ADDRESSED WITNESS FLOYD'S RECOMMENDATIONS REGARDING ITS SMALL BUSINESS ENERGY SAVER PROGRAM?

A. Yes. The evaluator incorporates HVAC interaction factors into the verified numbers and revises the coincidence factors for each Small Business Energy Saver evaluation. In addition, Program Management has initiated the tracking of heating and cooling types for Small Business Energy Saver participants. It is important to know that the simulation modeling required to estimate HVAC interaction factors incorporating heating and cooling data adds approximately 10-20% to the typical Small Business Energy Saver evaluation budget. The addition of the simulation modeling would have required a change order to the agreed-upon Statement of Work ("SOW") between Duke Energy and the evaluator for the program year 2016 Small Business Energy Saver evaluation, as the SOW was agreed between each party on a date prior to the date of the EM&V recommendations. With the heating and cooling types now being tracked, the next Small Business Energy Saver evaluation will include simulation modeling to improve future estimates of HVAC interaction factors.

Q. HAS DEC ADDRESSED WITNESS FLOYD'S RECOMMENDATIONS REGARDING LIGHTING MEASURES OFFERED AS A PART OF ITS NON-RESIDENTIAL SMART $AVER ENERGY EFFICIENT PRODUCTS AND ASSESSMENTS – PRESCRIPTIVE PROGRAM?

A. Evaluation activities had commenced in Spring 2016 for the 2015/2016 DEC Non-Residential Smart $aver® Prescriptive program; therefore, the evaluator was not able to incorporate metering studies into the program evaluation currently underway due to the timing of the EM&V program recommendations. Metering studies to determine the hours-of-use for lighting measure will be included in future Non-Residential Smart $aver® Prescriptive evaluations.

Q. DID THE COMPANY SUBMIT CORRECTED EM&V REPORTS FOR THE MULTI-FAMILY EE PROGRAM, THE SMART $AVER PRESCRIPTIVE INCENTIVE PROGRAM, AND THE SMALL BUSINESS ENERGY SAVER PROGRAM?

A. Yes. The revised evaluation studies have been provided in the filed Evans exhibits. The revised Multi-Family EE Program evaluation is identified as Evans Exhibit H, the revised Smart $aver® Prescriptive Incentive Program evaluation is identified as Evans Exhibit I, and the revised the Small Business Energy Saver Program evaluation is identified as Evans Exhibit E.

IV. NCJC/SACE RECOMMENDATIONS

Q. HAS THE COLLABORATIVE MET AFTER THE ISSUANCE OF COMMISSION'S SUB 1130 ORDER?

A. Yes. Subsequent to the Commission's August 23, 2017 Sub 1130 Order, the Company scheduled two meetings of the Collaborative. The third quarter meeting was canceled due to events surrounding Hurricane Irma; however, the Collaborative did meet in December for its fourth quarter session.

Q. HAS THE COLLABORATIVE CONTINUED ITS WORKING GROUP DISCUSSIONS?

A. Yes. While the fourth quarter Collaborative meeting is dedicated primarily to EM&V report reviews, reports were provided by the Residential Low-Income and Residential Multi-Family subcommittees/working groups. These groups will continue to meet, both within and outside the formal Collaborative, through and likely beyond 2018.

Q. WERE NCJC/SACE WITNESS WEISS' OTHER RECOMMENDATIONS DISCUSSED BY THE COLLABORATIVE?

A. Yes. While all issues were touched on during the fourth quarter 2017 meeting, these issues will be discussed in greater depth starting with the first quarter 2018 meeting scheduled for March 27.

V. RULE R8-69 FILING REQUIREMENTS

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

A. The information for Rider 10 is provided in response to the Commission's filing requirements contained in R8-69(f)(1) and can be found in the testimony and exhibits of Company witnesses Evans and Miller as follows:

R8-69(f)(1)		Items	Location in Testimony
(i)		Projected NC retail sales for the rate period	Miller Exhibit 6
(ii)		For each measure for which cost recovery is requested through Rider 10:	
(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-L
(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	Miller Exhibit 4
(vi)		Proposed Rider 10	Testimony of Carolyn Miller and Miller Exhibit 1
(vii)		Projected NC sales for customers opting out of measures	Miller Exhibit 6
(viii)		Supporting work papers	Flash drive accompanying filing

VI. PORTFOLIO OVERVIEW

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

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

RESIDENTIAL CUSTOMER PROGRAMS

- Energy Assessments Program
- EE Education Program
- Energy Efficient Appliances and Devices
- Residential Smart $aver® EE Program (formerly, the HVAC EE Program)
- Multi-Family EE Program
- My Home Energy Report (MyHER)
- Income-Qualified EE and Weatherization Program
- Power Manager

NON-RESIDENTIAL CUSTOMER PROGRAMS

- Non-Residential Smart $aver® Energy Efficient Food Service Products Program
- Non-Residential Smart $aver® Energy Efficient HVAC Products Program
- Non-Residential Smart $aver® Energy Efficient IT Products Program
- Non-Residential Smart $aver® Energy Efficient Lighting Products Program
- Non-Residential Smart $aver® Energy Efficient Process Equipment Products Program
- Non-Residential Smart $aver® Energy Efficient Pumps and Drives Products Program
- Non-Residential Smart $aver® Custom Program

- Non-Residential Smart $aver® Custom Energy Assessments Program
- PowerShare®
- PowerShare® CallOption (program canceled effective January 31, 2018)
- Small Business Energy Saver
- Smart Energy in Offices (program to be canceled effective June 30, 2018)
- EnergyWise for Business
- Non-Residential Smart $aver® Performance Incentive

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

A. Yes. The programs contained in the current portfolio are the same as those approved by the Commission in the Sub 1032 Order, with the exception of: (1) the additions of the Non-Residential Smart $aver® Performance Incentive Program and Small Business Energy Saver Program; and (2) the discontinuation of the Business Energy Report Program, the Energy Management Information Services Pilot Program, the Residential Appliance Recycling Program, PowerShare® CallOption, and the Smart Energy in Healthcare Program, as well as the impending discontinuation of the Smart Energy in Offices Program.

Q. PLEASE DESCRIBE ANY UPDATES MADE TO THE UNDERLYING ASSUMPTIONS FOR DEC'S PORTFOLIO OF

PROGRAMS THAT HAVE ALTERED PROJECTIONS FOR VINTAGE 2019.

A. Updates to two key elements of the underlying assumptions materially impact DEC's 2019 portfolio projection: reductions in DEC's avoided costs and updates to EM&V-related impacts.

Q. PLEASE DESCRIBE THE IMPACT OF REDUCED AVOIDED COSTS.

A. The avoided cost rates used in the 2019 portfolio projection were significantly lower than those employed in the Sub 1130 proceeding. Both avoided capacity and energy rates were reduced; however, the reduction in the capacity rates was more pronounced than reduction in the energy rates. As a result, DSM programs were impacted more than EE programs. Irrespective of the program type, the reductions in avoided costs, lowered cost-effectiveness scores of all of the Company's DSM and EE programs as well as DEC's portfolio as a whole.

Q. PLEASE DESCRIBE THE EM&V IMPACT OF REDUCED AVOIDED COSTS TO DEC'S ESTIMATED 2019 PROGRAM PORTFOLIO.

A. Changes in the EM&V results were updated to reflect the savings impacts for those programs for which DEC received EM&V results after it prepared its application in Sub 1130. Updating programs for EM&V, as with the aforementioned reduction in avoided cost rates, results in changes to the projected avoided cost benefits associated with the projected participation

and hence will impact the calculation of the specific program and overall portfolio cost-effectiveness, as well as impact the calculation of DEC's projected shared savings incentive.

Q. AFTER FACTORING THESE UPDATES INTO THE VINTAGE 2019 PORTFOLIO, DO THE RESULTS OF DEC'S PROSPECTIVE COST-EFFECTIVENESS TESTS INDICATE THAT IT SHOULD DISCONTINUE OR MODIFY ANY OF ITS PROGRAMS?

A. DEC performed a prospective analysis of each of its programs and the aggregate portfolio for the Vintage 2019 period. The cost-effectiveness results for the entire portfolio for Vintage 2019 are contained in Evans Exhibit 7. This exhibit shows that, with the exception of the Income-Qualified EE Products and Services Program, which was not cost-effective at the time of Commission approval, as well as the Non-Residential Smart $aver® Performance Incentive and the Residential Smart $aver® EE programs, discussed earlier in my testimony, the aggregate portfolio continues to project cost-effectiveness.

Q. DID DEC MAKE ANY MODIFICATIONS TO ITS PORTFOLIO OF PROGRAMS DURING VINTAGE 2017?

A. Yes. The Company has made several modifications to its portfolio of programs during Vintage 2017. These modifications were made in compliance with the Flexibility Guidelines approved by the Commission in its Sub 1032 Order. Three of DEC's programs, Residential HVAC-EE Program Air Conditioning, Residential HVAC-EE Program Tune and Seal,

Residential EE Appliances and Devices Program were consolidated into two programs. The modifications associated with this consolidation are as follows: (1) renaming the Residential HVAC-EE Program Air Conditioning to the Residential Smart $aver® EE Program; (2) elimination of the Residential HVAC-EE Program Tune and Seal by shifting all measures into the Residential Smart $aver® EE Program (except for the HVAC tune up and duct insulation measures, which were discontinued); (3) relocation of the high efficiency heat pump water heater and pool pump measures from the Residential EE Appliances and Devices Program into the Residential Smart $aver® EE Program; (4) elimination of the existing tier structure for HVAC incentives; and (5) removal of incentives for HVAC devices with a SEER of less than 15.

Other program changes include the elimination of CFL measures, incentive changes, the addition of new measures in the Non-Residential Smart $aver® EE Program, and making the MyHER Program available to customers living in multi-family residences.

VII. DSM/EE PROGRAM RESULTS TO DATE

Q. HOW MUCH ENERGY, CAPACITY AND AVOIDED COST SAVINGS DID DEC DELIVER AS A RESULT OF ITS DSM/EE PROGRAMS DURING VINTAGE 2017?

A. During Vintage 2017, DEC's DSM/EE programs delivered over 907 million kilowatt-hours ("kWh") of energy savings and over 1,022 megawatts ("MW") of capacity savings, which produced net present value of avoided

cost savings of over $586 million. The 2017 performance results for individual programs are provided in Evans Exhibits 6 and 8.

Q. DID ANY PROGRAMS SIGNIFICANTLY OUT-PERFORM RELATIVE TO THEIR ORIGINAL ESTIMATES FOR VINTAGE 2017?

A. Yes. During Vintage 2017, DEC's portfolio of programs was able to deliver energy and capacity savings that yielded avoided costs that were 162 percent of the target, and it did so while expending 147 percent of targeted program costs. While the Company's entire portfolio of programs performed well, programs in the portfolio that feature lighting measures continued to contribute the largest portion of the avoided cost impacts. In the residential market, the three highest ranked programs in terms of percentage increases in avoided costs from those forecasted for 2017 were the Energy Efficient Appliances and Devices Program, the Multi-Family EE Program, and the MyHER Program. These impacts were achieved largely due to elevated participation of customers adopting measures at a higher rate than originally forecasted. The avoided cost savings impacts for these three programs, compared to those originally filed for Vintage 2017, exceeded the projections by 128 percent, 45 percent, and 26 percent, respectively. The energy savings impacts for the three programs, compared to those originally filed for Vintage 2017, exceeded the projections by 122 percent, 50 percent, and 48 percent, respectively.

The non-residential program with the largest percentage increase in avoided cost savings impacts from those forecasted for 2017 is the Non-Residential Smart $aver® Prescriptive Program. This program produced 257 percent of expected avoided costs and 174 percent of expected energy savings.

Q. HAVE ANY PROGRAMS SIGNIFICANTLY UNDERPERFORMED RELATIVE TO THEIR ORIGINAL ESTIMATES IN VINTAGE 2017?

A. Yes. In the residential market, the two lowest ranked programs, in terms of percentage variations in avoided costs from those forecasted for 2017, are the Income-Qualified EE and Weatherization Program and the Residential Energy Assessments Program. It is important to note that the Residential Smart $aver® EE program was not included in the 2017 estimates.

During 2017, the Income-Qualified EE and Weatherization Program produced 77 percent of forecasted avoided costs, 93 percent of forecasted energy savings, and 75 percent of forecasted capacity savings. The underperformance of this program is primarily due to less than forecasted program participation.

The Residential Energy Assessments Program produced 83 percent of forecasted avoided costs, 103 percent of forecasted energy savings, and 130 percent of forecasted capacity savings. The primary drivers for the underperformance of DEC's Residential Energy Assessments Program were reductions in realized avoided costs and an increase in program costs.

VIII. PROJECTED RESULTS

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

A. Consistent with its practices during the save-a-watt pilot, DEC will update the actual and projected EE achievement levels in its annual Rider EE filing to account for any program or measure additions based on the performance of programs, market conditions, economics and consumer demand. The actual results for Vintage 2017 and projection of the results for Vintages 2018 and 2019, as well as the associated projected program expense for DEC's portfolio of programs, are summarized in the following table:

DEC System (NC & SC) DSM/EE Portfolio 2017 Actual Results and 2018-2019 Projected Results			
	2017	2018	2019
Annual System MW	1,022	1,059	1,040
Annual System Net GWh	907	817	781
Annual Program Costs (Millions)	$192	$142	$145

The Vintage 2018 projections are similar to those provided by DEC and reported to the Commission in Sub 1130. The projected impacts and cost for Vintage 2019 are different as a result of updated participation estimates as well as the EM&V results that have been applied to the following programs: PowerShare®; Non-Residential Smart $aver® Energy Efficient Products and Assessment – Custom; MyHER; Power Manager Load

Control; Small Business Energy Saver; Non-Residential Smart $aver® Energy Efficient Products and Assessment – Assessment; EnergyWise for Business; Multi-Family EE; Non-Residential Smart $aver® Energy Efficient Products and Assessment – Prescriptive; Residential Energy Efficient Appliances and Devices – Save Energy and Water Kit; Energy Efficient Appliances and Devices – Free LED; and Smart Energy in Offices.

IX. EM&V ACTIVITIES

Q. CAN YOU PROVIDE INFORMATION ON THE COMPANY'S EM&V ACTIVITIES?

A. Yes. Evans Exhibit 11 provides a summary of 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 L provide the detailed completed EM&V reports or updates for the following programs:

Evans Exhibit	EM&V Reports	Report Finalization Date	Evaluation Type
A	PowerShare® Program: 2016	1/27/2017	Impact
B	Non-Residential Smart $aver® Energy Efficient Products and Assessment – Custom: 2014-2015	2/13/2017	Impact
C	My Home Energy Report Program (MyHER): 2015-2016	2/16/2017	Process and Impact
D	Power Manager Load Control Service: 2016	4/11/2017	Process and Impact
E	Small Business Energy Saver Program: 2014-2016	6/6/2017	Process and Impact
F	Non-Residential Smart $aver® Energy Efficient Products and Assessment – Assessment: 2014-2016	6/8/2017	Process and Impact
G	EnergyWise for Business: 2016	6/12/2017	Impact
H	Multi-Family EE: 2014-2016	6/27/2017	Process and Impact

I	Non-Residential Smart $aver® Energy Efficient Products and Assessment – Prescriptive: 2013-2015	8/4/2017	Process and Impact
J	Residential Energy Efficient Appliances and Devices – Save Energy and Water Kit: 2016	11/29/2017	Process and Impact
K	Energy Efficient Appliances and Devices – Free LED: 2016-2017	12/8/2017	Process and Impact
L	Smart Energy in Offices: 2014-2016	12/15/2017	Process and Impact

Q. HOW WERE EM&V RESULTS UTILIZED IN DEVELOPING THE PROPOSED RIDER 10?

A. The Company has applied EM&V in accordance with the process as agreed upon by DEC, SACE, and the Public Staff and approved by the Commission in its *Order Approving DSM/EE Rider and Requiring Filing of Proposed Customer Notice* issued on November 8, 2011, in Docket No. E-7, Sub 979 ("EM&V Agreement"). In accordance with the Sub 1032 Order, DEC continues to apply EM&V in accordance with the EM&V Agreement.

Actual participation and evaluated load impacts are used prospectively to update net lost revenues estimated for 2017. In addition, the EM&V Agreement provides that initial EM&V results shall be applied retrospectively to program impacts that were based upon estimated impact assumptions derived from industry standards (rather than EM&V results for the program in the Carolinas), in particular the DSM/EE programs initially approved by the Commission in Docket No. E-7, Sub 831 ("Sub 831") programs, with the exception of the Non-Residential Smart $aver® Custom Rebate Program and the Low-Income EE and Weatherization Assistance Program.

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

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

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

The level of EM&V required varies by program and depends on that program's contribution to total portfolio, the duration the program has been in the portfolio without material change, and whether the program and administration is new and different in the energy industry. DEC estimates,

however, that no additional costs above 5 percent of total program costs will be associated with performing EM&V for all measures in the portfolio.

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

A. The following programs have Carolinas-based EM&V applied and have been provided as Evans Exhibits A through L: PowerShare® Program 2016 (Evans Exhibit A); Non-Residential Smart $aver® Energy Efficient Products and Assessment – Custom 2014-2015 (Evans Exhibit B); MyHER 2015-2016 (Evans Exhibit C); Power Manager Load Control Service 2016 (Evans Exhibit D); Small Business Energy Saver 2014-2016 (Evans Exhibit E); Non-Residential Smart $aver® Energy Efficient Products and Assessment – Assessment 2014-2016 (Evans Exhibit F); EnergyWise for Business 2016 (Evans Exhibit G); Multi-Family EE 2014-2016 (Evans Exhibit H) (Evans Exhibit H); Non-Residential Smart $aver® Energy Efficient Products and Assessment – Prescriptive 2013-2015 (Evans Exhibit I); Residential Energy Efficient Appliances and Devices – Save Energy and Water Kit: 2016 (Evans Exhibit J); Energy Efficient Appliances and Devices – Free LED 2016-2017 (Evans Exhibit K); and Smart Energy in Offices 2014-2016 (Evans Exhibit L).

X. RIDER IMPACTS

Q. HAVE THE PARTICIPATION RESULTS AFFECTED THE VINTAGE 2017 EXPERIENCE MODIFICATION FACTOR?

A. Yes. The EMF in Rider 10 accounts for changes to actual participation relative to the forecasted participation levels utilized in DEC's Vintage 2016 Rider EE. As DEC receives actual participation information, it is then able to update participation-driven actual avoided cost benefits from its DSM/EE programs and the net lost revenues derived from its EE programs. For example, as previously mentioned, the Residential Energy Assessments Program and Income-Qualified EE and Weatherization Program underperformed relative to their original participation targets. As a result, the EMF will be reduced to reflect the lower costs, net lost revenues, and shared savings incentive (PPI) associated with these programs. On the other hand, higher-than-expected participation in programs, such as the Multi-Family EE, Energy Efficient Appliances and Devices, and MyHER programs, cause the EMF to reflect higher program costs, net lost revenues, and PPI. In addition to the above, the EMF is impacted by the application of EM&V results.

Q. HOW WILL EM&V BE INCORPORATED INTO THE VINTAGE 2016 TRUE-UP COMPONENT OF RIDER 10?

A. All of the final EM&V results that have been received by DEC as of December 31, 2017 have been applied prospectively from the first day of the month immediately following the month in which the study participation sample for the EM&V was completed in accordance with the EM&V Agreement. Accordingly, for any program for which DEC has received EM&V results, the per participant impact applied to the projected program

participation in Vintage 2017 is based upon the actual EM&V results that have been received.

Q. PLEASE DESCRIBE HOW DEC CALCULATED FOUND REVENUES.

A. Consistent with the Sub 1032 Order and with the "Decision Tree" found in Appendix A of the Commission's February 8, 2011 order in Docket No. E-7, Sub 831, and approved for the new portfolio in the Sub 1032 Order, possible found revenue activities were identified, categorized, and netted against the net lost revenues created by DEC's EE programs. Found revenues may result from activities that directly or indirectly result in an increase in customer demand or energy consumption within DEC's service territory. Load-building activities such as these, however, would not be considered found revenues if they (1) would have occurred regardless of DEC's activity, (2) were a result of a Commission-approved economic development activity not determined to produce found revenues, or (3) were part of an unsolicited request for DEC to engage in an activity that supports efforts to grow the economy. On the other hand, found revenues would occur for load growth that did not fall into the previous categories but was directly or indirectly a result of DEC's activities. Based on the results of this work, all potential found revenue-related activities are identified and categorized in Evans Exhibit 4. Additionally, consistent with the methodology employed and approved in Docket No. E-7, Sub 1073, as discussed in detail in the testimony of Company witness Timothy J. Duff in

Docket No. E-7, Sub 1050, DEC also proposes to adjust calculation of found revenues to account for the impacts of activities outside of its EE programs that it undertakes that reduce customer consumption – i.e., "negative found revenues."

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

A. DEC continues to aggressively pursue, with its outdoor lighting customers, the replacement of aging Mercury Vapor lights with Light Emitting Diode ("LED") fixtures. By moving customers past the standard High Pressure Sodium ("HPS") fixture to an LED fixture in this replacement process, DEC is generating significant energy savings. These energy savings, since they come outside of DEC's EE programs, are not captured in DEC's calculation of lost revenues. Since one of the activities that DEC includes in the calculation of found revenues is the increase in consumption from new outdoor lighting fixtures added by DEC, it is logical and symmetrical to count the energy consumption reduction realized in outdoor lighting efficiency upgrades. The Company does not take credit for the entire efficiency gain from replacing Mercury Vapor lights, but rather only the efficiency gain from replacing HPS with LED fixtures. In addition, DEC has not recognized any negative found revenues in excess of the found revenues calculated; in other words, the net found revenues number will never be negative and have the effect of increasing net lost revenue

calculations. In Docket No. E-7, Sub 1073, the Commission found inclusion of negative found revenues associated with the Company's initiative to replace Mercury Vapor lighting with LED fixtures in the calculation of net found revenues to be reasonable, and the Company proposes to continue to this practice in Rider 10.

Q. HAS THE OPT-OUT OF NON-RESIDENTIAL CUSTOMERS AFFECTED THE RESULTS FROM THE PORTFOLIO OF APPROVED PROGRAMS?

A. Yes, the opt-out of qualifying non-residential customers has had a negative effect on DEC's overall non-residential impacts. For Vintage 2017, DEC had 4,075 eligible customer accounts opt out of participating in DEC's non-residential portfolio of EE programs. In addition, DEC had 4,863 eligible customer accounts opt out of participating in DEC's non-residential DSM programs. While the total number of opted-out accounts increased from Vintage 2016 to Vintage 2017, it is worth noting that there was a positive increase in the number of accounts that opted into the Vintage 2017 DSM/EE Rider. For comparison, only 78 eligible customer accounts that were opted-out of the Vintage 2015 EE Rider then opted into the Vintage 2016 Rider. The number of eligible customer accounts that were opted-out of the Vintage 2016 EE portion of the Rider and then opted into the Vintage 2017 EE Rider was 199.

Q. PLEASE EXPLAIN THE INCREASE IN THE OPT-OUT IN 2017 COMPARED TO 2016.

A. Because the Company does not take part in the customers' economic benefit analysis or the customers' decision-making process, it is difficult to provide a concrete explanation as to the reason for the increase in opt-outs. As non-residential customers become better equipped at determining the economic benefit of participating in the Company's DSM/EE programs versus the costs associated with opting into the DSM/EE Rider, they are more knowledgeable on the best allocation of their resources. The Company believes this knowledge, coupled with increases to the Rider EE rates, is leading to the increase in eligible customer opt-outs.

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

A. Yes. Increasing the participation of opt-out eligible customers in DSM and EE programs is very important to the Company. As discussed earlier, DEC continues to evaluate and revise its non-residential portfolio of programs to accommodate new technologies, eliminate product gaps, remove barriers to participation, and make its programs more attractive. It also continues to leverage its Large Account Management Team to make sure customers are informed about product offerings and the March Opt-in Window.

XI. PPI CALCULATION

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

A. Pursuant to the Sub 1032 Order, the Mechanism allows DEC to (1) recover the reasonable and prudent costs incurred for adopting and implementing DSM and EE measures in accordance with N.C. Gen. Stat. § 62-133.9 and Commission Rules R8-68 and R8-69; (2) recover net lost revenues incurred for up to 36 months of a measure's life for EE programs; and (3) earn a PPI based upon the sharing of 11.5% of the net savings achieved through DEC's DSM/EE programs on an annual basis.

Q. PLEASE EXPLAIN HOW DEC DETERMINES THE PPI.

A. First, DEC determines the net savings eligible for incentive by subtracting the present value of the annual lifetime DSM/EE program costs (excluding approved low-income programs as described below) from the net present value of the annual lifetime avoided costs achieved through the Company's programs (again, excluding approved low-income programs). The Company then multiplies the net savings eligible for incentive by the 11.5% shared savings percentage to determine its pretax incentive.

Q. PLEASE EXPLAIN IF DEC EXCLUDES ANY PROGRAMS FROM THE DETERMINATION OF ITS PPI CALCULATION.

A. Consistent with the Sub 1032 Order, DEC has excluded the impacts and costs associated with the Income-Qualified EE and Weatherization Program from its calculation of the PPI. At the time the program was approved, it was not cost-effective, but was approved based on its societal benefit. As such, although DEC is eligible to recover the program costs and 36 months of the net lost revenues associated with the impacts of the program, it does

not earn an incentive, and the negative net savings associated with these types of programs is not factored into the calculation of the annual shared savings PPI.

XII. CONCLUSION

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

A. Yes.

Duke Energy Carolinas, LLC
Vintage 2014 True-up for January 1, 2014 to December 31, 2014
Docket Number E-7, Sub 1164
Load Impacts and Estimated Revenue Requirements, excluding Lost Revenue by Program

		System kW Reduction - Summer Peak	System Energy Reduction (kWh)	A System NPV of Avoided Cost	B System Cost	C =(A-B * 11.5%) Earned Utility Incentive	D= B+C System Cost Plus Incentive	E NC Retail kWh Sales Allocation Factor (Miller Exhibit 5, pg. 1)	NC Residential Revenue Requirement D * E
	Residential Programs								
	EE Programs								
1	**Appliance Recycling Program**	709	5,100,458	$ 1,763,411	$ 1,515,867	$ 28,468	$ 1,544,335	72.9600473%	$ 1,126,747
2	**Energy Efficiency Education**	735	6,991,608	5,079,938	1,963,153	358,430	2,321,584	72.9600473%	1,693,829
3	**Energy Efficient Appliances and Devices**	18,726	168,414,153	52,276,512	14,738,129	4,316,914	19,055,043	72.9600473%	13,902,569
4	**HVAC Energy Efficiency**	2,509	4,526,177	7,061,500	4,786,807	261,590	5,048,397	72.9600473%	3,683,313
5	**Income Qualified Energy Efficiency and Weatherization Assistance**	792	3,374,813	1,675,463	1,917,192		1,917,192	72.9600473%	1,398,784
6	**Multi-Family Energy Efficiency**	965	9,953,578	5,306,321	1,442,533	444,336	1,886,869	72.9600473%	1,376,660
7	**Energy Assessments**	1,312	10,599,335	12,827,575	3,605,737	1,060,511	4,666,249	72.9600473%	3,404,497
8	**Subtotal**	25,748	208,960,120	$ 85,990,721	$ 29,969,419	$ 6,470,249	$ 36,439,668		$ 26,586,399
9	**My Home Energy Report (1)**	39,424	146,011,689	12,166,183	8,285,066	446,328	8,731,394	72.9600473%	6,370,430
10	**Total for Residential Energy Efficiency Programs**	65,172	354,971,809	$ 98,156,904	$ 38,254,485	$ 6,916,577	$ 45,171,062		**$ 32,956,829**
								NC Residential Peak Demand Allocation Factor (Miller Exhibit 5 pg. 1)	**D11* E11**
11	**Total DSM Programs (2)**	781,007	-	113,038,043	$ 31,183,186	$ 9,413,309	$ 40,596,495	34.0209980%	**$ 13,811,333**
12	**Total Residential Revenue Requirement**								**$ 46,768,162**
		System kW Reduction - Summer Peak	**System Energy Reduction (kWh)**	**System NPV of Avoided Cost**	**System Cost**	**Earned Utility Incentive**	**System Cost Plus Incentive**	**NC Retail kWh Sales Allocation Factor (Miller Exhibit 5 pg. 1)**	**NC Non-Residential Revenue Requirement D * E**
	Non-Residential Programs								
	EE Programs								
13	**Non Residential Smart Saver Custom Energy Assessments**	1,504	9,128,218	$ 6,858,644	$ 1,458,195	$ 621,052	$ 2,079,247	72.9600473%	$ 1,517,020
14	**Non Residential Smart Saver Custom**	9,392	78,157,513	49,908,871	8,136,712	4,803,798	12,940,510	72.9600473%	9,441,402
15	**Energy Management Information Services**	-	-	-	74,855	(8,608)	66,246	72.9600473%	48,333
16	**Non Residential Smart Saver Energy Efficient Food Service Products**	164	2,340,975	1,489,862	199,350	148,409	347,758	72.9600473%	253,725
17	**Non Residential Smart Saver Energy Efficient HVAC Products**	1,252	4,669,724	5,224,765	815,339	507,084	1,322,423	72.9600473%	964,841
18	**Non Residential Smart Saver Energy Efficient Lighting Products**	12,290	70,310,751	40,866,018	6,727,675	3,925,909	10,653,584	72.9600473%	7,772,860
19	**Non Residential Smart Saver Energy Efficient Pumps and Drives Products**	787	6,487,067	3,629,866	584,874	350,174	935,048	72.9600473%	682,211
20	**Non Residential Smart Saver Energy Efficient IT Products**	15	124,237	35,580	25,730	1,133	26,863	72.9600473%	19,599
21	**Non Residential Smart Saver Energy Efficient Process Equipment Products**	159	661,883	660,330	89,809	65,610	155,419	72.9600473%	113,394
22	**Small Business Energy Saver**	1,011	4,902,250	3,221,137	1,026,607	252,371	1,278,978	72.9600473%	933,143
23	**Smart Energy in Offices**	1,783	8,568,751	934,385	1,156,497	(25,543)	1,130,954	72.9600473%	825,144
24	**Total for Non-Residential Energy Efficiency Programs**	28,359	185,351,369	$ 112,829,457	$ 20,295,641	$ 10,641,389	$ 30,937,031		**$ 22,571,673**
								NC Non-Residential Peak Demand Allocation Factor (Miller Exhibit 5 pg. 1)	**D25*E25**
25	**Total DSM Programs(2)**	781,007	-	$ 113,038,043	$ 31,183,186	$ 9,413,309	$ 40,596,495	41.2108021%	**$ 16,730,141**
26	**Total Non-Residential Revenue Requirement**								**$ 39,301,814**
								NC Retail Peak Demand Allocation Factor (Miller Exhibit 5 pg. 1)	**D30* E30**
	Total DSM Program Breakdown								
27	**Power Manager (Residential)**	398,972	-	$ 57,744,666	$ 15,662,693	$ 4,839,427	$ 20,502,121		
28	**Power Share CallOption (Non-Residential)**	-	-	$ -	$ -				
29	**Power Share (Non-Residential)**	382,035	-	$ 55,293,377	$ 15,520,492	$ 4,573,882	$ 20,094,374		
30	**Total DSM**	781,007	-	$ 113,038,043	$ 31,183,186	$ 9,413,309	$ 40,596,495	75.2318001%	$ 30,541,474

(1) My Home Energy Report impacts reflect cumulative capability as of end of vintage year, including impacts for participants from prior vintage
(2) Total System DSM programs allocated to Residential and Non-Residential based on contribution to retail system peak

Duke Energy Carolinas, LLC
Vintage 2015 Estimate for January 1, 2015 to December 31, 2015
Docket Number E-7, Sub 1164
Load Impacts and Estimated Revenue Requirements, excluding Lost Revenue by Program

		System kW Reduction - Summer Peak	System Energy Reduction (kWh)	A System NPV of Avoided Cost	B System Cost	C Earned Utility Incentive	D= B+C System Cost Plus Incentive	E NC Retail kWh Sales Allocation Factor (Miller Exhibit 5 pg. 2)	NC Residential Revenue Requirement D * E
	Residential Programs								
	EE Programs								
1	**Appliance Recycling Program**	748	5,534,546	$ 1,901,321	$ 1,537,241	$ 41,869	$ 1,579,111	72.9564706%	$ 1,152,063
2	**Energy Efficiency Education**	830	4,417,898	$ 2,498,417	$ 2,054,672	$ 51,031	$ 2,105,702	72.9564706%	$ 1,536,246
3	**Energy Efficient Appliances and Devices**	14,743	129,350,071	$ 49,525,402	$ 12,050,485	$ 4,309,616	$ 16,360,100	72.9564706%	$ 11,935,752
4	**HVAC Energy Efficiency**	2,663	4,763,631	$ 6,816,479	$ 5,416,833	$ 160,959	$ 5,577,792	72.9564706%	$ 4,069,360
5	**Income Qualified Energy Efficiency and Weatherization Assistance**	622	2,864,912	$ 1,586,109	$ 2,238,776	$ -	$ 2,238,776	72.9564706%	$ 1,633,332
6	**Multi-Family Energy Efficiency**	1,339	13,988,109	$ 7,431,163	$ 2,092,935	$ 613,896	$ 2,706,831	72.9564706%	$ 1,974,808
7	**Energy Assessments**	1,275	10,293,765	$ 10,115,222	$ 3,086,173	$ 808,341	$ 3,894,514	72.9564706%	$ 2,841,300
8	**Subtotal**	22,219	171,212,932	$ 79,874,113	$ 28,477,114	$ 5,985,712	$ 34,462,825		$ 25,142,861
9	**My Home Energy Report (1)**	61,770	228,776,428	$ 16,583,325	$ 9,845,895	$ 774,805	$ 10,620,699	72.9564706%	$ 7,748,487
10	**Total for Residential Energy Efficiency Programs**	83,989	399,989,360	$ 96,457,439	$ 38,323,008	$ 6,760,516	$ 45,083,525		**$ 32,891,348**

								NC Residential Peak Demand Allocation Factor (Miller Exhibit 5 pg. 2)	D11* E11
11	**Total DSM Programs (2)**	871,944	18,374	101,113,558	$ 31,958,782	$ 7,952,799	$ 39,911,582	32.5218612%	**$ 12,979,989**
12	**Total Residential Revenue Requirement**								**$ 45,871,337**

		System kW Reduction - Summer Peak	System Energy Reduction (kWh)	System NPV of Avoided Cost	System Cost	Earned Utility Incentive	System Cost Plus Incentive	NC Retail kWh Sales Allocation Factor (Miller Exhibit 5 pg. 2)	NC Non-Residential Revenue Requirement D * E
	Non-Residential Programs								
	EE Programs								
13	**Non Residential Smart Saver Custom Energy Assessments**	87	765,303	$ 321,686	$ 660,420	$ (38,954)	$ 621,465	72.9564706%	$ 453,399
14	**Non Residential Smart Saver Custom**	11,108	76,142,627	53,882,448	9,932,877	5,054,201	14,987,078	72.9564706%	10,934,043
15	**Non Residential Smart Saver Energy Efficient Food Service Products**	140	1,672,329	1,099,734	194,425	104,111	298,535	72.9564706%	217,801
16	**Non Residential Smart Saver Energy Efficient HVAC Products**	1,611	5,405,220	6,221,217	1,142,522	584,050	1,726,572	72.9564706%	1,259,646
17	**Non Residential Smart Saver Energy Efficient Lighting Products**	11,523	67,083,512	42,227,035	11,335,798	3,552,492	14,888,290	72.9564706%	10,861,971
18	**Non Residential Smart Saver Energy Efficient Pumps and Drives Products**	423	3,354,574	1,924,058	466,478	167,622	634,100	72.9564706%	462,617
19	**Non Residential Smart Saver Energy Efficient IT Products**	540	5,196,710	1,130,386	716,542	47,592	764,134	72.9564706%	557,485
20	**Non Residential Smart Saver Energy Efficient Process Equipment Products**	112	630,354	517,342	88,823	49,280	138,103	72.9564706%	100,755
21	**Small Business Energy Saver**	14,417	77,515,622	47,989,975	13,968,790	3,912,436	17,881,226	72.9564706%	13,045,511
22	**Smart Energy in Offices**	3,109	14,938,552	1,666,306	1,463,240	23,353	1,486,592	72.9564706%	1,084,565
23	**Business Energy Report**	-	-	-	126,404	-	126,404	72.9564706%	92,220
24	**Total for Non-Residential Energy Efficiency Programs**	43,072	252,704,804	$ 156,980,188	$ 40,096,318	$ 13,456,181	$ 53,552,499		**39,070,014**

								NC Non-Residential Peak Demand Allocation Factor (Miller Exhibit 5 pg. 2)	D23*E23
25	**Total DSM Programs(2)**	871,944	18,374	$ 101,113,558	$ 31,958,782	$ 7,952,799	$ 39,911,582	42.4483655%	**$ 16,941,814**
26	**Total Non-Residential Revenue Requirement**								**$ 56,011,828**

								NC Retail Peak Demand Allocation Factor (Miller Exhibit 5 pg. 2)	D28* E28
	Total DSM Program Breakdown								
27	**Power Manager (Residential)**	454,663	-	$ 52,718,688	$ 14,634,279	$ 4,379,707	$ 19,013,986		
28	**EnergyWise for Business**	6	18,374	$ 11,248	$ 1,549,305	$ (176,876)	$ 1,372,428		
29	**Power Share CallOption (Non-Residential)**	-	-	$ -	$ -	$ -	$ -		
30	**Power Share (Non-Residential)**	417,276	-	$ 48,383,622	$ 15,779,050	$ 3,749,526	$ 19,528,576		
31	**Disallowed Costs from 2015 Program Costs Audit (Order E-7 Sub 1105, dated 8/25/16)**				$ (3,851)	$ 443	$ (3,408)		
32	**Total DSM**	871,944	18,374	101,113,558	31,958,782	7,952,799	39,911,582	74.9702266%	$ 29,921,803

(1) My Home Energy Report impacts reflect cumulative capability as of end of vintage year, including impacts for participants from prior vintage
(2) Total System DSM programs allocated to Residential and Non-Residential based on contribution to retail system peak

Duke Energy Carolinas, LLC
Vintage 2016 Estimate for January 1, 2016 to December 31, 2016
Docket Number E-7, Sub 1164
Load Impacts and Estimated Revenue Requirements, excluding Lost Revenue by Program

		System kW Reduction - Summer Peak	System Energy Reduction (kWh)	A System NPV of Avoided Cost	B System Cost	C = (A-B) *11.5% Earned Utility Incentive	D= B+C System Cost Plus Incentive	E NC Retail kWh Sales Allocation Factor (Miller Exhibit 5 pg. 3)	NC Residential Revenue Requirement D * E
	Residential Programs								
	EE Programs								
1	**Appliance Recycling Program**	21	164,720	$ 59,758	$ (97,397)	$ 18,073	$ (79,324)	73.0962827%	$ (57,983)
2	**Energy Efficiency Education**	1,512	6,441,283	3,695,507	2,126,509	180,435	2,306,944	73.0962827%	1,686,290
3	**Energy Efficient Appliances and Devices**	14,518	120,226,223	82,262,218	24,069,774	6,692,131	30,761,905	73.0962827%	22,485,809
4	**HVAC Energy Efficiency**	2,462	6,294,837	7,476,100	7,839,566	(41,799)	7,797,767	73.0962827%	5,699,878
5	**Income Qualified Energy Efficiency and Weatherization Assistance**	669	4,260,402	2,418,242	4,792,436	-	4,792,436	73.0962827%	3,503,093
6	**Multi-Family Energy Efficiency**	1,572	15,235,497	8,950,706	2,518,988	739,648	3,258,636	73.0962827%	2,381,941
7	**Energy Assessments**	1,070	7,389,091	6,822,806	2,678,893	476,550	3,155,443	73.0962827%	2,306,512
8	**Subtotal**	21,824	160,012,051	$ 111,685,337	$ 43,928,769	$ 8,065,038	$ 51,993,807		$ 38,005,540
9	**My Home Energy Report (1)**	71,814	283,569,925	20,423,954	10,822,444	1,104,174	11,926,618	73.0962827%	8,717,914
10	**Total for Residential Energy Efficiency Programs**	93,638	443,581,976	$ 132,109,290	$ 54,751,213	$ 9,169,211	$ 63,920,424		**$ 46,723,454**
								NC Residential Peak Demand Allocation Factor (Miller Exhibit 5 pg. 3)	**D11* E11**
11	**Total DSM Programs (2)**	825,492	718,623	98,643,760	$ 28,406,298	$ 8,077,308	$ 36,483,606	33.7973480%	**$ 12,330,491**
12	**Total Residential Revenue Requirement**								**$ 59,053,945**

		System kW Reduction - Summer Peak	System Energy Reduction (kWh)	System NPV of Avoided Cost	System Cost	Earned Utility Incentive	System Cost Plus Incentive	NC Retail kWh Sales Allocation Factor (Miller Exhibit 5 pg. 3)	NC Non-Residential Revenue Requirement D * E
	Non-Residential Programs								
	EE Programs								
13	**Non Residential Smart Saver Custom Energy Assessments**	1,584	16,953,402	$ 9,572,687	$ 2,034,308	$ 866,914	$ 2,901,222	73.0962827%	$ 2,120,685
14	**Non Residential Smart Saver Custom**	7,934	52,154,624	39,025,086	7,356,509	3,629,838	10,986,347	73.0962827%	8,030,611
15	**Non Residential Smart Saver Energy Efficient Food Service Products**	356	3,809,316	2,474,312	324,117	247,272	571,389	73.0962827%	417,664
16	**Non Residential Smart Saver Energy Efficient HVAC Products**	808	3,316,901	3,344,669	1,473,991	215,128	1,689,119	73.0962827%	1,234,683
17	**Non Residential Smart Saver Energy Efficient Lighting Products**	29,268	167,342,422	120,392,639	39,622,944	9,288,515	48,911,459	73.0962827%	35,752,458
18	**Non Residential Smart Saver Energy Efficient Pumps and Drives Products**	368	2,494,340	1,574,965	471,930	126,849	598,779	73.0962827%	437,685
19	**Non Residential Smart Saver Energy Efficient IT Products**	107	2,462,027	777,601	285,430	56,600	342,030	73.0962827%	250,011
20	**Non Residential Smart Saver Energy Efficient Process Equipment Products**	50	313,131	279,184	125,947	17,622	143,569	73.0962827%	104,944
21	**Non Residential Smart Saver Performance Incentive**	-	-	-	35,670	(4,102)	31,568	73.0962827%	23,075
22	**Small Business Energy Saver**	16,110	85,687,928	55,685,830	15,360,852	4,637,372	19,998,224	73.0962827%	14,617,959
23	**Smart Energy in Offices**	3,505	16,842,267	1,843,559	1,061,729	89,911	1,151,640	73.0962827%	841,806
24	**Business Energy Report**	388	5,561,349	302,497	263,169	-	263,169	73.0962827%	192,367
25	**Total for Non-Residential Energy Efficiency Programs**	60,480	356,937,707	$ 235,273,030	$ 68,416,596	$ 19,171,918	$ 87,588,514		**$ 64,023,948**
								NC Non-Residential Peak Demand Allocation Factor (Miller Exhibit 5 pg. 3)	**D24*E24**
26	**Total DSM Programs(2)**	825,492	718,623	$ 98,643,760	$ 28,406,298	$ 8,077,308	$ 36,483,606	40.8166437%	**$ 14,891,384**
27	**Total Non-Residential Revenue Requirement**								**$ 78,915,332**
								NC Retail Peak Demand Allocation Factor (Miller Exhibit 5 pg. 3)	**D29* E29**
	Total DSM Program Breakdown								
28	**Power Manager (Residential)**	455,393	-	$ 54,179,776	$ 13,644,970	$ 4,661,503	$ 18,306,473	`	
27	**EnergyWise for Business (Non-Residential)**	1,199	718,623	$ 574,590	$ 470,304	$ 11,993	$ 482,297		
29	**Power Share CallOption (Non-Residential)**	-	-	$ -	$ -	$ -	$ -		
30	**Power Share (Non-Residential)**	368,900	-	$ 43,889,394	$ 14,291,024	$ 3,403,812	$ 17,694,836		
31	**Total DSM**	825,492	718,623	$ 98,643,760	$ 28,406,298	$ 8,077,308	$ 36,483,606	74.6139917%	$ 27,221,875

(1) My Home Energy Report impacts reflect cumulative capability as of end of vintage year, including impacts for participants from prior vintage
(2) Total System DSM programs allocated to Residential and Non-Residential based on contribution to retail system peak

Duke Energy Carolinas, LLC
Vintage 2017 Actual for January 1, 2017 to December 31, 2017
Docket Number E-7, Sub 1164
Load Impacts and Estimated Revenue Requirements, excluding Lost Revenue by Program

		System kW Reduction - Summer Peak	System Energy Reduction (kWh)	A System NPV of Avoided Cost	B System Cost	C = (A-B) *11.5% Earned Utility Incentive	D= B+C System Cost Plus Incentive	E NC Retail kWh Sales Allocation Factor (Miller Exhibit 5 pg. 4)	NC Residential Revenue Requirement D * E
Residential Programs									
EE Programs									
1	**Appliance Recycling Program**	-	-	$ -	$ 5,307	$ (610)	$ 4,697	72.8087506%	$ 3,420
2	**Energy Efficiency Education**	1,393	5,932,086	3,597,724	2,077,611	174,813	2,252,424	72.8087506%	1,639,962
3	**Energy Efficient Appliances and Devices**	23,860	141,300,087	106,282,505	30,340,728	8,733,304	39,074,032	72.8087506%	28,449,314
4	**Residential – Smart $aver Energy Efficiency Program**	2,478	8,545,577	8,895,209	7,403,327	171,566	7,574,894	72.8087506%	5,515,185
5	**Income Qualified Energy Efficiency and Weatherization Assistance**	782	4,951,901	2,766,923	5,505,992	-	5,505,992	72.8087506%	4,008,844
6	**Multi-Family Energy Efficiency**	1,918	19,056,155	13,325,932	3,168,422	1,168,114	4,336,535	72.8087506%	3,157,377
7	**Energy Assessments**	1,274	8,131,752	7,275,644	2,909,098	502,153	3,411,251	72.8087506%	2,483,689
8	**Subtotal**	31,706	187,917,557	$ 142,143,937	$ 51,410,486	$ 10,749,340	$ 62,159,826		$ 45,257,793
9	**My Home Energy Report (1)**	79,070	311,368,855	21,728,369	13,812,250	910,354	14,722,603	72.8087506%	10,719,344
10	**Total for Residential Energy Efficiency Programs**	110,776	499,286,413	$ 163,872,305	$ 65,222,736	$ 11,659,693	$ 76,882,429		**$ 55,977,136**
								NC Residential Peak Demand Allocation Factor (Miller Exhibit 5 pg. 4)	**D11* E11**
11	**SubTotal DSM Programs (2)**	846,941	2,943,906	105,087,510	$ 29,822,652	$ 8,655,459	$ 38,478,111	33.8075104%	**$ 13,008,491**
12	**Total DSM Programs**								**13,008,491**
13	**Total Residential Revenue Requirement**								**$ 68,985,627**
		System kW Reduction - Summer Peak	**System Energy Reduction (kWh)**	**System NPV of Avoided Cost**	**System Cost**	**Earned Utility Incentive**	**System Cost Plus Incentive**	**NC Retail kWh Sales Allocation Factor (Miller Exhibit 5 pg. 4)**	**NC Non-Residential Revenue Requirement D * E**
Non-Residential Programs									
EE Programs									
14	**Non Residential Smart Saver Custom Energy Assessments**	1,604	15,633,234	$ 10,206,769	$ 2,139,875	$ 927,693	$ 3,067,568	72.8087506%	$ 2,233,458
15	**Non Residential Smart Saver Custom**	6,222	41,833,254	35,755,444	7,304,838	3,271,820	10,576,658	72.8087506%	7,700,732
16	**Non Residential Smart Saver Energy Efficient Food Service Products**	226	2,257,329	1,591,382	306,488	147,763	454,251	72.8087506%	330,734
17	**Non Residential Smart Saver Energy Efficient HVAC Products**	1,031	3,382,708	3,396,965	1,560,769	211,162	1,771,932	72.8087506%	1,290,121
18	**Non Residential Smart Saver Energy Efficient Lighting Products**	32,963	229,728,893	193,305,560	66,689,770	14,560,816	81,250,586	72.8087506%	59,157,537
19	**Non Residential Smart Saver Energy Efficient Pumps and Drives Products**	496	3,470,697	2,214,300	528,937	193,817	722,753	72.8087506%	526,228
20	**Non Residential Smart Saver Energy Efficient IT Products**	-	3,330	591	61,215	(6,972)	54,243	72.8087506%	39,494
21	**Non Residential Smart Saver Energy Efficient Process Equipment Products**	87	577,560	446,289	162,413	32,646	195,059	72.8087506%	142,020
22	**Non Residential Smart Saver Performance Incentive**	3	12,810	9,274	320,559	(35,798)	284,762	72.8087506%	207,331
23	**Small Business Energy Saver**	19,726	97,516,700	69,324,378	17,350,972	5,976,942	23,327,914	72.8087506%	16,984,763
24	**Smart Energy in Offices**	2,138	10,272,154	1,067,480	891,010	20,294	911,304	72.8087506%	663,509
25	**Business Energy Report**	3	42,398	696	126,680	-	126,680	72.8087506%	92,234
26	**Sub-Total for Non-Residential Energy Efficiency Programs**	64,499	404,731,067	$ 317,319,129	$ 97,443,527	$ 25,300,182	$ 122,743,709		**$ 89,368,161**
27	**Total for Non-Residential Energy Efficiency Programs**								**$ 89,368,161**
								NC Non-Residential Peak Demand Allocation Factor (Miller Exhibit 5 pg. 4)	**D24*E24**
28	**Total DSM Programs(2)**	846,941	2,943,906	$ 105,087,510	$ 29,822,652	$ 8,655,459	$ 38,478,111	40.0747013%	**$ 15,419,988**
29	**Total Non-Residential DSM Programs**								**15,419,988**
30	**Total Non-Residential Revenue Requirement**								**$ 104,788,149**
								NC Retail Peak Demand Allocation Factor (Miller Exhibit 5 pg. 4)	**D29* E29**
Total DSM Program Breakdown									
31	**Power Manager (Residential)**	501,118	-	$ 61,074,105	$ 14,021,500	$ 5,411,050	$ 19,432,549	`	
32	**EnergyWise for Business (Non-Residential)**	5,453	2,943,906	$ 2,530,761	$ 2,484,618	$ 5,306	$ 2,489,924		
33	**Power Share CallOption (Non-Residential)**	-	-	$ -	$ -	$ -	$ -		
34	**Power Share (Non-Residential)**	340,369	-	$ 41,482,644	$ 13,316,535	$ 3,239,103	$ 16,555,638		
35	**Total DSM**	846,941	2,943,906	$ 105,087,510	$ 29,822,652	$ 8,655,459	$ 38,478,111	73.8822117%	$ 28,428,479

(1) My Home Energy Report impacts reflect cumulative capability as of end of vintage year, including impacts for participants from prior vintage
(2) Total System DSM programs allocated to Residential and Non-Residential based on contribution to retail system peak

Duke Energy Carolinas, LLC
Vintage 2019 Estimate for January 1, 2019 to December 31, 2019
Docket Number E-7, Sub 1164
Load Impacts and Estimated Revenue Requirements, excluding Lost Revenue by Program

		System kW Reduction - Summer Peak	System Energy Reduction (kWh)	A System NPV of Avoided Cost	B System Cost	C = (A-B) *11.5% Earned Utility Incentive	D= B+C System Cost Plus Incentive	E NC Retail kWh Sales Allocation Factor (Miller Exhibit 5 pg. 4)	NC Residential Revenue Requirement D * E
	Residential Programs								
	EE Programs								
1	**Appliance Recycling Program**	-	-	$ -	$ -	$ -	$ -	72.8087506%	$ -
2	**Energy Efficiency Education**	1,339	5,701,506	2,565,053	2,104,087	53,011	2,157,098	72.8087506%	1,570,556
3	**Energy Efficient Appliances and Devices**	16,726	97,320,521	52,102,465	21,726,700	3,493,213	25,219,913	72.8087506%	18,362,304
4	**Residential – Smart $aver Energy Efficiency Program**	1,294	5,130,696	4,520,986	4,802,289	(32,350)	4,769,939	72.8087506%	3,472,933
5	**Income Qualified Energy Efficiency and Weatherization Assistance**	639	4,043,435	1,523,619	7,905,880	-	7,905,880	72.8087506%	5,756,172
6	**Multi-Family Energy Efficiency**	2,001	19,846,385	9,552,489	3,382,816	709,512	4,092,328	72.8087506%	2,979,573
7	**Energy Assessments**	1,040	6,542,935	4,216,535	2,987,118	141,383	3,128,501	72.8087506%	2,277,823
8	**Subtotal**	23,038	138,585,479	$ 74,481,147	$ 42,908,890	$ 4,364,769	$ 47,273,659		$ 34,419,361
9	**My Home Energy Report (1)**	79,359	312,934,099	20,858,118	13,406,971	856,882	14,263,852	72.8087506%	10,385,333
10	**Total for Residential Energy Efficiency Programs**	102,397	451,519,578	$ 95,339,264	$ 56,315,861	$ 5,221,651	$ 61,537,512		**$ 44,804,694**
								NC Residential Peak Demand Allocation Factor (Miller Exhibit 5 pg. 4)	**D11* E11**
11	**SubTotal DSM Programs (2)**	888,945	2,885,926	102,613,710	$ 31,286,990	$ 8,202,573	$ 39,489,563	33.8075104%	**$ 13,350,438**
12	**Total DSM Programs**								**13,350,438**
13	**Total Residential Revenue Requirement**								**$ 58,155,132**
		System kW Reduction - Summer Peak	System Energy Reduction (kWh)	System NPV of Avoided Cost	System Cost	Earned Utility Incentive	System Cost Plus Incentive	NC Retail kWh Sales Allocation Factor (Miller Exhibit 5 pg. 4)	NC Non-Residential Revenue Requirement D * E
	Non-Residential Programs								
	EE Programs								
14	**Non Residential Smart Saver Custom Energy Assessments**	1,008	8,831,594	$ 3,504,112	$ 1,618,240	$ 216,875	$ 1,835,115	72.8087506%	$ 1,336,124
15	**Non Residential Smart Saver Custom**	6,927	60,678,525	24,075,425	10,095,189	1,607,727	11,702,916	72.8087506%	8,520,747
16	**Non Residential Smart Saver Energy Efficient Food Service Products**	1,159	10,601,930	5,383,903	2,010,534	387,937	2,398,471	72.8087506%	1,746,297
17	**Non Residential Smart Saver Energy Efficient HVAC Products**	5,012	13,318,652	11,734,281	5,762,803	686,720	6,449,523	72.8087506%	4,695,817
18	**Non Residential Smart Saver Energy Efficient Lighting Products**	16,312	122,943,286	61,974,803	17,828,618	5,076,811	22,905,429	72.8087506%	16,677,157
19	**Non Residential Smart Saver Energy Efficient Pumps and Drives Products**	978	6,310,561	2,965,783	1,165,434	207,040	1,372,474	72.8087506%	999,281
20	**Non Residential Smart Saver Energy Efficient IT Products**	50	6,503,152	1,771,808	749,325	117,585	866,911	72.8087506%	631,187
21	**Non Residential Smart Saver Energy Efficient Process Equipment Products**	129	1,052,919	511,938	240,281	31,241	271,521	72.8087506%	197,691
22	**Non Residential Smart Saver Performance Incentive**	2,453	21,489,480	8,526,383	3,162,160	616,886	3,779,046	72.8087506%	2,751,476
23	**Small Business Energy Saver**	14,501	75,258,073	37,880,472	14,602,066	2,677,017	17,279,082	72.8087506%	12,580,684
24	**Smart Energy in Offices**	-	-	-	-	-	-	72.8087506%	-
25	**Business Energy Report**	-	-	-	-	-	-	72.8087506%	-
26	**Sub-Total for Non-Residential Energy Efficiency Programs**	48,530	326,988,173	$ 158,328,908	$ 57,234,649	$ 11,625,840	$ 68,860,489		**$ 50,136,461**
27	**Total for Non-Residential Energy Efficiency Programs**								**$ 50,136,461**
								NC Non-Residential Peak Demand Allocation Factor (Miller Exhibit 5 pg. 4)	**D24*E24**
28	**Total DSM Programs(2)**	888,945	2,885,926	$ 102,613,710	$ 31,286,990	$ 8,202,573	$ 39,489,563	40.0747013%	**$ 15,825,324**
29	**Total Non-Residential DSM Programs**								**15,825,324**
30	**Total Non-Residential Revenue Requirement**								**$ 65,961,786**
								NC Retail Peak Demand Allocation Factor (Miller Exhibit 5 pg. 4)	**D29* E29**
	Total DSM Program Breakdown								
31	**Power Manager (Residential)**	534,419	-	$ 60,847,789	$ 14,055,575	$ 5,381,105	$ 19,436,679	`	
32	**EnergyWise for Business (Non-Residential)**	16,662	2,885,926	$ 3,297,534	$ 3,967,504	$ (77,047)	$ 3,890,458		
33	**Power Share CallOption (Non-Residential)**	-	-	$ -	$ -	$ -	$ -		
34	**Power Share (Non-Residential)**	337,864	-	$ 38,468,387	$ 13,263,911	$ 2,898,515	$ 16,162,426		
35	**Total DSM**	888,945	2,885,926	$ 102,613,710	$ 31,286,990	$ 8,202,573	$ 39,489,563	73.8822117%	$ 29,175,763

(1) My Home Energy Report impacts reflect cumulative capability as of end of vintage year, including impacts for participants from prior vintage
(2) Total System DSM programs allocated to Residential and Non-Residential based on contribution to retail system peak

Duke Energy Carolinas, LLC
For the Period January 1, 2017 - December 31, 2017
Docket Number E-7, Sub 1164
North Carolina Net Lost Revenue Estimates for Vintages 2014 - 2019

Line	Residential	Vintage 2014 2014	2015	2016	2017[(a)]	2018	2019	Total
1	Energy Assessments	$ 310,188	$ 500,867	$ 501,049	$ 189,373			$ 1,501,478
2	My Home Energy Report	6,638,564	-	-	-			6,638,564
3	Energy Efficient Appliances and Devices	3,920,850	8,151,042	8,152,670	4,192,091			24,416,653
4	HVAC Energy Efficiency	117,000	219,682	219,714	101,824			658,219
5	Appliance Recycle Program	107,888	256,657	256,757	147,355			768,658
6	Income Qualified Energy Efficiency and Weatherization Assistance	85,574	159,285	159,363	74,793			479,016
7	Multi-Family Energy Efficiency	179,326	500,657	500,420	318,697			1,499,100
8	Energy Efficiency Education	130,479	321,730	321,836	189,706			963,752
9	Total Lost Revenues	11,489,869	10,109,920	10,111,809	5,213,840	-		36,925,438
10	Found Residential Revenues *							-
11	Net Lost Residential Revenues	**$ 11,489,869**	**$ 10,109,920**	**$ 10,111,809**	**$ 5,213,840**	**$ -**	**$**	**36,925,438**

	Non-Residential	2014	2015	2016	2017[(a)]	2018	2019	Total
12	Nonresidential Smart Saver Custom Energy Assessments	$ 166,013	$ 225,057	$ 224,335	$ 52,083			$ 667,487
13	Non Residential Smart Saver Custom	1,189,509	1,955,317	1,950,017	724,597			5,819,440
14	Energy Management Information Systems	-	-	-	-			-
15	Non Residential Smart Saver Energy Efficient Food Service Products	44,048	73,677	73,746	29,610			221,081
16	Non Residential Smart Saver Energy Efficient HVAC Products	98,688	174,818	174,680	75,587			523,773
17	Non Residential Smart Saver Energy Efficient Lighting Products	1,312,340	2,408,423	2,330,985	1,012,227			7,063,975
18	Non Residential Smart Saver Energy Efficient Pumps and Drives Products	94,582	169,755	169,726	74,452			508,516
19	Non Residential Smart Saver Energy Efficient IT Products	419	3,025	3,013	2,556			9,013
20	Non Residential Smart Saver Energy Efficient Process Equipment Products	19,578	29,107	28,991	8,775			86,451
21	Smart Business Energy Saver	20,550	245,994	246,943	224,806			738,294
22	Smart Energy in Offices	55,770	309,619	-	-			365,389
23	Total Lost Revenues	3,001,497	5,594,793	5,202,436	2,204,693	-		16,003,418
24	Found Non-Residential Revenues *	1,474						1,474
25	Net Lost Non-Residential Revenues	**$ 3,000,022**	**$ 5,594,793**	**$ 5,202,436**	**$ 2,204,693**	**$ -**	**$**	**16,001,944**

Line	Residential	2014	Vintage 2015 2015	2016	2017[(a)]	2018	2019	Total
26	Residential Energy Assessments		$ 283,798	$ 477,738	$ 473,182	$ 115,847		$ 1,350,564
27	My Home Energy Report		10,047,270	-	-	-		10,047,270
28	Energy Efficient Appliances and Devices		3,690,771	6,169,123	6,116,216	1,515,035		17,491,146
29	HVAC Energy Efficiency		132,089	234,967	232,892	63,375		663,323
30	Appliance Recycle Program		150,786	279,840	277,098	80,309		788,032
31	Income Qualified Energy Efficiency and Weatherization Assistance		65,602	135,872	134,562	38,334		374,370
32	Multi-Family Energy Efficiency		336,658	681,177	676,879	185,916		1,880,630
33	Energy Efficiency Education		89,806	220,572	218,470	57,519		586,368
34	Total Lost Revenues		14,796,779	8,199,289	8,129,299	2,056,336		33,181,702
35	Found Residential Revenues *							-
36	Net Lost Residential Revenues		**$ 14,796,779**	**$ 8,199,289**	**$ 8,129,299**	**$ 2,056,336**	**$**	**33,181,702**

	Non-Residential	2014	2015	2016	2017[(a)]	2018	2019	Total
37	Nonresidential Smart Saver Custom Energy Assessments		$ 5,659	$ 22,194	$ 21,744	$ 7,229		$ 56,826
38	Non Residential Smart Saver Custom		1,432,898	2,477,128	2,416,373	533,772		6,860,171
39	Energy Management Information Services		-	-	-	-		-
40	Non Residential Smart Saver Energy Efficient Food Service Products		33,714	65,479	64,761	17,349		181,302
41	Non Residential Smart Saver Energy Efficient HVAC Products		109,819	196,207	193,346	50,089		549,461
42	Non Residential Smart Saver Energy Efficient Lighting Products		1,439,011	2,400,931	2,289,093	540,562		6,669,598
43	Non Residential Smart Saver Energy Efficient Pumps and Drives Products		51,265	82,153	80,494	16,818		230,731
44	Non Residential Smart Saver Energy Efficient IT Products		58,585	173,258	170,131	54,912		456,886
45	Non Residential Smart Saver Energy Efficient Process Equipment Products		14,723	25,414	24,674	5,909		70,720
46	Smart Business Energy Saver		1,832,775	3,599,216	3,572,716	1,040,910		10,045,616
47	Smart Energy in Offices		178,960	387,139	-	-		566,099
48	EnergyWise for Business		-	-	-	-		
49	Total Lost Revenues		5,157,409	9,429,119	8,833,331	2,267,550		25,687,409
50	Found Non-Residential Revenues *							-
51	Net Lost Non-Residential Revenues		**$ 5,157,409**	**$ 9,429,119**	**$ 8,833,331**	**$ 2,267,550**	**$**	**25,687,409**

Line	Residential	2014	Vintage 2016 2015	2016	2017[(a)]	2018	2019	Total
52	Residential Energy Assessments			$ 193,357	$ 336,600	$ 111,591		$ 641,548
53	My Home Energy Report			13,052,806	-	-		13,052,806
54	Energy Efficient Appliances and Devices			2,665,348	5,787,926	1,918,854		10,372,128
55	HVAC Energy Efficiency			132,531	334,414	110,865		577,810
56	Appliance Recycle Program			5,096	8,147	2,701		15,943
57	Income Qualified Energy Efficiency and Weatherization Assistance			99,176	209,079	69,314		377,569
58	Multi-Family Energy Efficiency			347,362	698,540	231,533		1,277,435
59	Energy Efficiency Education			142,689	301,026	99,796		543,511
60	Total Lost Revenues		-	16,638,364	7,675,731	2,544,654		26,858,749
61	Found Residential Revenues *							-
62	Net Lost Residential Revenues		**$ -**	**$ 16,638,364**	**$ 7,675,731**	**$ 2,544,654**		**$ 26,858,749**

Line	Non-Residential	2014	2015	2016	2017[(a)]	2018	2019	Total
63	Nonresidential Smart Saver Custom Energy Assessments			$ 199,079	$ 389,585	$ 129,503		$ 718,167
64	Non Residential Smart Saver Custom			914,009	1,703,790	572,603		3,190,402
65	Energy Management Information Services			-	-	-		-
66	Non Residential Smart Saver Energy Efficient Food Service Products			24,889	66,328	22,069		113,286
67	Non Residential Smart Saver Energy Efficient HVAC Products			46,952	103,028	34,301		184,281
68	Non Residential Smart Saver Energy Efficient Lighting Products			2,925,514	6,589,455	2,188,879		11,703,848
69	Non Residential Smart Saver Energy Efficient Pumps and Drives Products			38,898	66,558	22,256		127,711
70	Non Residential Smart Saver Energy Efficient IT Products			59,904	75,403	25,073		160,381
71	Non Residential Smart Saver Energy Efficient Process Equipment Products			4,731	10,652	3,592		18,975
72	Small Business Energy Saver			2,145,932	4,346,981	1,448,423		7,941,336
73	Smart Energy in Offices			227,062	418,553	-		645,616
74	Business Energy Report			-	-	-		-
75	EnergyWise for Business			15,922	36,788	12,255		64,964
76	Total Lost Revenues			6,602,893	13,807,121	4,458,954		24,868,967
77	Found Non-Residential Revenues *							-
78	Net Lost Non-Residential Revenues			**$ 6,602,893**	**$ 13,807,121**	**$ 4,458,954**		**$ 24,868,967**

Line	Residential	2014	Vintage 2017 2015	2016	2017[(a)]	2018	2019	Total
78	Residential Energy Assessments				$ 205,575	$ -	$ 366,739	$ 572,314
79	My Home Energy Report				14,455,527	-	-	14,455,527
80	Energy Efficient Appliances and Devices				3,426,482	3,085,375	6,635,996	13,147,854
81	Residential – Smart $aver Energy Efficiency Program				237,440		433,059	670,499
82	Appliance Recycle Program				-	-	-	-
83	Income Qualified Energy Efficiency and Weatherization Assistance				129,311	249,170	242,487	620,968
84	Multi-Family Energy Efficiency				535,629	605,213	946,417	2,087,258
85	Energy Efficiency Education				165,284	262,244	279,889	707,417
86	Total Lost Revenues		-	-	19,155,248	4,202,002	8,904,587	32,261,836
87	Found Residential Revenues *							-
88	Net Lost Residential Revenues		**$ -**	**$ -**	**$ 19,155,248**	**$ 4,202,002**	**$ 8,904,587**	**$ 32,261,836**

Line	Non-Residential	2014	2015	2016	2017[(a)]	2018	2019	Total
89	Nonresidential Smart Saver Custom Energy Assessments				$ 215,024	$ 383,160	$ 355,020	$ 953,203
90	Non Residential Smart Saver Custom				447,290	2,833,159	916,764	4,197,213
91	Energy Management Information Services				-	-	-	-
92	Non Residential Smart Saver Energy Efficient Food Service Products				42,360	117,567	69,365	229,291
93	Non Residential Smart Saver Energy Efficient HVAC Products				69,985	188,797	131,612	390,393
94	Non Residential Smart Saver Energy Efficient Lighting Products				5,277,868	1,870,239	8,730,546	15,878,653
95	Non Residential Smart Saver Energy Efficient Pumps and Drives Products				45,557	98,438	93,363	237,357
96	Non Residential Smart Saver Energy Efficient IT Products				88	102,038	186	102,311
97	Non Residential Smart Saver Energy Efficient Process Equipment Products				7,200	13,834	10,555	31,589
98	Non Residential Smart Saver Performance Incentive				68	-	818	886
99	Small Business Energy Saver				2,267,155	2,937,757	4,099,390	9,304,302
100	Smart Energy in Offices				209,239	854,649	-	1,063,888
101	Business Energy Report				-	-	-	-
102	EnergyWise for Business				85,270	67,231	162,762	315,264
103	Total Lost Revenues			-	8,667,102	9,466,867	14,570,381	32,704,350
104	Found Non-Residential Revenues *							-
105	Net Lost Non-Residential Revenues			**$ -**	**$ 8,667,102**	**$ 9,466,867**	**$ 14,570,381**	**$ 32,704,350**

* Found Revenues - See Evans Exhibit 4

(a) Lost revenues were estimated by applying forecasted lost revenue rates for residential and non-residential customers to state specific forecasted program participation.

Vintage 2018

Line	Residential	2014	2015	2016	2017[(a)]	2018	2019	Total
106	Residential Energy Assessments					$ 189,591	$ 353,963	$ 543,555
107	My Home Energy Report					15,916,706	-	15,916,706
108	Energy Efficient Appliances and Devices					2,465,108	4,054,825	6,519,933
109	Residential – Smart $aver Energy Efficiency Program					145,909	213,538	359,446
110	Appliance Recycle Program					-	-	-
111	Income Qualified Energy Efficiency and Weatherization Assistance					131,969	246,384	378,353
112	Multi-Family Energy Efficiency					624,158	1,165,290	1,789,448
113	Energy Efficiency Education					139,276	260,025	399,301
114	Total Lost Revenues		-	-	-	19,612,717	6,294,025	25,906,742
115	Found Residential Revenues *							-
116	Net Lost Residential Revenues		**$ -**	**$ -**	**$ -**	**$ 19,612,717**	**$ 6,294,025**	**$ 25,906,742**

	Non-Residential	2014	2015	2016	2017[(a)]	2018	2019	Total
117	Nonresidential Smart Saver Custom Energy Assessments					$ 263,062	$ 549,855	$ 812,917
118	Non Residential Smart Saver Custom					1,286,383	2,688,812	3,975,195
119	Energy Management Information Services					-	-	-
120	Non Residential Smart Saver Energy Efficient Food Service Products					10,829	26,794	37,622
121	Non Residential Smart Saver Energy Efficient HVAC Products					59,787	134,931	194,719
122	Non Residential Smart Saver Energy Efficient Lighting Products					1,215,496	2,987,074	4,202,570
123	Non Residential Smart Saver Energy Efficient Pumps and Drives Products					25,728	49,390	75,118
124	Non Residential Smart Saver Energy Efficient IT Products					48,416	117,948	166,363
125	Non Residential Smart Saver Energy Efficient Process Equipment Products					4,509	11,082	15,592
126	Non Residential Smart Saver Performance Incentive					77,007	160,962	237,969
126	Small Business Energy Saver					1,280,808	3,493,883	4,774,692
127	Smart Energy in Offices					707,291	-	707,291
128	Business Energy Report					-	-	-
129	EnergyWise for Business					47,682	51,234	98,917
130	Total Lost Revenues			-	-	5,026,998	10,271,966	15,298,963
131	Found Non-Residential Revenues *							-
132	Net Lost Non-Residential Revenues			**$ -**	**$ -**	**$ 5,026,998**	**$ 10,271,966**	**$ 15,298,963**

* Found Revenues - See Evans Exhibit 4

(a) Lost revenues were estimated by applying forecasted lost revenue rates for residential and non-residential customers to state specific forecasted program participation.

Vintage 2019

Line	Residential	2014	2015	2016	2017[(a)]	2018	2019	Total
132	Residential Energy Assessments						$ 178,309	$ 178,309
133	My Home Energy Report						15,206,604	15,206,604
134	Energy Efficient Appliances and Devices						2,553,378	2,553,378
135	Residential – Smart $aver Energy Efficiency Program						129,065	129,065
136	Appliance Recycle Program						-	-
137	Income Qualified Energy Efficiency and Weatherization Assistance						99,398	99,398
138	Multi-Family Energy Efficiency						496,951	496,951
139	Energy Efficiency Education						119,499	119,499
140	Total Lost Revenues		-	-	-		18,783,204	18,783,204
141	Found Residential Revenues *							-
142	Net Lost Residential Revenues		**$ -**	**$ -**	**$ -**		**$ 18,783,204**	**$ 18,783,204**

	Non-Residential	2014	2015	2016	2017[(a)]	2018	2019	Total
143	Nonresidential Smart Saver Custom Energy Assessments						$ 145,699	$ 145,699
144	Non Residential Smart Saver Custom						1,059,600	1,059,600
145	Energy Management Information Services						-	-
146	Non Residential Smart Saver Energy Efficient Food Service Products						146,435	146,435
147	Non Residential Smart Saver Energy Efficient HVAC Products						193,528	193,528
148	Non Residential Smart Saver Energy Efficient Lighting Products						1,921,414	1,921,414
149	Non Residential Smart Saver Energy Efficient Pumps and Drives Products						77,800	77,800
150	Non Residential Smart Saver Energy Efficient IT Products						77,654	77,654
151	Non Residential Smart Saver Energy Efficient Process Equipment Products						18,722	18,722
152	Non Residential Smart Saver Performance Incentive						375,261	375,261
152	Small Business Energy Saver						1,523,101	1,523,101
153	Smart Energy in Offices						-	-
154	Business Energy Report						-	-
155	EnergyWise for Business						51,234	51,234
156	Total Lost Revenues			-	-		5,590,446	5,590,446
157	Found Non-Residential Revenues *							-
158	Net Lost Non-Residential Revenues			**$ -**	**$ -**		**$ 5,590,446**	**$ 5,590,446**

* Found Revenues - See Evans Exhibit 4

(a) Lost revenues were estimated by applying forecasted lost revenue rates for residential and non-residential customers to state specific forecasted program participation.

Evans Exhibit 3

Duke Energy Carolinas, LLC
For the Period January 1, 2017 - December 31, 2017
Docket Number E-7 Sub 1164
Actual Program Costs for Vintage Years 2014, 2015, 2016 and 2017

		Carolinas System - 12 Months Ended 12/31/2014	Carolinas System - 12 months Ended 12/31/2015	Carolinas System - 12 months Ended 12/31/2016	Carolinas System - 12 months Ended 12/31/2017
1	Residential Energy Assessments	$ 3,605,737	$ 3,086,173	2,678,893	2,909,098
2	My Home Energy Report	8,285,066	9,845,895	10,822,444	13,812,250
3	Energy Efficient Appliances and Devices	14,738,129	12,050,485	24,069,774	30,340,728
4	Residential – Smart $aver Energy Efficiency Program	4,786,807	5,416,833	7,839,566	7,403,327
5	Appliance Recycle Program	1,515,867	1,537,241	(97,397)	5,307
6	Income Qualified Energy Efficiency and Weatherization Assistance	1,917,192	2,238,776	4,792,436	5,505,992
7	Multi family Energy Efficiency	1,442,533	2,092,935	2,518,988	3,168,422
8	Energy Efficiency Education	1,963,153	2,054,672	2,126,509	2,077,611
9	Nonresidential Smart Saver Custom Energy Assessments	1,458,195	660,420	2,034,308	2,139,875
10	Energy Management Information Systems	74,855	-	-	-
11	Non-Residential Smart Saver Custom	8,136,712	9,932,877	7,356,509	7,304,838
12	Non-Residential Smart Saver Performance Incentive			35,670	320,559
13	Non-Residential Energy Efficient Food Service Products	199,350	194,425	324,117	306,488
14	Non-Residential Smart Saver Energy Efficient HVAC Products	815,339	1,142,522	1,473,991	1,560,769
15	Non-Residential Smart Saver Energy Efficient Lighting Products	6,727,675	11,335,798	39,622,944	66,689,770
16	Nonresidential Energy Efficient Pumps and Drives Products	584,874	466,478	471,930	528,937
17	Nonresidential Energy Efficient ITEE	25,730	716,542	285,430	61,215
18	Nonresidential Energy Efficient Process Equipment Products	89,809	88,823	125,947	162,413
19	Smart Energy In Offices	1,156,497	1,463,240	1,061,729	891,010
20	Small Business Energy Saver	1,026,607	13,968,790	15,360,852	17,350,972
21	Business Energy Report	-	126,404	263,169	126,680
22	Power Manager	15,662,693	14,634,279	13,644,970	14,021,500
23	EnergyWise for Business	-	1,549,305	470,304	2,484,618
24	Power Share	15,520,492	15,779,050	14,291,024	13,316,535
25	Disallowed Costs from 2015 Program Costs Audit (Order E-7 Sub 1105, dated 8/25/16)		(3,851)		
26	**Total Energy Efficiency & Demand Side Program Costs**	**$ 89,733,313**	**$ 110,378,109**	**$ 151,574,107**	**$ 192,488,915**
27	NC Allocation Factor for EE programs	72.9600473%	72.9564706%	73.0962827%	72.8087506%
28	NC Allocation Factor for DSM programs-Residential	34.0209980%	32.5218612%	33.7973480%	33.8075104%
29	NC Allocation Factor for DSM programs-Non-Residential	41.2108021%	42.4483655%	40.8166437%	40.0747013%

		NC Allocated - 12 Months Ended 12/31/2014	NC Allocated - 12 Months Ended 12/31/2015	NC Allocated - 12 Months Ended 12/31/2016	NC Allocated - 12 Months Ended 12/31/2017
30	Residential Energy Assessments	$ 2,630,748	$ 2,251,563	$ 1,958,171	$ 2,118,078
31	My Home Energy Report	6,044,788	7,183,217	7,910,805	10,056,526
32	Energy Efficient Appliances and Devices	10,752,946	8,791,608	17,594,110	22,090,705
33	Residential – Smart $aver Energy Efficiency Program	3,492,457	3,951,930	5,730,431	5,390,270
34	Appliance Recycle Program	1,105,977	1,121,517	(71,194)	3,864
35	Income Qualified Energy Efficiency and Weatherization Assistance	1,398,784	1,633,332	3,503,093	4,008,844
36	Multi family Energy Efficiency	1,052,473	1,526,931	1,841,287	2,306,888
37	Energy Efficiency Education	1,432,317	1,499,016	1,554,399	1,512,683
38	Nonresidential Smart Saver Custom Energy Assessments	1,063,900	481,819	1,487,003	1,558,016
39	Energy Management Information Systems	54,614	-	-	-
40	Non-Residential Smart Saver Custom	5,936,549	7,246,677	5,377,335	5,318,561
41	Non-Residential Smart Saver Performance Incentive			26,073	
42	Non-Residential Energy Efficient Food Service Products	145,446	141,845	236,918	223,150
43	Non-Residential Smart Saver Energy Efficient HVAC Products	594,872	833,543	1,077,433	1,136,376
44	Non-Residential Smart Saver Energy Efficient Lighting Products	4,908,515	8,270,198	28,962,899	48,555,988
45	Nonresidential Energy Efficient Pumps and Drives Products	426,724	340,326	344,963	385,112
46	Nonresidential Energy Efficient ITEE	18,773	522,764	208,639	44,570
47	Nonresidential Energy Efficient Process Equipment Products	65,525	64,802	92,062	118,251
48	Smart Energy In Offices	843,781	1,067,528	776,084	648,734
49	Small Business Energy Saver	749,013	10,191,136	11,228,212	12,633,026
50	Business Energy Report	-	92,220	192,366	92,234
51	Power Manager	10,608,831	10,394,843	9,600,575	10,082,296
52	EnergyWise for Business		1,213,062	369,407	1,879,262
53	Power Share	12,850,841	12,354,553	11,225,091	10,072,077
54	Disallowed Costs from 2015 Program Costs Audit (Order E-7 Sub 1105, dated 8/25/16)		(2,887)		
55	**Total Energy Efficiency & Demand Side Program Costs**	**$ 66,177,873**	**$ 81,171,544**	**$ 111,226,163**	**$ 140,235,514**

Duke Energy Carolinas, LLC
January 2014 - December 2017 Actuals
January 2018 - December 2019 Estimates
Docket Number E-7, Sub 1164
North Carolina Found Revenues

	Actual/ Reported KWH				Estimated KWH			
	2014	2015	2016	2017	2018	2019	Total	Decision Tree Node
Economic Development	166,234,550	464,610,000	271,322,290	348,693,600	-	-	1,250,860,440	Box 5 - exclude
Plug-in Electric Charging Station Pilot	238,696	-	-		-	-	238,696	Box 3 - exclude
Lighting								
Residential	105,354	90,653	90,608	78,437	78,437	78,437	521,926	Box 6 - include
Non Residential (Regulated)	95,391	76,081	96,691	102,200	102,200	102,200	574,763	Box 6 - include
MV to LED Credit - Residential (Regulated)	(156,381)	(171,375)	(189,823)	(172,702)	(959,451)	(883,485)	(2,533,216)	Box 6 - include
MV to LED Credit - Non-Residential (Regulated)	(104,331)	(160,589)	(173,799)	(193,494)	(1,074,961)	(989,850)	(2,697,024)	Box 6 - include
Total KWH	166,413,279	464,444,770	271,145,967	348,508,041	(1,853,775)	(1,692,697)	1,246,965,585	
Total KWH Included	(59,967)	(165,230)	(176,323)	(185,559)	(1,853,775)	(1,692,697)	(4,133,551)	
Total KWH Included (net of Free Riders 15%)	(50,972)	(140,446)	(149,875)	(157,725)	(1,575,709)	(1,438,793)	(3,513,518)	
Annualized Found Revenue - Non Residential	$ (3,700)	$ (37,868)	$ (37,374)	$ (47,610)	$ (532,809)	$ (486,191)	$ (1,145,551)	
Annualized Found Revenue - Residential	$ (34,952)	$ (55,340)	$ (67,985)	$ (63,990)	$ (603,909)	$ (551,837)	$ (1,378,013)	

	2014	2015	2016	2017	2018	2019	Total
Vintage 2014 - Non Res	1,474	(3,700)	(3,700)	(5,174)			(11,099)
Vintage 2015 - Non Res		(21,561)	(37,868)	(37,868)	(8,995)		(106,292)
Vintage 2016 - Non Res			(19,617)	(37,374)	(12,458)	-	(69,449)
Vintage 2017 - Non Res				(19,367)	(47,610)	(47,610)	(114,587)
Vintage 2018 - Non Res					(288,605)	(532,809)	(821,413)
Vintage 2019 - Non Res						(263,353)	(263,353)
Net Negative Found Revenues to Zero*	-	25,261	61,185	99,784	357,668	843,772	1,387,669
Subtotal - Non Res	$ 1,474	$ -	$ -	$ -	$ -	$ -	$ 1,474
Vintage 2014 - Res	(12,947)	(34,952)	(34,952)	(22,005)	-		(104,857)
Vintage 2015 - Res		(32,355)	(55,340)	(55,340)	(12,367)	-	(155,402)
Vintage 2016 - Res			(38,231)	(67,985)	(22,662)	-	(128,878)
Vintage 2017 - Res				(26,863)	(63,990)	(63,990)	(154,842)
Vintage 2018 - Res					(327,118)	(603,909)	(931,027)
Vintage 2019 - Res						(298,912)	(298,912)
Net Negative Found Revenues to Zero*	12,947	67,307	128,523	172,193	426,136	966,811	1,773,918
Subtotal - Residential	$ -	$ -	$ -		$ -	$ -	$ -
Total Found Revenues	$ 1,474	$ -	$ -		$ -	$ -	$ 1,474

* Eliminates the inclusion of total negative found revenues at the Residential and Non-Residential level

Evans Exhibit 5

Duke Energy Carolinas
System Event Based Demand Response January 1, 2017 - December 31, 2017
Docket Number E-7, Sub 1164

Date	State	Program Name	Event Trigger	High / Low System Temp (F)	Customers Notified /Switches Dispatched	MW Reduction
7/13/2017	NC and SC	Power Manager	Emergency, Low Reserves	92 / 78	208,330 / 248,954	220.5

Notes:

- The 'High / Low System Temperature' is the average of the daily high & low temperatures from 3 weather stations (Charlotte, Greensboro, Greenville/Spartanburg)
- 'Customers Notified' is the number of participants notified to participate in the event
- 'Switches Dispatched' values represent the monthly active switch counts
- 'MW Reduction' values are based on the average across all hours of the event
- A loss adjustment of 1.0622 has been included in the 'MW Reduction' values.

Duke Energy Carolinas, LLC – Executive Summary

A. Description

During the first quarter 2018 Duke Energy Carolinas Collaborative meeting, Duke Energy Carolinas, LLC (the "Company") will provide an update on the performance of its energy efficiency and demand side management programs/pilots for the time frame of January 2017 through December 2017. The Company's product managers prepared reports on each program/pilot describing the offerings and detailing each program's performance. This Executive Summary describes how the Company performed in regards to the energy efficiency and demand side management program/pilot performance at an aggregate level during the full year of Vintage 2017 in comparison to as filed information. Program-specific details are provided in the individual reports.

Program reports include:

Program	Category	Customer
Appliance Recycling Program **(Closed)**	EE	Residential
Energy Assessments	EE	Residential
Energy Efficient Appliances and Devices	EE	Residential
Energy Efficiency Education Programs	EE	Residential
Residential – Smart $aver Energy Efficiency Program (HVAC EE)	EE	Residential
Income Qualified Energy Efficiency and Weatherization Assistance	EE	Residential
My Home Energy Report	EE	Residential
Multi-Family Energy Efficiency	EE	Residential
Business Energy Reports **(Closed)**	EE	Non-residential
Non-Residential Smart $aver Prescriptive	EE	Non-residential
Non-Residential Smart $aver Custom	EE	Non-residential
Non-Residential Smart $aver Custom Assessment	EE	Non-residential
Non-Residential Smart $aver Performance Incentive	EE	Non-residential
Small Business Energy Saver	EE	Non-residential
Smart Energy in Healthcare **(Closed)**	EE	Non-residential
Smart Energy in Offices **(Scheduled for closure 06/30/2018)**	EE	Non-residential
EnergyWise for Business	EE/DSM	Non-residential
Power Manager	DSM	Residential
PowerShare	DSM	Non-residential

Audience
All retail Duke Energy Carolinas customers who have not opted out.

B &C. Impacts, Participants and Expenses
The tables below include actual results for the full year of Vintage 2017 in comparison to as filed data for Vintage 2017.

The Company includes the number of units achieved and a percentage comparison to the as filed values. The unit of measure varies by measure as a participant, for example, may be a single LED bulb, a kW, a kWh, a household or a square foot. Due to the multiple measures in a given program or programs, units may appear skewed and are not easily comparable.

Duke Energy Carolinas, LLC – Executive Summary

Carolinas System Summary[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$360.8	$586.3	162%
Program Cost	$130.6	$192.5	147%
MW[2]	1,002.0	1,022.2	102%
MWH	608,069.9	906,961.4	149%
Units	118,555,154	121,536,772	103%

1) Numbers rounded.
2) As filed MW are annual maximum peak. Coincident peak is tracked for impacts.

Carolinas Energy Efficiency Summary[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$253.4	$481.2	190%
Program Cost	$99.1	$162.7	164%
MW[2]	118.7	175.3	148%
MWH	606,312.6	904,017.5	149%
Units	117,728,662	120,736,014	103%

1) Numbers rounded.
2) As filed MW are annual maximum peak. Coincident peak is tracked for impacts.

Carolinas Demand Response Summary[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$107.4	$105.1	98%
Program Cost	$31.5	$29.8	95%
MW[2]	883.3	846.9	96%
MWH	1,757.4	2,943.9	168%
Units[3]	826,492	800,758	97%

1) Numbers rounded.
2) MW capability derived by taking the average over the PowerShare and PowerManager contract periods.
3) Units included in filing represented kW at meter, rather than number of participants. YTD value reflects average participation for 2017.
4) Numbers rounded.

D. Qualitative Analysis

Energy efficiency impacts have primarily been driven by lighting measures for both residential and non-residential customers. This is a result of a higher take-rate for lighting offerings than originally projected.

Highlights

Energy Efficiency

Customer participation continues to be largely driven by lighting and assessments programs. These measures provide customers with a relatively low cost efficiency upgrade, with minimal effort, creating a positive initial energy efficiency experience.

Demand Side Management (DSM)

The DSM portfolio is comprised of PowerShare (non-residential), Power Manager (residential), and EnergyWise for Business (non-residential) programs. The impacts and participation were very close to the 2017 As-Filed targets.

Issues

A few of the Company's programs struggled to garner participation and/or remain cost-effective and were therefore closed or are scheduled for early closure. The Company faces a significant challenge with reductions in avoided costs, making programs and their measures become less impactful. As a result of this and other factors, the Company's continued assessment of its portfolio may result in the removal of measures and possible elimination of programs in order to address cost-effectiveness.

Potential Changes

Several programs are reviewing their current processes and are considering potential changes to increase customer adoption. Potential changes are discussed in individual program reports.

E. Marketing Strategy

Located in individual reports.

F. Evaluation, Measurement and Verification

Located in individual program reports.

Program Update:
Effective December 31, 2017 this program was closed.

A. Description

The Appliance Recycling Program ("Program") promotes the removal and responsible disposal of operating refrigerators and freezers from Duke Energy Carolinas, LLC's (the "Company's") residential customers. The refrigerator or freezer must have a capacity of at least 10 cubic feet but not more than 30 cubic feet. The Program recycles approximately 95% of the material from the harvested appliances.

Audience

Eligible Program participants include the Company's residential customers who own operating refrigerators and freezers used in individually metered residences.

B &C. Impacts, Participants and Expenses

Appliance Recycling[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$0.0	$0.0	-
Program Cost	$0.0	$0.0	-
MW	0.0	0.0	-
MWH	0.0	0.0	-
Units	0	0	-

1) Values are reflected at the system level.
2) Numbers rounded.

D. Qualitative Analysis

This program is no longer being offered to customers.

Potential Changes
No Changes at this time.

E. Marketing Strategy

No Marketing efforts were performed.

F. Evaluation, Measurement and Verification

No evaluation activities were conducted in 2017.

Energy Efficient Appliances and Devices

A. Description

The Energy Efficient Appliances and Devices program ("Program") offers a variety of measures that allow eligible Duke Energy Carolinas, LLC (the "Company") customers to take action and reduce energy consumption. The Program includes offers for lighting measures, pool pumps, heat pumps water heaters and water measures.

Free LED Program

The Free LED (Light Emitting Diode) program launched in January 2016, replacing the Free CFL program. It is designed to increase the energy efficiency of residential customers by offering customers 9 watt A19 LEDs to install in high-use fixtures within their homes.

The LEDs are offered through multiple channels to eligible customers. The on-demand ordering platform enables eligible customers to request LEDs and have them shipped directly to their homes.

The program consists of two types of eligible customers:

1. Customers who have not yet met or exceeded the Duke Energy bulb (CFL or LED) limit of 15. These customers have the option to choose kits in quantities of 3, 6, 8, 12, and 15 bulbs. Available order quantities presented are dependent on past campaign participation (i.e., coupons, Business Reply Cards ("BRCs") and other Company programs offering lighting).

2. Customers who met or exceeded the 15 bulb limit (CFL or LED) and 5 years has passed since their shipment date. Depending upon past order quantities, these customers could have the option to order 12 bulbs or a lesser quantity of 6.

Customers have the flexibility to order and track their shipment through three separate channels:

1) Telephone: Customers may call a toll-free number to access the Interactive Voice Response ("IVR") system, which provides prompts to facilitate the ordering process. The IVR is designed to handle request for both English and Spanish-speaking customers. Customers may easily validate their account, determine their eligibility and order their LEDs over the phone.

2) The Company's Web Site: Customers can go online to order LEDs. Eligibility requirements and frequently asked questions are also available.

3) Online Services ("OLS"): Customers enrolled in the Company's Online Services may order LEDs through the Company's web site, if they are eligible.

Specialty Lighting

The Duke Energy Savings Store ("Store") is an extension of the on-demand ordering platform enabling eligible customers to purchase specialty bulbs and have them shipped directly to their homes. The Store launched on April 26, 2013 and offers a variety Light Emitting Diodes lamps ("LEDs") including; Reflectors, Globes, Candelabra, 3-Way, Dimmable and A-Line type bulbs. The incentive levels vary by bulb type and the customer pays the difference. Various shipping promotions are run throughout the year, ranging from free to a reduced flat rate price.

The maximum number of incented bulbs eligible by the Company is 36 per account. However, customers may choose to order additional bulbs but will not receive the Company offered incentive.

Customers can check eligibility and shop for specialty bulbs through four separate channels:

1) The Company Web Site: Customers can access the store via the program's webpage on DukeEnergy.com . By clicking the 'shop now' button customers are then taken to the store where they can purchase specialty bulbs. Frequently asked questions are available to help customers learn more about the program and how sustainable they can be by purchasing and using LED lighting.
2) Online Services: Customers enrolled in the Company's Online Services may visit the Store and purchase specialty bulbs. Upon login, eligible customers are intercepted with the Store offer. Customers can select "Shop Now" or "No Thanks". Additional links and promos within OLS are also available for customers to access the Store.
3) Phone Ordering: Customers are provided with the opportunity to order by phone. A toll free phone number is now provided on all promotional pieces for the program and customers can place their orders over the phone directly with the programs third party vendor.
4) On occasion, Duke Energy provides customers with a mail-in option for placing an order. Customers who receive a direct mail campaign that offer specially priced bulb bundles the option to order these bundles online, by phone or with a postage paid return mailer included in the piece.

The Store is managed by a third party vendor, Energy Federation Inc. ("EFI"). EFI is responsible for maintaining the Store website, fulfilling all customer purchases, program call center support and product recommends. The Store's landing page provides information about the store, lighting products, account information, and order history. Support features include a toll free number, package tracking, and frequently asked questions.

An educational tool is available to help customers with their purchase decisions. The interactive tool provides information on bulb types, application types, savings calculator, lighting benefits, understanding watts versus lumens (includes a video) and recycling/safety tips. Each wireframe within the educational tool provides insight on the types of bulbs customers can purchase and/or provides answers to questions they have about the products or savings.

Product pages for each bulb category include application photos, product images, product specifications, purchase limits, and program pricing. Customers may place items in their shopping carts to purchase at a later time. Customers can pay for their purchase with a credit card or by check.

Benefits of the four distinct channels for the Savings Store include:

- Improved customer experience
- Advanced inventory management
- Simplified program coordination
- Enhanced reporting
- Increased program participation
- Reduced program costs
- Quick and convenient
- Discounted pricing

Retail Lighting

Energy Efficient Appliances and Devices

The Retail Lighting Program launched in March of 2016 with the goal of reducing electric energy consumption and peak demand through increased awareness and adoption of energy-efficient lighting technologies. The program partners with retailers and manufacturers across North and South Carolina to provide price markdowns on customer purchases of efficient lighting. Product mix includes Energy Star rated standard, reflector, and specialty LEDs, and fixtures. Participating retailers include a variety of channel types, including Big Box, DIY, Club, and Discount stores.

The program promotes customer awareness and purchase of program-discounted products through a range of marketing and outreach strategies, including in-store collateral and events, bill inserts, direct mail and email marketing, mass media advertising, online advertising, and community events. The program also provides training to store staff to enable better customer education at the point of purchase. Customer education is imperative to ensure customers are purchasing the right bulb for the application in order to obtain high satisfaction with lighting products and subsequent purchases.

Water Measures

The Save Energy and Water Kit Program ("SEWK") launched in 2014. The Program is designed to increase the energy efficiency of residential customers by offering customers energy efficient water fixtures and insulating pipe tape for use within their homes.

The SEWK program is offered through a selective eligibility process, enabling eligible customers to request a kit and have it shipped directly to their homes. Customers owning and living in a single-family home with an electric water heater who have not received similar measures through another Company-offered energy efficiency program are eligible for the program. Kits are available in two sizes for homes with one or more full bathrooms and contain varying quantities of shower heads, bathroom aerators, kitchen aerator and insulating pipe tape. Program participants are eligible for one kit shipped free of charge to their home.

Customers are pre-screened based on the eligibility requirements and mailed a business reply card (BRC). Customers may choose to return the BRC or call a toll-free number to take advantage of the offer. Upon receiving the BRC from the customer or receiving a telephone redemption, Energy Federation Inc (EFI), the program vendor, will ship the eligible kit to the customer. Due to the unique eligibility requirements of this program, BRCs have been the only channel employed to offer the kits to customers. The Company will add direct email offers in 1Q2018. Customers receiving the direct email offer will be subject to the same eligibility requirements.

High Efficiency Pool Pumps

The High Efficiency Pool Pumps measure ("Pool Energy Efficiency Program") is designed to encourage the purchase and installation of energy efficient variable speed pool pumps for residential in-ground swimming pools. Eligible customers receive an incentive of $300 for the replacement of an eligible single-speed pool pump with a new Energy Star certified variable speed pump. New swimming pool construction is also eligible for the rebate. The program is marketed through a network of participating contractors ("Trade Allies") that interface directly with the customer, as well as through various marketing channels such as direct mail, email, company website, bill inserts and other customer communications. Eligible customers include single-family, owner-occupied residential customers with an in-ground pool in the Duke Energy Carolinas service territory. Builders of single-family residences are eligible for new residence construction that includes an in-ground swimming pool. In late 2017 this measure was moved to the Residential Smart $aver® Energy Efficiency Program (previously known as HVAC EE).

High Efficiency Heat Pump Water Heater

Energy Efficient Appliances and Devices

The High Efficiency Heat Pump Water Heater measure is designed to encourage the installation and adoption of heat pump water heaters. Eligible customers receive an incentive of $350 for the replacement of an existing electric water heater with an Energy Star certified heat pump water heater having an Energy Factor ("EF") rating of 2.0 or higher. The program is marketed through a network of participating contractors ("Trade Allies") that interface directly with the customer, as well as through various marketing channels such as direct mail, email, company website, bill inserts and other customer communications. Eligible customers include single-family, owner-occupied residential customers with electric water heating in the Duke Energy Carolinas service territory. Builders of single-family residences that include an eligible heat pump water heater are also eligible for the rebate. In late 2017 this measure was moved to the Residential Smart $aver® Energy Efficiency Program (previously known as HVAC EE).

Audience
Customers who meet the Program eligibility requirements.

B &C. Impacts, Participants and Expenses

Energy Efficient Appliances and Devices[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$46.6	$106.3	228%
Program Cost	$16.7	$30.3	182%
MW	8.1	23.9	293%
MWH	63,591.5	141,300.1	222%
Units	2,544,764	6,734,133	265%

1) Values are reflected at the system level.
2) Numbers rounded.

D. Qualitative Analysis

Free LED Program

Highlights
Beginning March 18th 2017, the Free LED offer was made available to eligible customers who met or exceeded the 15 bulb limit (CFL or LED) and 5 years has passed since their shipment date. At the time of launch, over 500,000 additional customers immediately became eligible to participate with the ability to order up to 12 bulbs depending on the date and quantity of past orders. As each day goes by, more customers will become eligible based on meeting the 5 year anniversary of their previous order date if that order consisted of at least 6 free bulbs. In 2017, this newly eligible customer segment accounted for 143,482 orders equating to 1,635,582 bulbs. Overall, , the program has experienced 293,494 orders resulting in 3,673,184 bulbs.

From an order channel perspective, 66% of the orders were placed through OLS (Online Services). The IVR accounted for 7% of orders and public website had 27%.

Issues
Analyzing customer data and finding ways to effectively market to non-participating customers.

Potential Changes
There are no anticipated changes at this time for the program. .

Specialty Lighting

Highlights

Energy Efficient Appliances and Devices

The Online Savings Store provides an ecommerce platform that allows customers to purchase LEDs on demand, at any time. Over 34,600 orders were placed January 1 through December 31 2017 resulting in over 414,000 bulbs being delivered. Over 84 percent of customers accessed the Online Savings Store via the public website, while 16 percent accessed the Online Savings Store by logging into their on-line services account.

Issues
Educating and bringing awareness of the Store to eligible customers, while providing expanded product offerings that meet customers energy efficient needs from a holistic perspective.

Potential Changes
Introduction of more LED's and non-lighting products to provide variety to the product mix are potential changes for 2018. Additionally, refreshing the stores appearance to be more inviting and easier to navigate –overall improving the shopping experience, are being planned for 2018.

Retail Lighting

Highlights
In 2017, the program moved a total of 2,107,057 measures, including 1,705,231 LEDs and 401,826 Fixtures.

The DEC Energy Efficiency Program had 8 lighting retail channels actively participating in 2017. While the top three retail channels account for 71% of the program sales, all retail channels are considered important in that they allow access to the program for a widely diverse and geographically spread population of DEC customers. This assures that the Program reaches 90% of customers within 30 miles of a participating retail location.

The Program is operating efficiently with 64% of overall Program costs going directly to customers in the form of incentives. 99% of the remaining Program costs are spent on implementation and administration of the Program, including incentives and management fees. Only 1% of these costs are spent on marketing, labor and other costs.

Issues
No issues at this time.

Potential Changes
No changes at this time.

Save Energy and Water Kit Program

Highlights
The Save Energy and Water Kit ("Program") was launched in April 2014. In 2017, 427,850 business reply cards (BRCs) were mailed resulting in the distribution of over 629,000 measures.

Issues
The Company continues to analyze data from non-respondents of the BRC offer to identify opportunities to increase the adoption rate. The Company also continues to review customer satisfaction surveys to

identify opportunities to improve in service rates and overall customer satisfaction. Currently, customers lack the ability to customize the measures offered in the kit to receive different form factors, upgraded items or additional quantities. [Ldg1]EM&V data shows a higher percentage of gas water heater customers participated in the program than expected.

Potential Changes

In 4Q 2017, the electric water heater propensity model was updated to reduce participation by customers with gas water heaters. In 2018, the program will expand an online ordering option that will allow customers to redeem the offer online. As a part of this launch, the Company will begin using direct email to reach market segments that are more prone to interact and do business online. The program will add other energy efficient water saving products to the online ordering platform that will allow customers to upgrade the products offered through the program and pay the difference during check out.

High Efficiency Pool Pumps

Highlights

The Company partnered with several wholesale distributers across North Carolina and South Carolina to serve as distribution channels for program awareness and developing the Trade Ally Network. Trade Allies are important to the program's success and continue to be targeted through these channels because they interface with the customer during the decision-making process. Several training classes were conducted throughout the jurisdiction to continue educating the trade allies on the advanced technology variable speed offers for reducing energy consumption as well as how to sell the technology to the end user.

Issues

Customer buy-in and participation of the Trade Ally network is vital to the success of the program. Educating contractors on new emerging technologies and the value the technologies provide customers is critical in growing the trade ally network and their willingness to adopt the program. Additionally many distributers are requesting POS rebates as they do not want to deal with submitting rebates or handling the additional paper work requirements for the Program. The Company is currently working to determine if a technology build can be put in place to accommodate distributor needs and boost participation.

High Efficiency Heat Pump Water Heater

Highlights

The Company has partnered with manufactures and national retailer such as General Electric and Lowes to increased program awareness and maximized in store purchases. The program continued recruiting plumbing contractors and currently registered HVAC companies to increase coverage across the jurisdictions and maximize participation. Training classes were conducted throughout the jurisdiction to continue educating the trade allies on the advanced technology offers for reducing energy consumption as well as how to sell the technology to the end user vs. traditional electric hot water heaters.

Issues

Educating and bringing awareness of the program to both customers and potential contractors has been challenging. Educating contractors has been addressed through additional Trade Ally marketing, recruitment and training but remained slow do to the re-emerging technology of heat pump water heaters and willingness to adopt more technical services. Customer awareness is being addressed through program design and marketing tactics but will be primarily targeted as a joint effort with manufactures and national retailers. Their willingness to continue co-branding and the frequency of those campaigns will be

critical in reaching our customer base. In addition, GE announced in Q4 2016 that they would stop production of the GEO-Spring HPWH by the end of 2016 which carried a significant percentage of the market share. The Program is now working with AO Smith to continue maximizing in-store retail purchases.

- **Marketing Strategy**

Free LED Program
The overall strategy of the program is to reach residential customers who have not adopted LED lighting. The Company will continue to educate customers on the benefits of LEDs while addressing barriers for customers who have not participated in the program. Additionally, the ease of Program participation will also be highlighted to encourage use of the on-demand ordering platform. The Free LED and Specialty Lighting offers utilize the same ordering platform which allows the Company to promote both lighting offers efficiently and bring awareness to non-adopters.

From an outreach standpoint, the program does rely on our OLS (Online Services) Intercept to generate interest in the program. This is a pop up that launches as a customer logs into OLS to pay their bill or view account information. At that time, a customer can click “continue” to take them to the Free LED ordering page. In 2017, approximately 58% of orders came as a result of this intercept.

In addition to the intercept, the program also solicited customers via emails and direct mail pieces. From an email perspective, over the course of 6 separate campaigns, the program targeted over 177,000 customers resulting in a take rate of about 16%. In regards to direct mail, approximately 134,000 customers were targeted over the course of 3 separate campaigns. These also generated a response rate close to 16%.

A sample of program collateral and emails (which cross promote Specialty Lighting) are available in the Appendix.

Specialty Lighting
Since the launch of the Store, the marketing efforts include:

- bill messages,
- bill inserts,
- email campaigns
- And direct mail.

Examples of the marketing pieces can be found in the Appendix. Awareness and education will continue to be a focus in collateral messages to eligible customers, as well as highlighting great pricing and other promotional offering i.e.: free shipping.

Retail Lighting

The program’s marketing efforts for 2016 included:

- Point of Purchase materials at the participating retailer locations
- Duke Energy and Program website
- General Awareness Campaigns

  - Bill Inserts
  - Email
  - Online Advertising
  - Paid advertising/mass media
  - Out of Home advertising

- Advertised events at key retailers including:
  - Direct mail
  - Email
  - Paid advertising/mass media (radio, newspaper, etc.)
  - Social media
  - In Store materials (fliers, bag stuffers, posters, banners, etc.)
- Community outreach events (home shows, sporting events, cultural events, etc.)

These marketing efforts are designed to create customer awareness of the Program, to educate customers on energy saving opportunities and to emphasize the convenience of Program participation. Additionally, marketing efforts related to advertised in-store events are designed to motivate customer participation.

Save Energy and Water Kit Program

The overall strategy of the program is to reach residential customers who have not adopted low flow water devices. The Company will continue to educate customers on the benefits of low flow water devices while addressing barriers for consumers who have not participated in the program.

Direct mail marketing in the form of BRCs is the current marketing channel being utilized by this program in the Carolinas. The Company will add direct email to select market segments throughout 2018..

High Efficiency Pool Pumps

The Company implemented several customer marketing campaigns in 2016 which leveraged channels such as email, paid search, display ads, direct mail and social media to build awareness of the program. Other channels such as co-branded retail displays with selected distributers were utilized to create awareness for the program. The programs' messaging was built around the benefits of the product including payback, annual savings and cleaner pools.

High Energy Efficiency Heat Pump Water Heater

The Company implemented several customer marketing campaigns in 2016 which leveraged channels such as bill inserts, paid search, and display ads to build awareness of the program. Other channels such as co-branded retail displays with selected manufactures and national retailers were utilized to create awareness for the program.

- **Evaluation, Measurement and Verification**

Residential Lighting/Heat Pump Water Heaters/Pool Pump/Save Energy & Water

Energy Efficient Appliances and Devices

The DEC Free LED evaluation work was completed at the end of 2017. Evaluation activities included a process and impact evaluation. The verified gross energy impact per bulb was 31.4 kWh with program realization rates of 112% for energy, 127% for summer peak and 171% for winter peak. Program net to gross for the program was 50%.

For the Retail Lighting evaluation, the combined DEC/DEP process and impact report is scheduled for completion in first quarter of 2018. Both evaluations will consist of engineering estimates of the measures provided in the kits or in retail channels. The DEC Specialty Lighting process and impact evaluation is currently underway and is scheduled for completion in the third quarter of 2018.

Evaluation work for the combined DEC/DEP Water Measures program began in the first quarter of 2017, with the final report delivered in the fourth quarter of 2017. Evaluation activities used a combination of participant surveys and engineering methods to quantify energy, summer, and winter demand impacts from the measures provided in the Water Measures kit. Participant surveys helped inform in-service rates, satisfaction with the kit measures, and help determine free ridership and spillover. Verified results include gross energy savings per kit of 279.6 kWh versus ex-ante impacts of 595.2 kWh, for an energy realization rate of 47%. Program free ridership was 17% and spillover was estimated at 10%, for a NTG of 93.%.

Lastly, evaluation activities for the heat pump water heaters and pool pump measures is included in the DEC Smart $aver HVAC program evaluation which is scheduled to be completed in the first quarter of 2018.

Energy Efficient Appliances and Devices

- **Appendix**

Free LED Program – Direct Mail New Customer Letter:

DUKE ENERGY.

<<Mr. Sample A. Sample>>
<<Mailing Address Line 1>>
<<Mailing Address Line 2>>
<<Anytown, USA 12345>>

Welcome to Duke Energy!

As your new energy provider, we're always looking for ways to help you save money and energy. Energy-efficient lighting is a great way to do both.

We'd like to start you on the right foot and, as a welcome, offer you a **FREE BOX OF LED BULBS**. You'll get general purpose ENERGY STAR® certified 9-watt bulbs for your home.

YOUR FREE LEDS:

- **Use up to 90% less energy** and **last 25 times longer** than incandescent bulbs
- Contain **no mercury**
- Have a potential **lifetime savings** of up to $206 per bulb

Order your **FREE BULBS** now.

Visit **duke-energy.com/FreeLEDBulbs** or call **800.943.7585.**

Here's your account number to make ordering even easier:
<<account number here>>

SHOP MORE. SAVE MORE.

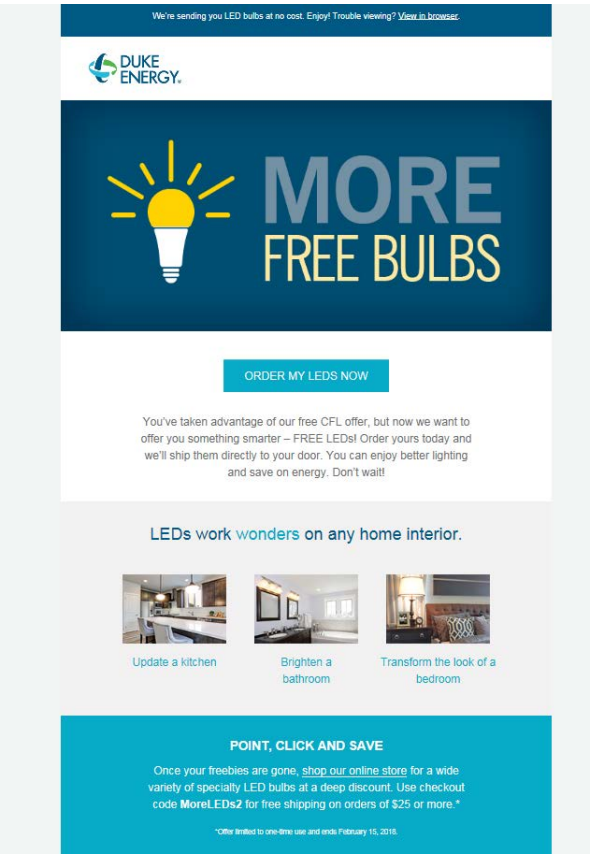
Once your freebies are gone, our online store offers a wide variety of name-brand, energy-saving bulbs at a discount. We offer specialty bulbs for every room in your house, and we'll have them shipped to your door.

Shop now at: duke-energy.com/OnlineStore

We offer free shipping on orders of $25 or more. Use code Duke103 at checkout. Free shipping offer ends 12/15/2016.

Free LED Program – Email Campaign:

Energy Efficient Appliances and Devices



Free LED Program – Direct Mail Campaign

Energy Efficient Appliances and Devices

APPLIANCE RECYCLING PROGRAM

Free removal of your extra fridge. Easy. Convenient. Plus get $50.

- Contact us to schedule your free home pickup
- We'll come get your fridge when it's good for you
- You'll get a **$50** check and save up to **$150 a year** in energy costs

Schedule your free pickup today. Call **855.398.6200** or visit **duke-energy.com/save**.

For more information and eligibility please visit duke-energy.com/save.

ONLINE SAVINGS STORE

Stop paying retail prices for your energy-saving light bulbs. Shop online.

- Enjoy up to **92 percent** off retail prices
- Huge selection of energy-saving CFL and LED bulbs delivered to your door
- Free shipping on orders over $25 through May 31, 2016. Use promotion code **Duke315**

Visit **duke-energy.com/BigSavings** and start saving money today.

DUKE ENERGY.

It's March **Savings** Madness!

ways we can help you score more than $1,000.

Order + Install = **SAVE** up to $120 each year

Would you like to save energy and water at home – and save money on your utility bills? It's simple! **Just sign up to receive one of the FREE Save Energy And Water Kits** we're offering exclusively to our customers.

These kits include the latest low-flow showerheads, kitchen and bathroom faucet aerators, water heater pipe insulation materials and a step-by-step, detailed installation guide.

Did you know that your electric water heater is the second-largest energy expense in your home?

Only heating and cooling uses more energy. Your water heater can account for 18 percent of your monthly energy bill. So, it only makes sense that if you save water, you save the energy it takes to heat that water.

See how easy it is to install these products with our brief installation videos at **duke-energy.com/savewater**.

Inside the Save Energy and Water Kit

Low-flow showerheads
If your showerhead is several years old, you could save as much as two gallons of water each minute, or more, by replacing it with one of our low-flow models.

Faucet aerators
Faucet aerators mix air with water to reduce the amount of water used while maintaining a satisfactory water pressure.

Insulation tape for your water heater pipes
The energy needed to heat water can represent a large portion of your monthly energy bill. Wrapping your water heater pipes is a simple way to help maintain water temperature in your home and save you nearly 17 percent on your monthly bill.

Installation guide and how-to video
Your kit also includes a detailed, step-by-step instructional guide to help you complete the installation of your new fixtures.

To learn more about this new program, or the kit, visit **duke-energy.com/savewater** or call **866.807.1544**.

YES, send me my **FREE** Save Energy and Water Kit!

I confirm that my residence has an electric water heater, and that its location corresponds with my Duke Energy account on record. I will install my new fixtures at this residence only.

DUKE ENERGY.

BUSINESS REPLY MAIL

DUKE ENERGY.

Stop rinsing money down the drain!
Get a FREE Save Energy and Water Kit delivered to your door.
Simply return the attached reply card.

DUKE ENERGY.

FREE
Save Energy and Water Kit
delivered to your door.

Lower your monthly energy bills, and get new kitchen and bathroom fixtures from Duke Energy.

Energy Efficient Appliances and Devices

Help the planet. Help your wallet.

Water and energy are precious resources. And now we've made it possible for you to save water every time you turn on the faucet or take a shower.

Our FREE state-of-the-art showerheads offer consistent water flow and help ensure a great shower experience. And the fixtures help you save on your bill and conserve water.

Make the switch with our Save Energy and Water Kit today.

Save Energy and Water Kits are available to qualifying Duke Energy Carolinas, Duke Energy Progress, Duke Energy Indiana, Duke Energy Kentucky and Duke Energy Ohio customers.

Inside your FREE kit:

State-of-the-art showerheads
Newest, top-of-the-line showerheads can help you save up to 2 gallons per minute while maintaining water pressure and your comfort.

Faucet aerators
Mixing air with water reduces the amount of water needed. The aerator also maintains constant and satisfactory water pressure.

Pipe insulation tape
Wrapping your water heater pipes is a simple way to manage water temperature in your home and saves you nearly 17 percent on your energy bill.

Installation guide and how-to video
Your kit includes a detailed, step-by-step instructional guide to help you complete the installation of your new fixtures.

To learn more about our program, visit duke-energy.com/SaveWater or call 866.807.1544.

☐ YES, send me my **FREE** Save Energy and Water Kit!

DUKE ENERGY.

Energy Efficient Appliances and Devices

You'll feel good knowing you've helped the planet too.

Water and energy are precious resources. And now we've made it possible for you to save water and still enjoy your shower experience.

Our **FREE state-of-the-art showerheads** offer consistent water flow and help ensure a great shower experience. And the fixtures help you save on your bill and conserve water.

Make the switch with our Save Energy and Water Kit today.

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Your kit includes a detailed, step-by-step instructional guide to help you complete the installation of your new fixtures.

To learn more about our program, visit **duke-energy.com/SaveWater** or call **866.807.1544**.

☐ YES, send me my **FREE** Save Energy and Water Kit!

I confirm that my residence has an electric water heater and that its location corresponds with my Duke Energy account on record. I will install my new fixtures at this residence only.

The barcode above is embedded with your address and account information. This system ensures your privacy and allows us to process your order quickly by scanning the barcode.

DUKE ENERGY.

Energy Efficient Appliances and Devices

The items included in this kit combine the best energy efficiency with the best performance. These devices save more energy and water than most of the low-flow devices on the market today.

In your kit, you've received:

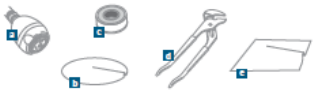
- Low-flow showerhead(s)
- Water heater pipe insulation tape
- Faucet caps with aerators for the bathroom
- Rubber easy-grip cloth
- Adjustable faucet cap with aerator for the kitchen
- Roll of pipe thread sealing tape

The following instructions will help you install these items in your home. Watch our how-to installation videos online at duke-energy.com/savewater. Then, **let the savings begin!**

Showerhead Installation

What you'll need:

a. Low-flow showerhead(s)
b. Rubber easy-grip cloth
c. Pipe thread sealing tape
d. Pliers (optional)
e. Rag



1. Remove your existing showerhead.

- Wrap the rubber easy-grip cloth around the base of your showerhead where it is attached to the shower arm.
- Turn the showerhead counterclockwise (left) to loosen.
- If the showerhead is difficult to loosen, you may need to use adjustable pliers to help remove it. Before using any tools, wrap the easy-grip cloth around the fixture to protect it from the teeth of the vise-grip or pliers during removal.

2. Apply pipe thread sealing tape.

- Once your existing showerhead is removed, wipe the pipe threads with a clean, dry cloth to remove any excess moisture.
- Stretch two layers of the white pipe thread sealing tape provided across the threads to cover them. Then cut the tape off the roll. This tape is used to seal the pipe connection and lubricate the threads for easy assembly.

3. Install your new low-flow showerhead.

- Hold the base of your new showerhead with the rubber easy-grip cloth and twist it onto the threaded area of the shower arm in a clockwise direction (right).
- You may tighten the showerhead with the rubber easy-grip cloth too, if necessary, to prevent any leaks.

4. Test your showerhead.

- Turn on the water to test your new showerhead. Look closely at the connection between the shower arm and the base showerhead collar to see if there is any water leaking.
- If the showerhead is leaking, tighten the base collar with pliers.

5. Adjusting the water flow mode.

- Your new low-flow showerhead is equipped with two different modes: massage and pulsating. You can change the modes by twisting the outer ring in both directions until you create the desired water flow.
- If you turn the outer ring all the way to the right, the water will be in massage mode. If you turn it all the way to the left, it is in full spray mode.

Troubleshooting tips:
If you have followed the installation instructions and you still find water leakage, there are three common sources of water leaks:

a. Your pipe threads are not taped properly. Please be sure to use two layers of the provided tape to ensure the seal is tight.

b. If your tape is applied correctly and the showerhead is still leaking, then your showerhead is cross-threaded. Unscrew and reinstall it, making sure you are lining up the threads.

c. In some cases, your showerhead may not be properly tightened. Please wrap the easy-grip cloth around your new fixture to protect it, and then use pliers over the cloth to ensure a fully tight connection between your shower arm and your new showerhead.

Try these troubleshooting tips before calling Energy Federation Inc. (EFI) customer service at 866.807.1544.

Faucet Aerator Installation
(for both kitchen and bathroom)

What you'll need:

a. Faucet caps with aerators*
b. Rubber easy-grip cloth
c. Pliers (optional)

* If you experience trouble installing the kitchen aerator or it does not fit, call 866.807.1544. We will ship you a free adapter.

1. Remove your existing faucet cap.

- Using the rubber easy-grip cloth, unscrew your faucet cap in a counterclockwise (left) direction.
- Your faucet arm will have threads on the inside (female) or threads on the outside (male). If your faucet arm has female threads, use the male rubber washer to align and install your new faucet cap and aerator. If your faucet arm has male threads, use the female rubber washer provided.

2. Install your new faucet cap with aerator.

- Install the new faucet cap by aligning the threads on the inside of the faucet arm with the exterior threads of the new cap.
- Gently screw in the faucet cap in a clockwise (right) direction until it is firmly connected. Tighten it fully with the rubber easy-grip cloth provided.

Energy Efficient Appliances and Devices

3. Install your new tri-flow faucet cap in your kitchen or wherever you'd like variable water flow.

- Align the threads on the inside of your faucet arm with the exterior threads of the new cap and gently screw the faucet cap into the faucet in a clockwise (right) direction until it is firm.
- You can use the dial on this aerator to adjust the flow of water at three different rates: from .5 to 1 to 1.5 gallons per minute (gpm). You could use the lowest setting for hand washing, the middle setting for washing dishes and the highest setting for filling pots or the sink.

4. Test your new aerator(s).

- Turn on your faucet and test the flow of your new aerator. While the water is flowing, look closely for any leaks at the threads.
- If you notice a leak or spray, tighten the cap with the rubber easy-grip cloth.
- If you installed the tri-flow cap, turn the black dial to the left or right while the water is running to understand how you can adjust the water flow to save water and energy.

Troubleshooting tips:
If you have followed the installation instructions and have trouble installing the aerator or still find water leakage, here are some easy solutions:

a. Make sure the existing washer from your faucet is removed. It might have gotten stuck inside your faucet after you removed your aerator. If so, feel inside the pipe with your finger to remove the existing washer.

b. Ensure your faucet caps and faucet arms are not cross-threaded. Remove the aerator and reinstall it, making sure you align the threads.

c. In some cases, your faucet cap(s) may not be properly tightened. Make sure the new caps are fully screwed into the faucet.

Please try these troubleshooting tips before calling EFI customer service at 866.807.1544.

Water Heater Pipe Wrap Insulation Tape Installation

Why is conserving energy used to heat your water important?

The energy needed to heat water can represent a large portion of your monthly energy bill. Wrapping your hot water pipes is a simple way to manage water temperature in your home and save on your energy bill.

What you'll need:

a. Insulation sealing tape
b. Scissors (not included)

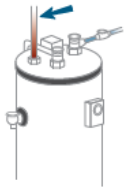
One roll contains 15 feet of tape. The length of pipe you will be able to cover will depend on the diameter of the pipe and the precision with which the insulation tape is installed.

1. Locate the hot water pipe for your water heater.

- Locate the hot water pipe that extends out of the top or side of your water heater. **Caution**: The hot water pipe will be very warm to the touch. Note the length of that pipe where it leads out of the electric water heater and up into the subfloor or walls of your home.

2. Wrap your pipe with the tape.

- First, make sure the pipe is both clean and dry.
- Then, carefully wrap the tape fully around the exposed length of the pipe – making sure that the edges of the tape meet each time you wrap it around the pipe. It's important to not leave any of the pipe exposed to ensure maximum insulation and energy savings.



- This type of insulation can be applied to pipes of any size or shape, and you can wrap it around your pipe valves and bends, as well as the pipe itself.
- If you need more insulation tape than what was provided in your kit, you can purchase an additional roll at your local home improvement store.

Maintaining Your Money-Saving Showerheads and Aerators

Sometimes faucet aerators can become clogged with small debris. If that happens, you can easily restore your water flow:

- Unscrew the tip of your faucet cap.
- Remove the aerator (it looks like a circular screen).
- Rinse it and place it back in the faucet cap.
- Screw the entire cap back onto the faucet.
- If the aerator appears corroded or worn, take it to your local home improvement store to purchase a new one.

If the water pressure from your low-flow showerhead has decreased, the holes in the showerhead are probably clogged with minerals from the water supply. To restore your water pressure:

- Wipe any dry debris from the holes with a scrubber sponge.
- Mix a solution of equal parts white vinegar and water (you'll need one cup of liquid total).
- Pour the solution into a plastic bag.
- Put the plastic bag around the showerhead so the holes are submerged in the liquid.
- Secure the bag to the shaft with a twist tie or rubber band and let it soak for 20 minutes.
- Remove the bag and wipe away loosened debris; run the shower on hot to flush the holes.

Learn more about water conservation measures and other bright ideas to help you save energy and money at duke-energy.com/savewater or email us at customerservice@efi.org.

View our installation videos online at duke-energy.com/savewater.

The Save Energy and Water Kit program is available to qualifying customers of all Duke Energy utilities, except in Duke Energy Florida.

DUKE ENERGY.

Save Energy and Water Kit

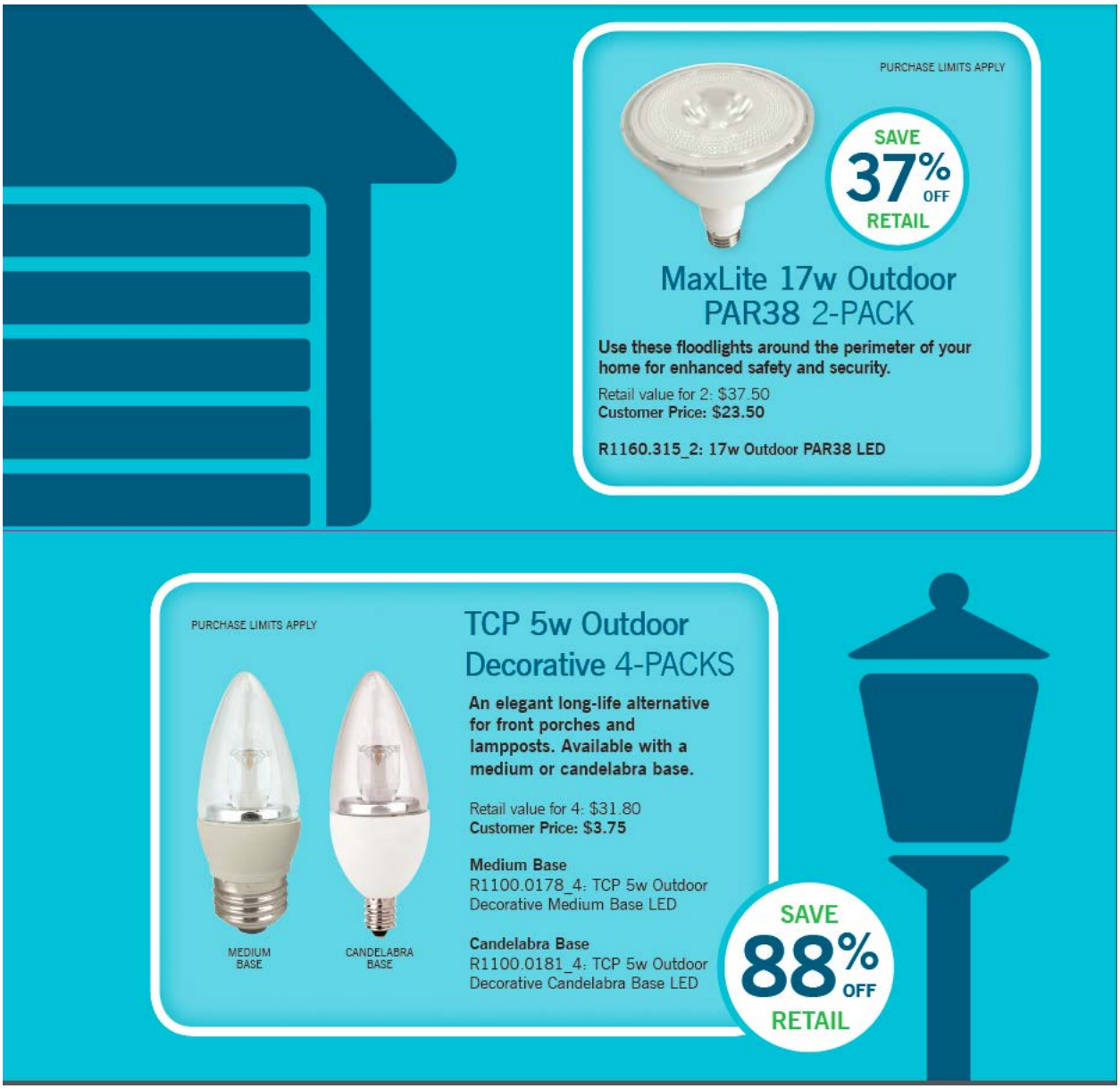
Installation guide

Energy Efficient Appliances and Devices

Online Savings Store

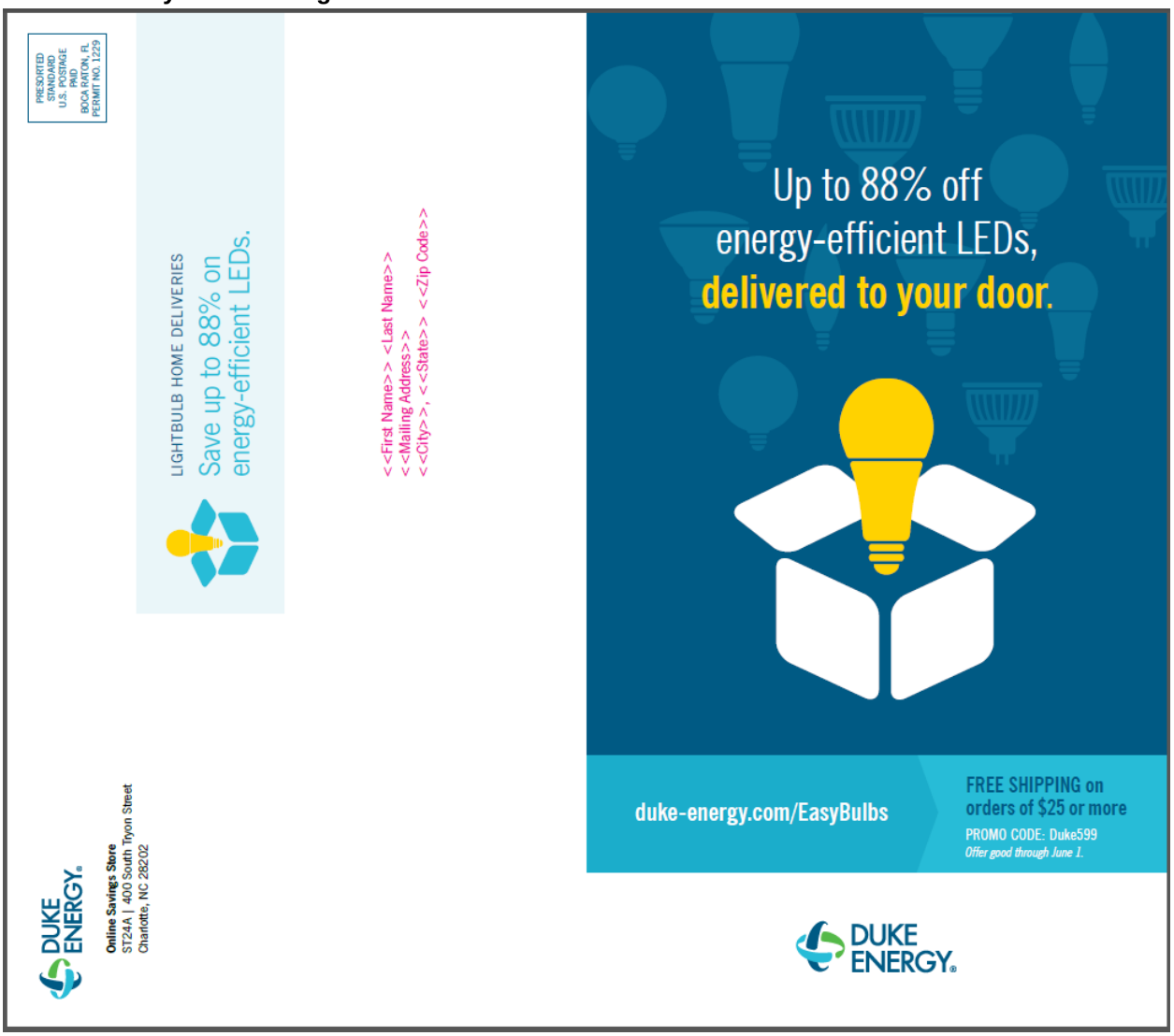
Outdoor Bundle–

Energy Efficient Appliances and Devices



Energy Efficient Appliances and Devices

Home Delivery Mini Catalog-



Energy Efficient Appliances and Devices

FIND THE RIGHT LIGHT FOR EVERY ROOM IN YOUR HOME.

1. Order your bulbs.
2. Install them.
3. Save today and every day.

With prices this low, it's simple to switch to energy-efficient lights – and to start saving on your monthly energy bill.
Order now while supplies last!

Visit **duke-energy.com/EasyBulbs** or call **866.849.9704** to order by phone.
Before placing your order, please have your account number or the account holder's phone number on hand.

Purchase limit of 36 bulbs per account.

Customer agrees to the Terms and Conditions when placing an order. Offer good while supplies last. The total limit per customer account, for all categories of bulbs, is 36 at the incented price. If you previously purchased from our Savings Store and are over that limit, you are ineligible to receive the deep discounts but may still purchase competitively priced bulbs through our online store. Duke Energy reserves the right to substitute bulbs with an equal or higher quality bulb. Products, prices, availability, specifications and offers are subject to change without notice. Duke Energy Savings Store is available for eligible Duke Energy residential customers in NC, SC, IN, OH and KY. Customers must log in to reach the online store using their Duke Energy account number or phone number and the last four digits of their Social Security number to authenticate their eligibility. Duke Energy, 400 South Tryon Street, Charlotte, NC 28202.

FREE SHIPPING on orders of $25 or more

PROMO CODE: Duke599
Offer good through June 1.

SEE EVEN MORE BULB DEALS AT duke-energy.com/EasyBulbs.

DECORATIVE
For chandeliers, bathroom vanity lighting and ceiling fans

(R1100.1315)
Philips LED Candelabra Base Flame Tip
Same as 40w, only uses: 4.5 watts
Retail: $8.97; **you pay: $1.97**

(R1100.1326)
Philips LED E12 Blunt Tip
Same as 25w, only uses: 3.5 watts
Retail: $7.97; **you pay: $0.97**

(R1100.0181)
TCP LED Torpedo Candelabra
Same as 40w, only uses: 5 watts
Retail: $7.97; **you pay: $0.97**

GENERAL PURPOSE
For reading lamps and overhead fixtures

(R1100.4074)
TCP A Lamp LED
Same as 40w, only uses: 7 watts
Retail: $4.97; **you pay: $1.97**

(R1100.1557)
Philips A Lamp LED
Same as 100w, only uses: 18 watts
Retail: $11.97; **you pay: $8.97**

(R1100.9312)
Philips A19 LED
Same as 40w, only uses: 6 watts
Retail: $5.50; **you pay: $2.50**

GLOBES
For pendants, bathroom vanity lighting and ceiling fans

(R1100.539)
TCP G25 LED
Same as 25w, only uses: 5 watts
Retail: $8.97; **you pay: $3.97**

(R1100.542)
Philips Globe LED
Same as 40w, only uses: 7 watts
Retail: $7.95; **you pay: $2.95**

3-WAY
For table lamps and floor lamps

(R1100.8283)
Philips A21 LED
40W/60W/100W, only uses: 5/8/18 watts
Retail: $13.97; **you pay: $6.97**

REFLECTORS
For recessed lighting, over-stove lighting and small lamps

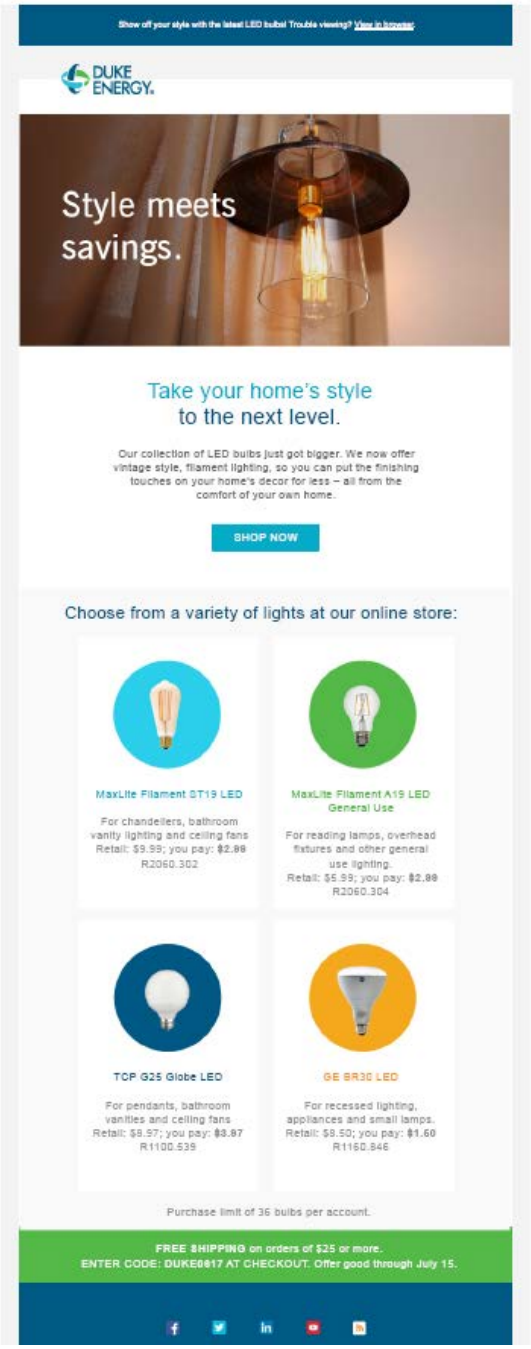
(R1160.315)
MaxLite PAR38 LED
Same as 90w, only uses: 17 watts
Retail: $19.97; **you pay: $12.97**

(R1160.846)
GE BR30 LED
Same as 65w, only uses: 10 watts
Retail: $8.50; **you pay: $1.50**

(R1160.9941)
TCP Downlight Module LED
Same as 60w, only uses: 11 watts
Retail: $13.95; **you pay: $6.95**

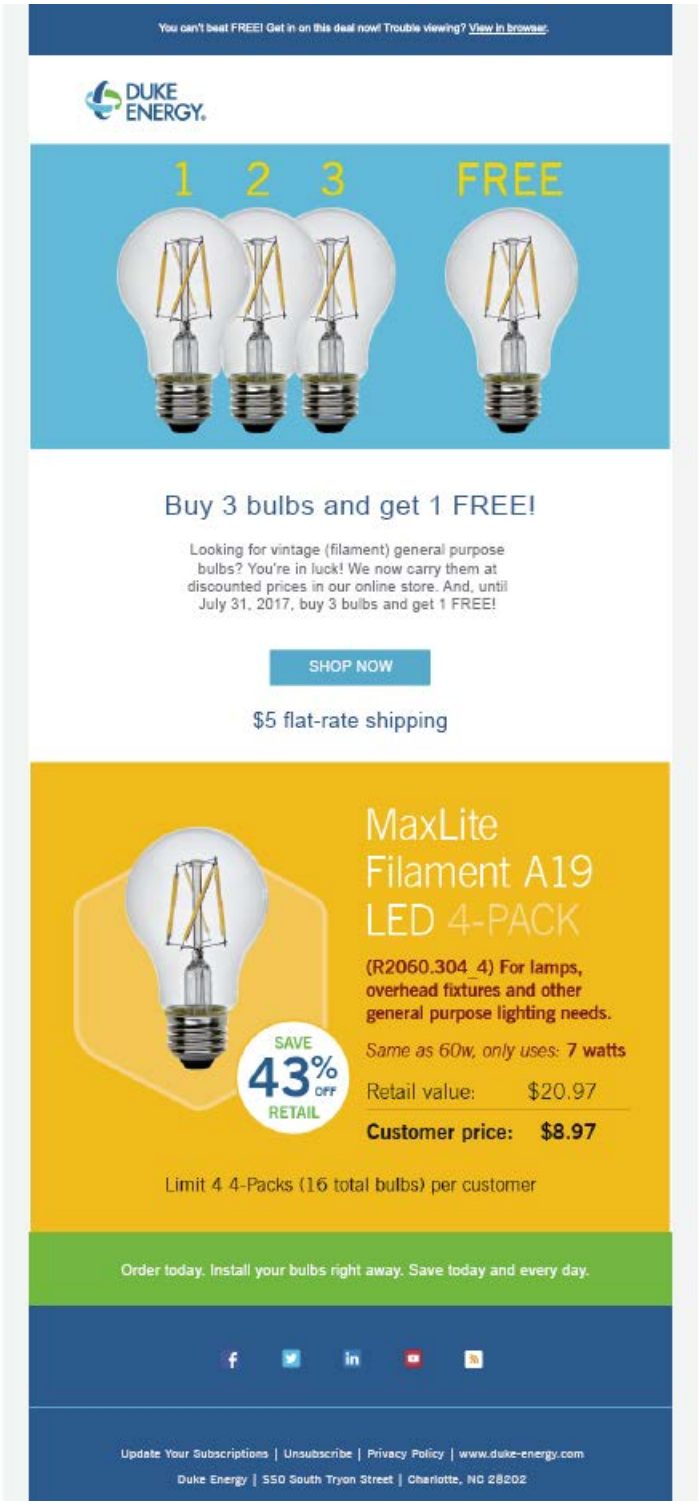
Energy Efficient Appliances and Devices

Style Meets Savings Mini Catalog-



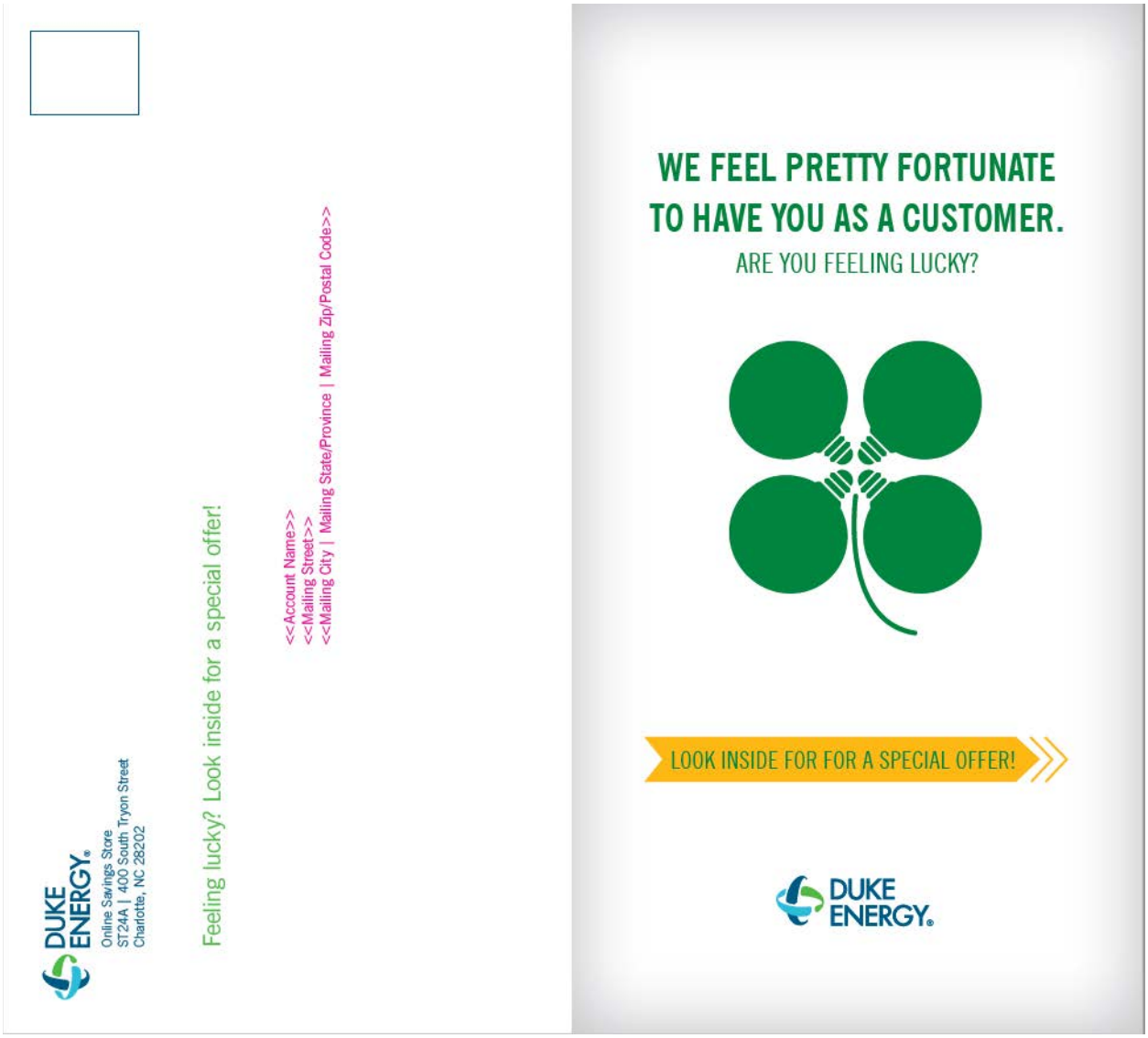
Energy Efficient Appliances and Devices

Buy 3, Get 1 Free Vintage Bulbs



Energy Efficient Appliances and Devices

Thank You Campaign



Energy Efficient Appliances and Devices

YOU'VE ONLY SCRATCHED THE SURFACE.

Thank you for shopping at our online store to find great deals on energy-efficient lighting. We appreciate your business and want to help you save even more, so we're giving you **a special offer on your next order**.

We're adding more bulbs all the time, so come back and see what else we have in store.

Order today and get FREE shipping.

Install your bulbs right away.

Save today and every day.

Customer agrees to the terms and conditions when placing an order. Offer good while supplies last. The total limit per customer account, for all categories of bulbs, is 36 at the incented price. Duke Energy reserves the right to substitute bulbs with an equal or higher quality bulb. Products, prices, availability, specifications and offers are subject to change without notice. Duke Energy Savings Store is available for eligible Duke Energy residential customers in NC, SC, IN, OH and KY. Customers must log in to reach the online store using their Duke Energy account number or phone number and the last four digits of their Social Security number to authenticate their eligibility. Duke Energy, 400 South Tryon Street, Charlotte, NC 28202.

SCRATCH TO SEE YOUR SPECIAL OFFER

WOAH! You get

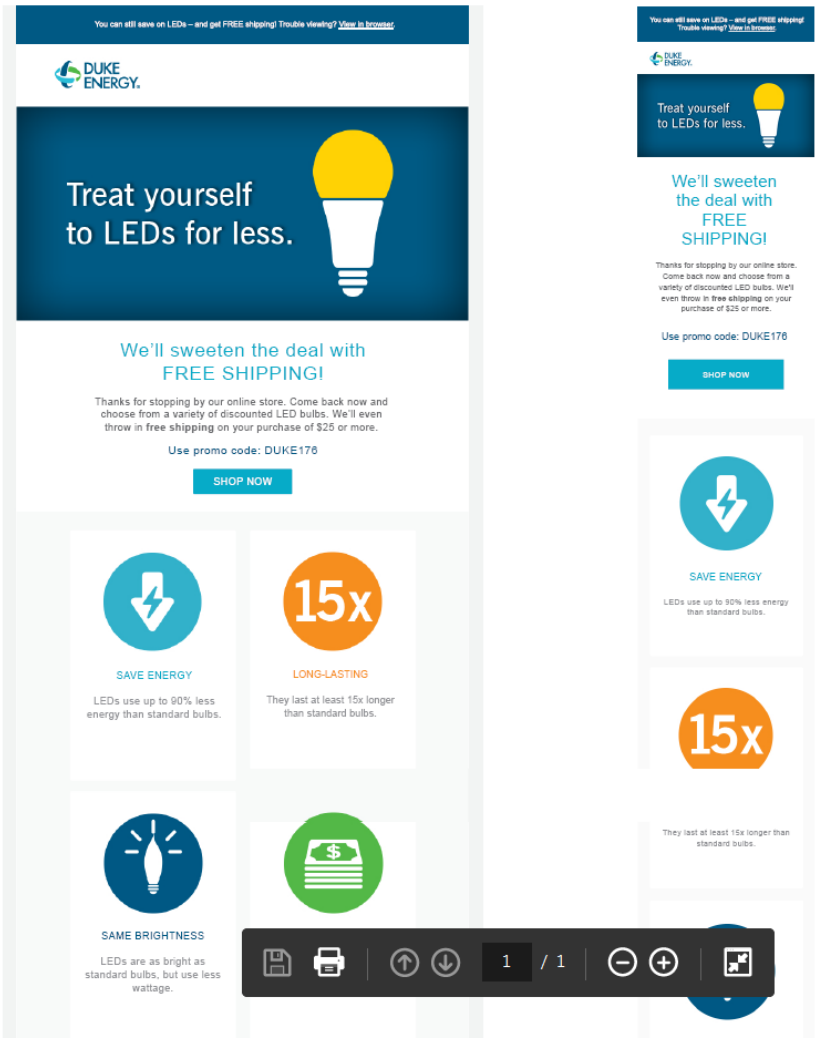
off your next purchase!

Just visit **duke-energy.com/LUCKYME** and enter promo code **ThankYou617** at checkout.

Hurry, this offer ends Aug. 31, 2017!

Energy Efficient Appliances and Devices

Intercept Enagement-



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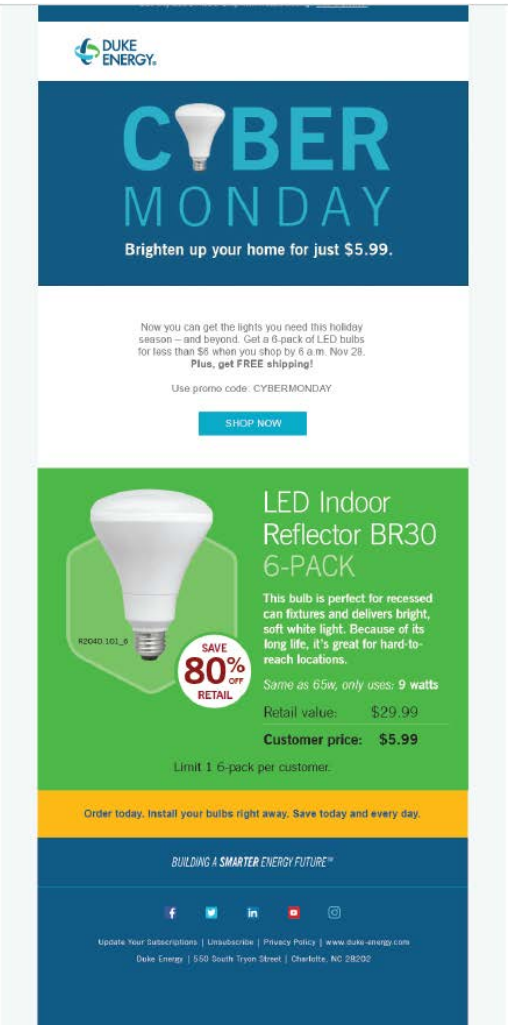
Cyber Monday-



Energy Efficient Appliances and Devices

Holiday Promotion-

Energy Efficient Appliances and Devices

High Efficiency Pool Pump Digital Ad

Energy Efficient Appliances and Devices

High Efficiency Pool Pumps Email

Pool costs sending you off the deep end?

We can help.

As a Duke Energy customer, you can get paid to improve your pool. Save up to $640* in the first year when you upgrade to a quieter, more efficient pool pump.

Install an ENERGY STAR® certified variable-speed pool pump:

- Get a $300 rebate
- Pays for itself in less than two years
- Saves you up to $340 each year in energy costs
- Makes your pool cleaner, with less maintenance

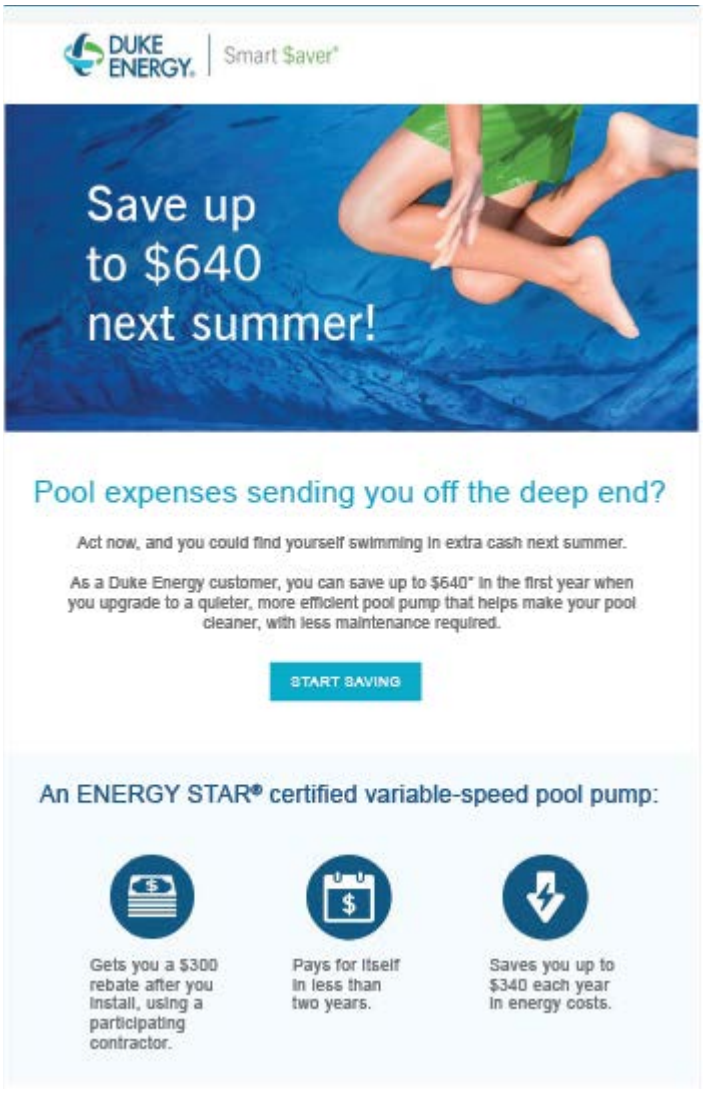
Call 866.785.6209 or visit **duke-energy.com/Splash** for eligibility requirements – and let the summertime savings begin.

*$300 rebate + $340 energy savings

DUKE ENERGY. | Smart $aver®

ST24A | 400 South Tryon Street
Charlotte, NC 28202

Energy Efficient Appliances and Devices



Energy Efficient Appliances and Devices

High Efficiency Heat Pump Water Heater National Retailer Display

Energy Efficient Appliances and Devices

High Efficiency Pool Pump Facebook Posting

High Efficiency Heat Pump Water Heater Digital Media

Energy Efficiency Education Program

A. Description

The Energy Efficiency Education Program ("Program") is an energy efficiency program offered in the Duke Energy Carolinas (the "Company" or "DEC") service territory. The Program is available to students in grades K-12 enrolled in public and private schools who reside in households served by the Company. The current curriculum administered by The National Theatre for Children ("NTC") targets K-8 grade students.

The Program provides principals and teachers with an innovative curriculum that educates students about energy, resources, how energy and resources are related, ways energy is wasted and how to be more energy efficient. The centerpiece of the curriculum is a live theatrical production performed by two professional actors focused on concepts such as energy, renewable fuels and energy efficiency. Teachers receive supportive educational material for classroom and student take home assignments. The workbooks, assignments and activities meet state curriculum requirements.

School principals are the main point of contact responsible for scheduling their school's performance at their convenience. Once the principal confirms the performance date and time, two weeks prior to the performance, all materials are delivered to the principal's attention for classroom and student distribution. Materials include school posters, teacher guides, and classroom and family activity books.

Students are encouraged to complete a home energy survey with their family (found in their classroom and family activity book, as well as online), to receive an Energy Efficiency Starter Kit. The kit contains specific energy efficiency measures to reduce home energy consumption. It is available at no cost to student households at participating schools.

Audience

Eligible participants include the Company's residential customers who reside in households served by Duke Energy Carolinas with school-age children enrolled in public and private schools.

B &C. Impacts, Participants and Expenses

Energy Efficiency Education[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$3.4	$3.6	105%
Program Cost	$2.3	$2.1	91%
MW	1.3	1.4	106%
MWH	5,604.4	5,932.1	106%
Units	26,250	27,785	106%

1) Values are reflected at the system level.
2) Numbers rounded.

D. Qualitative Analysis

Highlights

For the seventh straight year, the Company is supporting arts and theatre in schools while providing an important message about energy efficiency through an innovative delivery channel for students. Enhancing the message with a live theatrical production truly captivates the students' attention and reinforces the classroom curriculum materials provided.

Energy Efficiency Education Program

The 2016-2017 school year offered two new productions in partnership with the Program vendor, The National Theatre for Children (NTC). The elementary school production, *The Conservation Caper,* is a 25 minute performance for elementary students and teaches them how to use resources wisely through a fun superhero adventure featuring Nikki Neutron and a cast of colorful characters. *The Energy Agents*, a 40-minute performance, is designed for middle school students. This production combines sketch comedy with improvisation and audience participation to teach students about natural resources and energy efficiency while complimenting student studies in science and energy.

For the 2017-2018 school year, elementary students enjoy watching as Lorraine Quiche is just about to realize her dream of opening her own restaurant. Unfortunately, her top chef, Chuck Wagon, has been wasting energy and now the power's gone out! Without electricity, she'll get a bad review from food critic Eggs Benedict Arnold! So Lorraine sets out to learn how to measure how much energy we use and how we can reduce the energy we waste. With the help of Horace Flyman, a sanitation engineer, and zookeeper Adam Grizzly, Lorraine learns how to use energy wisely and saves the day for her Kilowatt Kitchen! The E-Team is a 40 minute, live show for Middle schoolers, grades six through nine. The program consists of two actors with two goals. The first goal is to highlight how we measure energy, the uses of energy, how energy is wasted and renewable resources. The second goal is to make the middle school students laugh so hard that they forget they're learning.

The show is a series of improvised comedy sketches between characters in all sorts of hilarious situations. Before each scene, actors interact with the audience and get ideas that will be used during the sketch, such as their favorite band or a household pet. The ideas are incorporated into the show and may change the course of a scene.

During the spring semester of the 2016-2017 school year, a total of 216 schools were visited in the Company's DEC service territory and approximately 115,861 students were reached with the Program, resulting in 15,923 kits distributed. During the fall semester of the 2017-2018 school year, a total of 328 schools hosted 535 performances and approximately 127,368 students were reached with the Program, resulting in 11,862 kits distributed. Overall participation for 2017 totaled 27,785.

Once the completed energy efficiency survey is processed for an eligible customer, the Energy Efficiency Starter Kit is shipped and received within two to four weeks. To ensure customer satisfaction with the Energy Efficiency Starter Kit and the installation of items, an email reminder is sent monthly after successful kit delivery to encourage families to return their Business Reply Card (BRC). Qualified households that have submitted their energy efficiency survey and returned the BRC are automatically entered into the household contest drawing, sponsored by NTC.

Additionally, school and classroom contests encourage sign ups and NTC awards checks to schools whose students, along with their families completed home energy surveys and received energy efficiency kits as part of the Program. In the fall and spring of each year, a drawing is held selecting one school and one household contest winner. Principals, teachers and students may view their school's progress and compare the number of sign ups to other schools via the website, www.trackmysignups.org.

Updates

The Company continues to enhance the Program by:

- Introducing two new productions each school year to refresh and refocus the materials and scripts to keep participating schools engaged.

- Promoting the program through social media to encourage awareness, recognition and participation.
- Partnering with Duke Energy Account and District Managers to leverage existing relationships in the community to develop positive media stories while encouraging kit sign ups.
- Offering teacher satisfaction survey evaluations after the performances for both the elementary and middle school shows. Average survey data from January through December indicated 95% of the Elementary teachers surveyed and 92% of Middle School teachers surveyed had very high satisfaction ratings.
- Enhance the offering by providing additional materials for all student households, but particularly those that have already received the current Energy Efficiency Starter Kit as well as non-Duke Energy customer student households. This will increase customer satisfaction and provide additional energy savings impacts for all customers, but particularly those customers that would otherwise have been excluded from the kit offering.

E. Marketing Strategy

The National Theatre for Children is responsible for all marketing campaigns and outreach. NTC utilizes direct mail and email sent directly to principals to market the Program.

F. Evaluation, Measurement and Verification

The next evaluation work is planned as a combined Duke Energy Carolinas and Duke Energy Progress process and impact evaluation. Evaluation activities will begin third quarter of 2018, with a final report to be delivered in Fourth Quarter of 2018.

The goal of the impact evaluation is to assess the net energy savings attributable to the Program, as well as the persistence of the energy savings over time. The independent, third-party EM&V consultant will determine the detailed analysis methodologies, sample design and data collection activities. The impact evaluation for this Program is expected to consist of engineering estimates and a billing analysis.

Where applicable, a statistically representative sample of participants will be selected for the analysis. The Company intends to follow industry-accepted methodologies for all measurement and verification activities, consistent with International Performance Measurement Verification Protocol (IPMVP) Options A, C or D depending on the measure.

Energy Assessments

A. Description

The Home Energy House Call Program ("Program") is offered under the Energy Assessment Program. Duke Energy Carolinas, LLC (the "Company") partners with several key vendors to administer the Program.

The Program provides a free in-home assessment performed by a Building Performance Institute ("BPI") certified energy specialist designed to help customers reduce energy usage and save money. The BPI certified energy specialist completes a 60 to 90 minute walk through assessment of a customer's home and analyzes energy usage to identify energy savings opportunities. The energy specialist discusses behavioral and equipment modifications that can save energy and money with the customer. The customer also receives a customized report that identifies actions the customer can take to increase their home's efficiency. Examples of recommendations might include the following:

- Turning off vampire load equipment when not in use.
- Turning off lights when not in the room.
- Using energy efficient lighting.
- Using a programmable thermostat to better manage heating and cooling usage.
- Replacing older equipment.
- Adding insulation and sealing the home.

In addition to a customized report, customers receive an energy efficiency starter kit with a variety of measures that can be directly installed by the energy specialist. The kit includes measures such as energy efficiency lighting, low flow shower head, low flow faucet aerators, outlet/switch gaskets, weather stripping and an energy saving tips booklet.

Audience

Eligible Program participants are Company's residential customers that own a single-family residence with at least four months of billing history and have central air, electric heat or an electric water heater.

B &C. Impacts, Participants and Expenses

Energy Assessments[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	**$8.7**	**$7.3**	**83%**
Program Cost	**$2.6**	**$2.9**	**113%**
MW	**1.0**	**1.3**	**130%**
MWH	**7,923.1**	**8,131.8**	**103%**
Units	**8,038**	**10,014**	**125%**

1) Values are reflected at the system level.

2) Units represent number of kits, and do not include additional LEDs

3) Numbers rounded.

D. Qualitative Analysis

Highlights

The Company continues with a multi-channel approach which included Duke Energy website pages, website banners, online services banner, paid search campaigns, Pandora, Facebook, email, bill inserts, bill messages and direct mail. We continue to utilize Acxiom segmentation to reach customers with a high propensity to participate . Examples of online, bill inserts and direct mail promotions are available in the appendix. We continue to explore other channels for our marketing campaigns to reach our target audience and maximize both program performance as well as customer experience.

Communication channels amongst vendors, partners and the team at Duke Energy continue to be optimized to maximize collaboration regarding marketing initiatives, future scheduling, availability, routing, targeting, backlog, etc. to drive efficient operations as well as customer satisfaction.

Through December 2017 the program has conducted 10,014 assessments and installed 42,532 additional LEDs. The program continues to focus on maximizing measures installed as well as cross promoting other Duke Energy programs and offerings

Potential Changes

Some program enhancements to increase the effectiveness of the Program being considered include:

- Continuing to optimize the online scheduling tool to enhance the customer experience.
- Exploring cost effective approach to include thermal imaging as part of the assessment in response to customer feedback and requests.
- Considering replacing the current showerhead with a chrome version to increase installation based on customer feedback and or shifting away from a bundled kit to a custom installs only.
- Continue to evaluate the incentive offerings to maximize savings and impacts as well as customer acceptance.
- Expand referral program integration as part of the assessment for quality leads to all advisors.
- Upgrade kit to include chrome showerheads.
- Implement pilot to include Home Energy Score in partnership with the Greater Cincinnati. Energy Alliance and Department of Energy.
- Remove four month usage eligibility requirement.
- Include eligibility for audit for townhomes/condos.
- Implement post audit follow up with reminders of recommendations/referrals.
- Develop a plan for post audit Q/A check to gain insights from customers to proactively obtain customer feedback and identify improvement or EM&V opportunities.
- Evaluate tiered audit option.

E. Marketing Strategy

Program participation continues to be driven through a multichannel approach including targeted mailings to pre-qualified residential customers, bill inserts, online promotions and online video. For those who elect to receive offers electronically, email marketing continues to be used to supplement direct mail. Information about the Program was included in the My Home Energy Report distributed in January 2017 and July 2017. The Program management team continues to explore additional channels to drive awareness including but not limited to community outreach and event marketing as well as other cross promotional opportunities. The creative continues to drive engagement and interest in the program based on online survey results and enrollment. The core messaging continues to be simple and focused on key benefits: (a free energy assessment from Duke Energy can help save energy and money while also increasing comfort) and (three easy steps: you call, we come over, you save).

Home Energy House Call program information and an online assessment request form are available at www.duke-energy.com.

F. Evaluation, Measurement and Verification

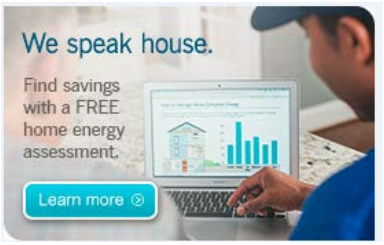
The next process and impact evaluation report for the DEC Home Energy House Call program is scheduled for completion in third quarter of 2018 with activities beginning late 2017.

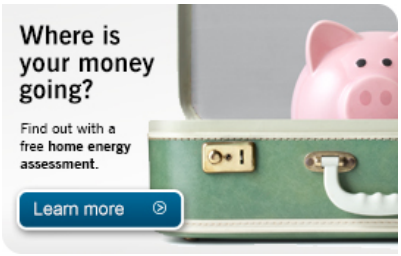
It is expected that the impact evaluation will consist of a billing analysis. Engineering estimates for each measure will be provided to program management to allow insights into in-service rates and free ridership. However, due to the billing analysis methodology, impacts are inherently provided for net savings.

The process evaluation activities will consist of interviews with program managers and implementation contractors to identify any needed improvements in program processes. Participant surveys will be conducted to ascertain satisfaction with the program.

G. Appendix: 2016 Marketing Samples

Online Banners:





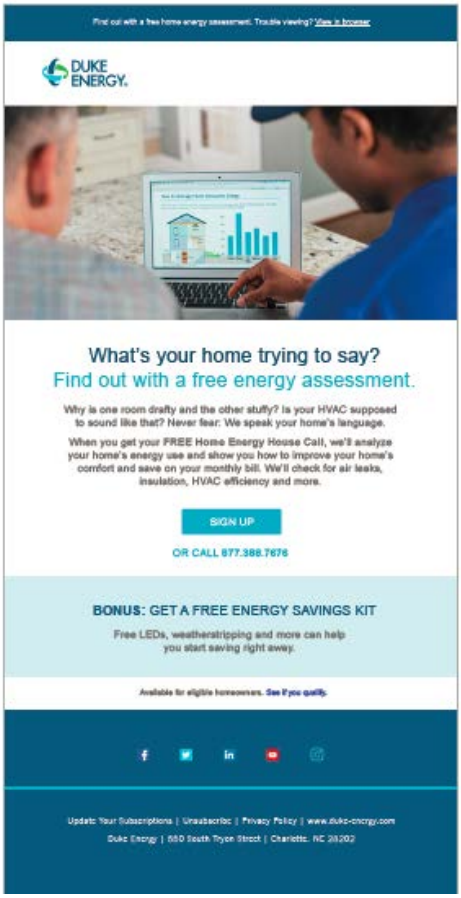
Energy Assessments

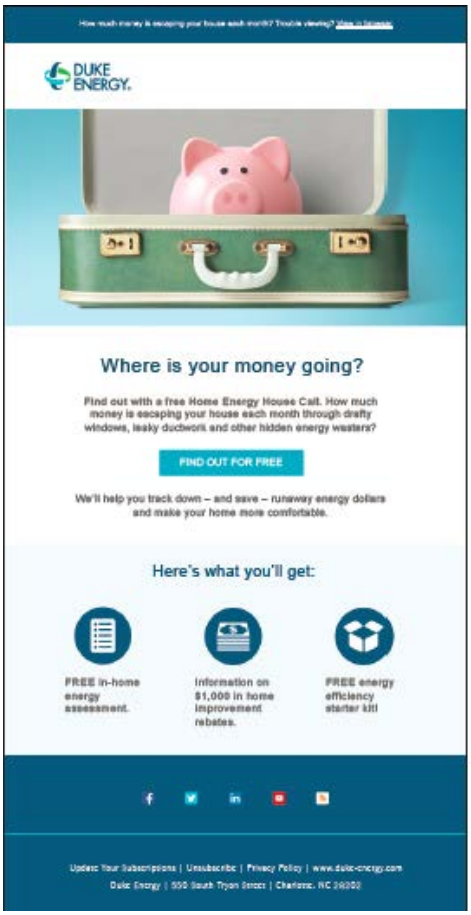
Free home energy assessment >

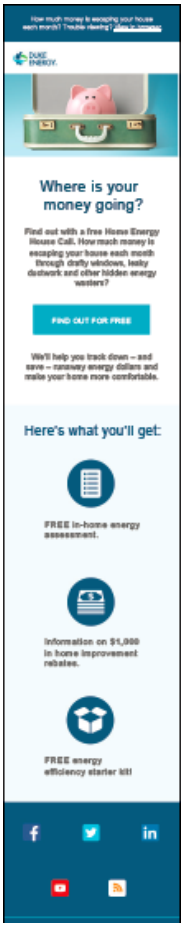
Find ways to save energy and money in your home.

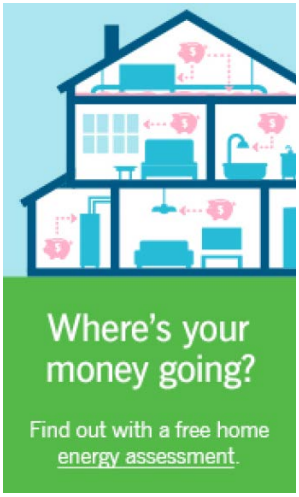
Energy Assessments

Email:



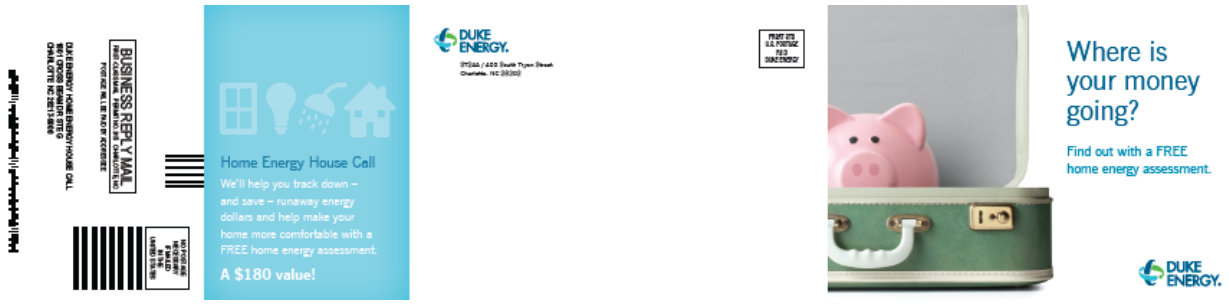




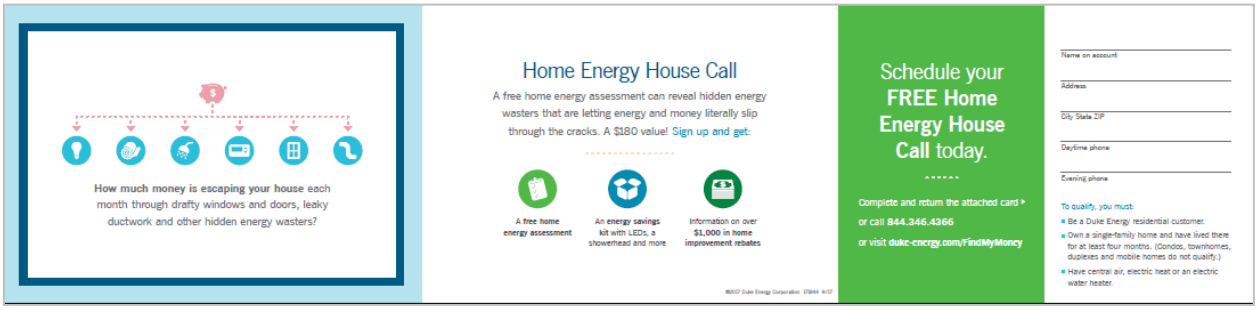


Energy Assessments

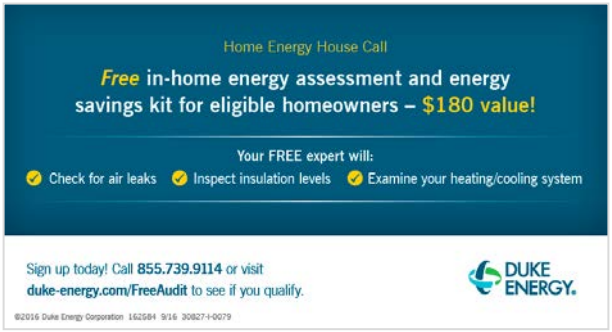
Direct Mail:



Energy Assessments



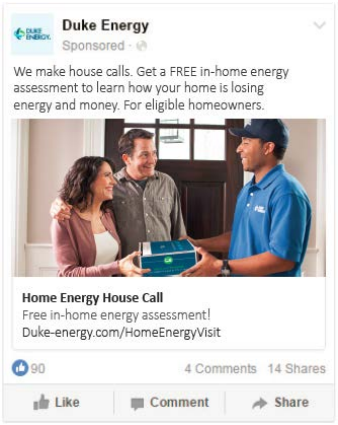
Bill Inserts:

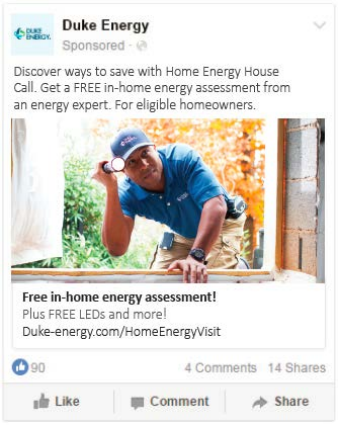


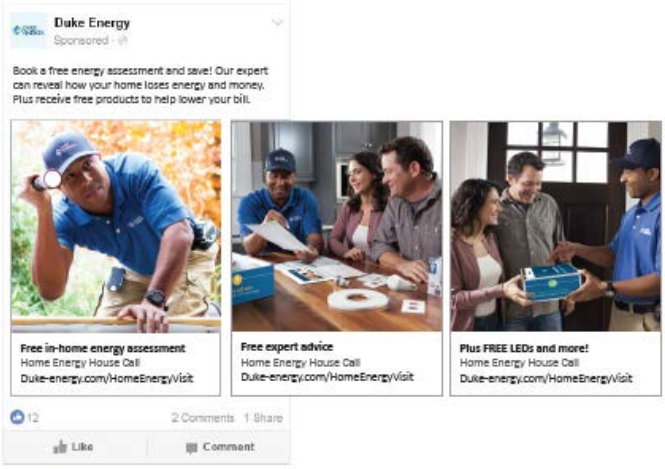
Energy Assessments

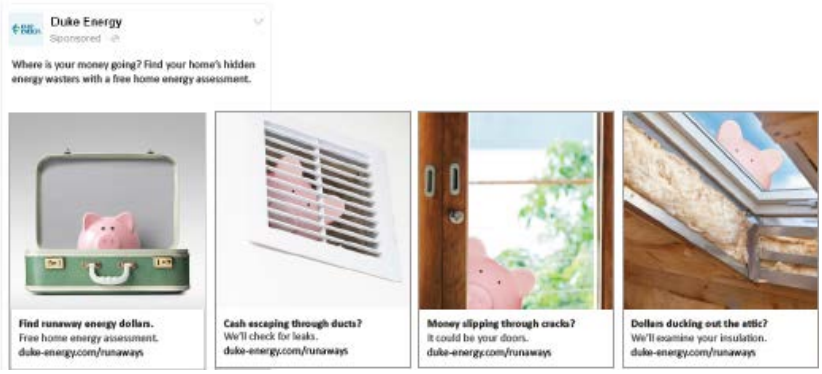
Pandora

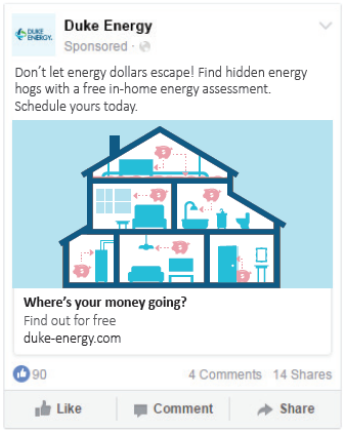
Facebook

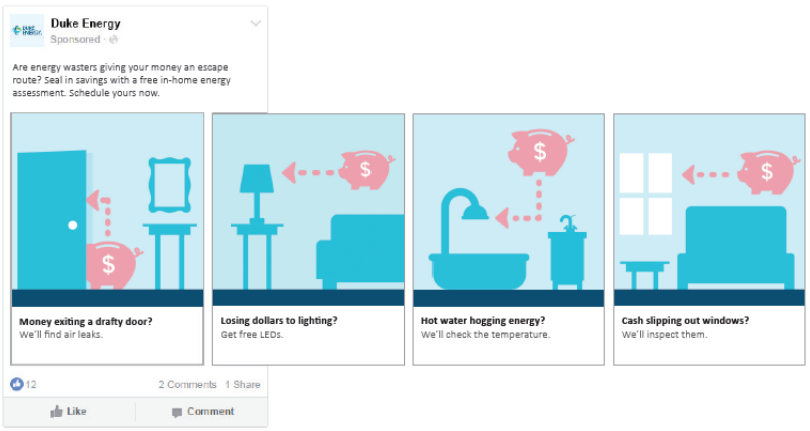












Income-Qualified Energy Efficiency and Weatherization Assistance Program

A. Description

The purpose of the Low Income Energy Efficiency and Weatherization Assistance Program ("Program") is to assist low income customers with energy efficiency measures in their homes to reduce energy usage. There are three offerings currently in the Program:

- Neighborhood Energy Saver ("NES")
- Weatherization and Equipment Replacement Program ("WERP")
- Refrigerator Replacement Program ("RRP").

WERP and RRP are available for income-qualified customers in Duke Energy Carolinas, LLC's (the "Company's") service territory for existing, individually metered, single-family, condominiums, and mobile homes. Funds are available for (i.) weatherization measures and/or (ii.) heating system replacement with a 15 or greater SEER heat pump, and/or (iii.) refrigerator replacement with an Energy Star appliance. The measures eligible for funding will be determined by a full energy audit of the residence. Based on the results of the audit, customers are placed into a tier based on energy usage (Tier 1, which provides up to $600 for energy efficiency services; and Tier 2, which provides up to $4,000 for energy efficiency services, including insulation), allowing high energy users to receive more extensive weatherization measures. WERP and RRP are delivered in coordination with State agencies that administer the state's weatherization programs.

Customers participating in the NES receive a walk-through energy assessment to identify energy efficiency opportunities in the customer's home and a one-on-one education on energy efficiency techniques and measures. Additionally, the customer receives a comprehensive package of energy efficient measures. NES participants may have the measures listed below installed in their home based on the opportunity identified from the energy assessment.

1. Energy Efficient Bulbs - Up to 15 energy efficient bulbs (LEDs) to replace incandescent bulbs.
2. Electric Water Heater Wrap and Insulation for Water Pipes.
3. Electric Water Heater Temperature Check and Adjustment.
4. Water Saving Faucet Aerators - Up to three faucet aerators.
5. Water Saving Showerheads - Up to two showerheads.
6. Wall Plate Thermometer.
7. HVAC Winterization Kits – Up to three kits for wall/window air conditioning units will be provided along with education on the proper use, installation and value of the winterization kit as a method of stopping air infiltration.
8. HVAC Filters - A one-year supply of HVAC filters will be provided along with instructions on the proper method for installing a replacement filter.
9. Air Infiltration Reduction Measures - Weather stripping, door sweeps, caulk, foam sealant and clear patch tape will be installed to reduce or stop air infiltration around doors, windows, attic hatches and plumbing penetrations.

Audience

WERP is available to qualified customers in existing individually-metered, owner-occupied single-family residences, condominiums or manufactured homes.

RRP is available to qualified customers in individually-metered residences irrespective of whether the property owner or the tenant owns the refrigerator.

NES is available to individually-metered residential customers in selected neighborhoods where ~50% of the homeowners have income equal to or less than 200% of the Federal Poverty Guidelines, based on third party and census data.

Income-Qualified Energy Efficiency and Weatherization Assistance Program

B &C. Impacts, Participants and Expenses

Income Qualified Energy Efficiency and Weatherization Assistance[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$3.6	$2.8	77%
Program Cost	$10.1	$5.5	54%
MW	1.0	0.8	75%
MWH	5,309.9	4,951.9	93%
Units	10,538	11,726	111%

1) Values are reflected at the system level.

2) Numbers rounded.

D. Qualitative Analysis

Highlights

Neighborhood Energy Saver: After receiving regulatory approval from both the North Carolina Utilities Commission and the South Carolina Public Service Commission in the fall of 2012, the Program was officially launched by the Company in March 2013. The yearly goal is to serve a minimum of 8,926 households. Honeywell Building Solutions was awarded the contract to administer the Program through a competitive bid process.

In 2017, NES offered free walk-through energy assessments to 9 qualifying neighborhoods in NC - Charlotte, Lincolnton, Walnut Cove, Greensboro, High Point, Spencer, Kannapolis, Robbinsville, and Winston-Salem and 3 qualifying neighborhoods in SC - Pendleton, Inman and Walhalla, serving a total of 11,095 customers. Neighborhood events have included support from community groups and speakers such as elected officials, community leaders and community action agency representatives.

Starting April 2017, the program has fully transitioned from CFLs to LEDs.

Weatherization: The Company launched WERP and RRP in February 2015 in North Carolina and South Carolina. The Company selected the program administrator, North Carolina Community Action Agency (NCCAA), in December 2014 via a request for proposal. The company is working with the NC and SC Weatherization Agencies to deliver this program.

In 2017, 559 homes received weatherization in conjunction with the DOE weatherization program, with 151 refrigerators replaced, 49 Tier 1 services provided and 443 Tier 2 services provided.

E. Marketing Strategy

Neighborhood Energy Saver: NES continues to target neighborhoods with a significant low-income customer base using a grassroots marketing approach to interact on an individual customer basis to gain trust. Participation is driven through a neighborhood kick-off event that includes trusted community leaders and local and state officials explaining the benefits of the Program. The purpose of the kick-off event is to rally the neighborhood around energy efficiency and to educate customers on methods to lower their energy bills. Customers have the option to make an appointment for an energy assessment at the time of the event.

Weatherization: WERP and RRP plan to piggy-back the marketing efforts of the current state Weatherization Assistance Programs administered by the state weatherization service providers. Additionally, agencies may utilize referrals generated from other Company energy efficiency programs as well as from their existing pool of weatherization applicants.

In addition to the kick-off event, the Company plans to use the following avenues to inform eligible customers about the Program:

- Direct mail (letters and reminder post cards)
- Door hangers
- Press releases and/or neighborhood flyers
- Community presentations and partnerships
- Inclusion in community publications such as newsletters, etc.

F. Evaluation, Measurement and Verification

The process and impact evaluation report for the Neighborhood Energy Saver portion of the Program is scheduled for completed in second quarter of 2019 upon the program's transition to LEDs.

Low Income Weatherization Program participation began in August 2015. Evaluation plans include a billing analysis to determine Impacts and a process evaluation to assess program operations and potential opportunity areas. Activities for the impact and process evaluation began in early 2016. The evaluation report deliverable date is now planned for the first quarter of 2018.

Multi-Family Energy Efficiency Program

A. Description

The Multi-Family Energy Efficiency program ("Program") provides energy efficient lighting and water measures to reduce energy usage in eligible multi-family properties. The Program allows Duke Energy Carolinas, LLC (the "Company") to utilize an alternative delivery channel which targets multi-family apartment complexes. The measures are installed in permanent fixtures by Franklin Energy the program administrator or the property management staff. Franklin Energy is in charge of all aspects of the Program which include outreach, direct installations and customer care.

The Program helps property managers save energy by offering energy efficient lighting and water products. The program offers LEDs including A-Line, Globes and Candelabra bulbs and energy efficient water measures such as bath and kitchen faucet aerators, water saving showerheads and pipe wrap. Water measures are available to eligible customers with electric water heating. These measures assist with reducing maintenance costs while improving tenant satisfaction by lowering energy bills.

The Program offers a direct install ("DI") option service by Franklin Energy. However, property managers still have the option for their property maintenance crews to complete the installations, upon request. The lighting measures and water measures are installed during scheduled direct install visits by Franklin Energy crews or routine maintenance visits by property personnel. In the case of direct installs, crews carry tablets to keep track of what is installed in each apartment. In the case of DIY installations, the property maintenance crew tracks the number of measures installed and reports them back to Franklin Energy. Franklin Energy then validates this information and submits the results to the Company.

After installations are completed, Quality Assurance ("QA") inspections are conducted on 20 percent of properties that completed installations in a given month. The QA inspections are conducted by an independent third party.

Audience

The target audience is property managers who have properties that consist of four or more units and are served on an individually metered residential rate schedule. In order to receive water measures, apartments must have electric water heating.

Properties that have already been served by the Property Manager CFL program are only eligible for water measures. However, properties with CFL installations over 5 years old are eligible for the new LEDs and water measures.

B &C. Impacts, Participants and Expenses

Multi-Family Energy Efficiency[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$9.2	$13.3	145%
Program Cost	$2.4	$3.2	131%
MW	1.2	1.9	161%
MWH	12,687.5	19,056.2	150%
Units	186,948	356,003	190%

1) Values are reflected at the system level.
2) Numbers rounded.

D. Qualitative Analysis

Highlights

In 2017, the Program completed installations at 221 properties, accounting for close to 23,800 units. The Program installed 356,003 measures with lighting measures representing 67 percent and water measures representing 33 percent. The Program successfully transitioned to LEDs in 2017 and the new LED measures have been well received by both tenants and property owners.

Issues

There are no issues to report at this time.

Potential Changes

In 2018, the Program will consider additional LED bulbs to serve track and recessed lighting fixtures. Additionally, the Program plans to file to remove the 4 conjoined unit requirement from the Multi-family program tariff so that all units within a complex can be served.

E. Marketing Strategy

As program implementer, Franklin Energy is responsible for marketing and outreach to property managers. This is primarily done through outbound calls and on-site visits to understand initial interest in the program from property managers in the Company's service territory. The Program also utilizes local apartment association memberships to obtain access to contact information for local properties and attend association trade shows or events to promote the program. The Program was an exhibitor in the May 2017 AANC Conference in Raleigh, NC and generated over 200 leads for the region.

A Multi-Family Energy Efficiency public website landing page is available for property managers to learn more about the Program. A program brochure and a frequently asked question sheet are available for download.

Other ways a property manager may learn more about this Program is through the MyDuke Portal, an online tool, when they login to pay the bills of vacant units at their property. The MyDuke Portal presents a promo link that directs the user to the Program website for more information. This promo ran several months during 2017 in Duke Energy Carolinas. Additionally, a Social Media campaign ran through May using Facebook ads to target Property Decision Makers and Trade Groups in NC & SC zip codes. Following the campaign, results were positive with solid click thru rates averaging 1.45%, over 150 new Multifamily website page views, call center leads increased and positive customer comments were received on Social Media.

Once enrolled, Franklin Energy provides property managers with a variety of marketing tools to create awareness of the Program to their tenants. These include letters to each tenant informing them of what is being installed and when the installation will take place. Tenants are provided educational leave-behind brochures when the installation is complete. The brochure includes a customer satisfaction survey to return to Duke Energy to provide valuable program feedback. An online version is also available.

At the conclusion of the installation, window clings are placed in strategic areas throughout the property. Placement of the window clings at a minimum will be at the common areas entry and each residential building on site (to the extent applicable). Using the window cling ensures that the program and Duke Energy are recognized long after the installation has taken place.

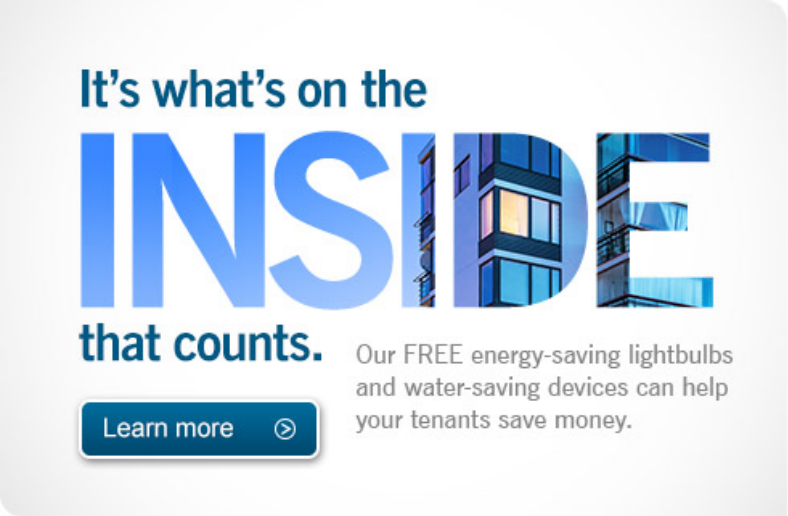
Multi-Family Energy Efficiency Program

F. Evaluation, Measurement and Verification

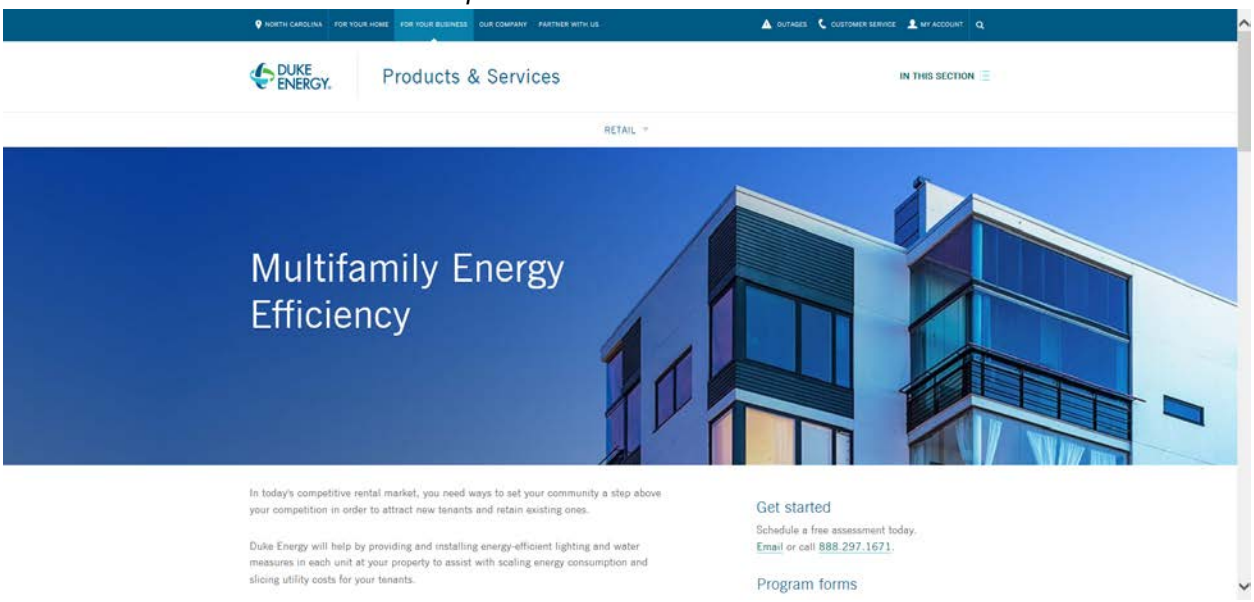
No evaluation activity is planned for 2018 at this time.

Appendix

State Landing Page Promotion (Hero Banner)-
Updated for transition to LEDs

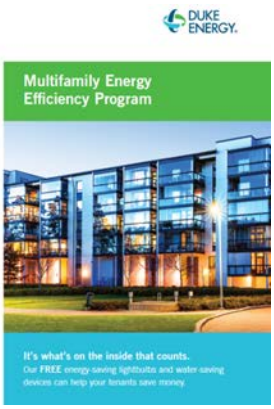


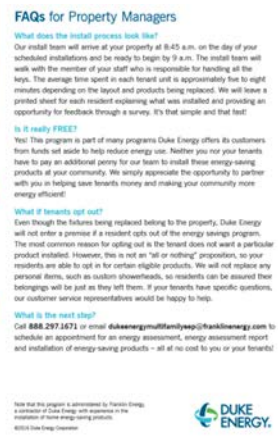
Program Web Page
Updated for transition to LEDs



Multi-Family Energy Efficiency Program

Program Brochure-
Updated for transition to LEDs





Window Cling-
New for 2016

Multi-Family Energy Efficiency Program

Tenat Leave Behind-

Updated for transition to LEDs

Multifamily Energy Efficiency Program

DUKE ENERGY.

Based on an assessment of your unit, these products were selected to offset your monthly energy usage:

Electric

Straight Line, Globe and Candelabra LED Lightbulbs

LEDs last longer and use up to 90 percent less energy than incandescent bulbs.

Water

(Water-saving products are only installed in properties that use electricity to heat water.)

Faucet aerators*

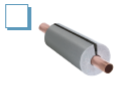
Faucet aerators installed in the kitchen and bathroom use up to 55 percent less water than standard faucet aerators.

Black handle allows for adjustable flow

Showerhead*

An energy-efficient 1.5-gpm showerhead will use less water than a regular showerhead, which means you can also use less energy to heat the water.

Adjustable flow



Pipe wrap*

Hot water pipe wrap reduces water and energy use by preventing heat loss while hot water travels through the pipes.

*Provided only to properties that use electricity to heat water.

For more information, contact the Multifamily Energy Efficiency Program at 888.297.1671 or dukeenergymultifamilyeep@franklinenergy.com. Or, visit duke-energy.com/multifamily.

Note that this program is administered by Franklin Energy, a contractor of Duke Energy with experience in the installation of home energy-saving products.

Customer Survey

Thank you for participating in this program. We'd like to know how we did installing your new energy-saving products. Please complete the below survey and mail it to us. The survey is also available online at duke-energy.com/multifamilysurvey.

Property name:

Address: Unit No.: City: State: ZIP:

Email:

I was notified in advance of this work. ❑ Yes ❑ No

I was at home while the technicians installed the products. ❑ Yes ❑ No

The technicians' ID badges were visible. ❑ Yes ❑ No ❑ N/A

I am interested in receiving additional information on energy efficiency. ❑ Yes ❑ No

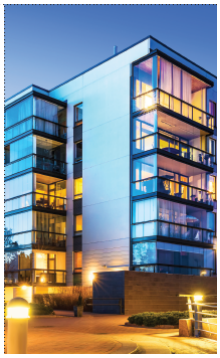
What effect has your participation in the Multifamily Energy Efficiency Program had on your overall satisfaction with Duke Energy? ❑ Positive effect ❑ Negative effect ❑ No effect ❑ Don't know

Using a scale of 1 to 10, please rate your level of agreement with the following statements (circle your response):

	not at all satisfied									completely satisfied
Overall, I was satisfied with the Duke Energy Multifamily Energy Efficiency Program.	1	2	3	4	5	6	7	8	9	10
The technicians respected my property and left it in good condition.	1	2	3	4	5	6	7	8	9	10
The technicians treated me with courtesy.	1	2	3	4	5	6	7	8	9	10
The technicians were knowledgeable about the products and answered my questions.	1	2	3	4	5	6	7	8	9	10
The leave-behind materials are informative.	1	2	3	4	5	6	7	8	9	10

Comments:

DE_LeaveBehindLW_091316



Multi-Family Energy Efficiency Program

Multifamily Energy Efficiency Program FAQs

DUKE ENERGY.

Questions? We have your answers.
Here's what you need to know before you get started with this program.

PROGRAM BENEFIT QUESTIONS

Do I have to pay to participate in the program?
Qualified property managers do not pay for these energy-saving products. When you take advantage of the Duke Energy Multifamily Energy Efficiency Program, not only will you receive free upgrades, but you will also help to increase retention rates and attract new tenants.

What's the value of letting us install these energy-saving products?

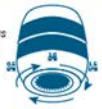
Straight Line, Globe and Candelabra LED Lightbulbs

Use **up to 90 percent less energy** and **can save an average of $80** over their lifetime in energy costs compared to traditional incandescent bulbs. A popular residential option, ENERGY STAR® light-emitting diodes, or LEDs, can be installed in bathrooms, permanent fixtures, ceiling fans, chandeliers and other high-usage areas.

Bathroom and Kitchen Faucet Aerators

Use **up to 55 percent less water** than traditional 2.2-gallons-per-minute (gpm) faucets, which can reduce water and sewer costs, as well as the amount of energy used to heat the water.*

Black handle allows for adjustable flow



Water-saving Showerheads

Use **up to 40 percent less water** than traditional 2.5-gpm showerheads, which can reduce water and sewer costs, as well as the amount of energy used to heat the water.*

Adjustable flow

Hot Water Pipe Wrap

Reduces water and energy use by preventing heat loss while hot water travels through your building's pipes.*

*Savings are not guaranteed.

Social Media ad for Property Managers

My Home Energy Report

A. Description

The My Home Energy Report ("MyHER" or the "Program"), is a periodic comparative usage report that compares a customer's energy use to similar residences in the same geographical area based upon the age, size and heating source of the home. Energy saving recommendations are included in the report to encourage energy saving behavior.

The reports are distributed up to 12 times per year (delivery may be interrupted during the off-peak energy usage months in the fall and spring). The report delivers energy savings by encouraging customers to alter their energy use. Customer's usage is compared to the average home (top 50 percent) in their area as well as the efficient home (top 25 percent). Suggested energy efficiency improvements, given the usage profile for that home, are also provided. In addition, measure-specific offers, rebates or audit follow-ups from other Company offered programs are offered to customers, based on the customer's energy profile. As of December 31, 2017, almost 1.2 million DEC customers were actively receiving the MyHER report.

In 2015, The Company developed an interactive online portal to enhance the MyHER program. The portal allows customers to further engage and learn more about their energy use and opportunities to reduce their usage. Customers are able to set goals, track their progress to goal, and receive more targeted tips. As of December 31, 2017, there were just shy of 27,000 single family customers and almost 1400 multifamily customers enrolled on the portal. In June 2016, the company also began sending out electronic versions of the MyHER to these customers enrolled on the portal. In addition, now all MyHER customers with an email address on file with the Company receive an electronic version of their report monthly.

Audience

Target customers reside in individually-metered, single-family and multifamily residences with an active account and concurrent service from Duke Energy Carolinas, LLC (the "Company"). Multifamily residences with a registered email address with the Company receive 4 printed reports and 8 electronic reports. Multifamily residences without a registered email address with the Company receive 6 printed report a year with a strong call to action to provide their email address to receive more report via email.

B & C. Impacts, Participants and Expenses (will you be showing separate participation numbers for Single Family and Multifamily?

My Home Energy Report[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	**$17.3**	**$21.7**	**126%**
Program Cost	**$11.8**	**$13.8**	**117%**
MW	**57.0**	**79.1**	**139%**
MWH[2]	**211,047.5**	**311,368.9**	**148%**
Units	**1,050,000**	**1,394,693**	**133%**

1) Values are reflected at the system level.
2) Units represents the average monthly participation.
3) Numbers rounded.

D. Qualitative Analysis

As customers receive subsequent reports, their engagement increases as they learn more about their specific energy use and how they compare to their peer group. The report then provides customers tools to reduce their usage in the form of targeted energy efficiency tips that provide customers with actionable ideas to help them

become more efficient. Program participants are encouraged to contact the Company with their questions, comments and report corrections. Report corrections continue to generate the largest number of inquiries. Customers wishing to be removed from the Program represent less than one tenth of one percent of Program participants.

Highlights

The paper and electronic versions of MyHER received a fairly significant facelift that began arriving in customer homes in September 2017. The report now provides customers a view of their forecasted disaggregated usage so they will know where to focus their savings efforts. The report is also more crisp and streamlined with visuals added for all actions and tips.

E. Marketing Strategy

Marketing for the Program consists of proactive communication through distribution of reports supported by a program website featuring additional information on the reports, Frequently Asked Questions ("FAQs") and contact resources. The MyHER Interactive portal is marketed by email campaigns as well as in the printed report.

F. Evaluation, Measurement and Verification

The next process and impact evaluation report is scheduled for completion in the first quarter of 2019.

Residential –Smart $aver® Energy Efficiency Program

A. Description

The Residential – Smart $aver® Energy Efficiency Program ("Program") offers measures that allow eligible Duke Energy Carolinas, LLC (the "Company") customers to take action and reduce energy consumption in the their home, including direct action against the home's single-largest user. The Program offering provides incentives for the purchase and installation of eligible central air conditioner or heat pump replacements in addition to Quality Installations and Wi-Fi enabled Smart Thermostats when installed and programmed at the time of installation of the heating ventilation and air conditioning (HVAC) system . Program participants may also receive an incentive for , attic insulation/air sealing, duct sealing, variable speed pool pumps, and heat pump water heaters..

Program staff is responsible for establishing relationships with HVAC and home performance contractors ("Trade Allies") who interface directly with residential customers. These Trade Allies market and leverage the Program to assist with selling these products and services to customers. Once the Trade Ally has sold the service/product, they adhere to Program requirements for completion and submit incentive applications on behalf of the customer. An incentive is disbursed to the customer and/or Trade Ally after the application has been approved and processed.

Duke Energy contracts with a third party vendor who is responsible for application processing, incentive payment disbursement, and Trade Ally and customer call processing.

Audience

The Company's residential customers that meet the eligibility requirements of the Program.

B &C. Impacts, Participants and Expenses

Residential – Smart $aver Energy Efficiency Program[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$0.0	$8.9	-
Program Cost	$0.0	$7.4	-
MW	0.0	2.5	-
MWH	0.0	8,545.6	-
Units	0	27,311	-

1) Values are reflected at the system level.
2) Numbers rounded.

D. Qualitative Analysis

Highlights

The Company's newly modified tiered incentive structure continues to continues to receive a positive reaction from customers as well as Trade Allies. Reporting continues to show that the increased incentive amounts for higher SEER equipment has encouraged customers to install higher efficiency equipment as well as having it properly installed and managed with new technologies.

The Referral Channel which provides free, trusted referrals to customers who are trying to find reliable qualified contractors for their energy saving home improvement needs has successfully generated roughly 10,0005,902 customer referrals throughout 2017. Customers who's referral generated a sale by the Trade Ally were triggered a star rating survey to rate their experience with using a referred contractor.

The Referral Network maintained a 4.68 out of 5 star rating during 2017 and looks to continue improving that score. throughout 2018..

Issues

The buy-in and participation of the Trade Ally network is vital to the success of the Program. The Program continues to transform the market; shifting market practices away from some of the more commonly utilized practices which rely heavily on decentralized training and varying knowledge levels, as well as imprecise and manual field calculations, towards industry trained and certified trade allies using higher quality diagnostic instruments and processes. The Company has continued to struggle to gain contractor acceptance with diagnostic based measures due to the required diagnostic equipment purchases, obtaining additional industry certifications and altering current business practices. The program will continue to place emphasis on these best practices and continue offering additional training to the Trade Allies to build support.

- **Marketing Strategy**

Promotion of the Program is primarily targeted to HVAC and home performance contractors as well as pool and plumbing contractors that provide installation opportunities for variable speed pumps and heat pump water heater technology. . Trade Allies are important to the Program's success because they interface with the customer during the decision-making event, which does not occur often for most customers.

Program information and Trade Ally enrollment links are available on the Program's website to educate customer about the Program and encourage participation. By increasing the overall awareness of the Program and the participation of Trade Allies, it ensures more customers are discussing the benefits of the Program at time of purchase.

The Program implemented several customer marketing campaigns during 2017 which leveraged channels such as bill inserts and email messaging to build awareness of the program. Other channels such as a paid search and co-branded special offer campaigns with eligible Trade Allies were also utilized to create awareness for the program as well as a reduction to the incremental cost associated with the purchase of a higher efficient product/service.

- **Evaluation, Measurement and Verification**

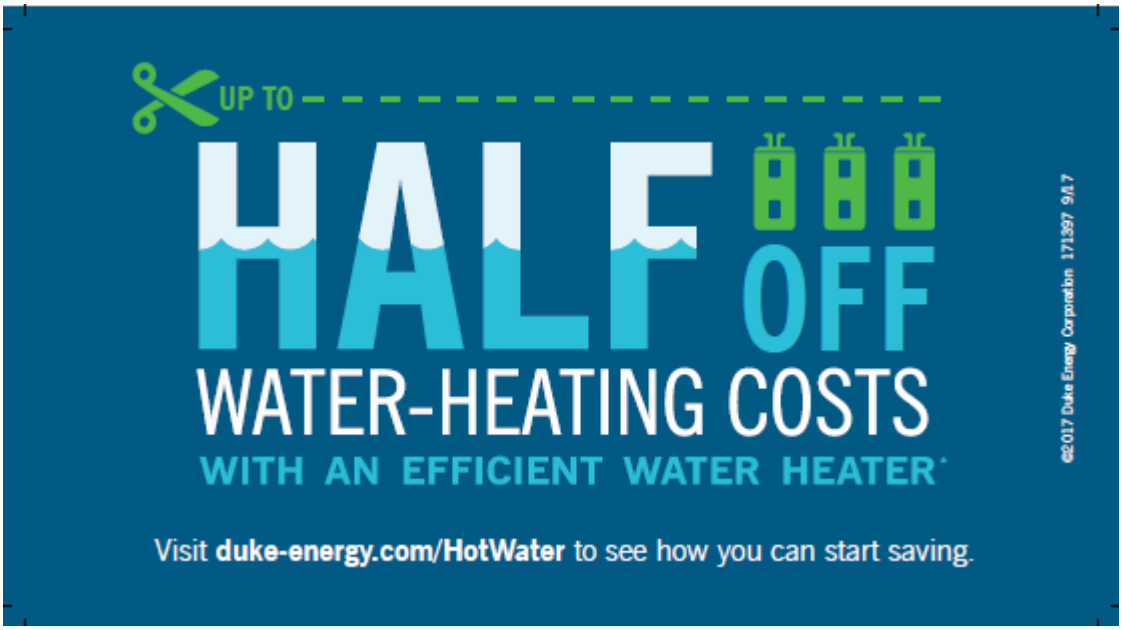
Evaluation activity is underway for this Program with the process and impact evaluation report scheduled for completion in first quarter of 2018..

The impact evaluation will consist of engineering estimates with sampled on-site measurement and verification. Participant surveys will be used to assess the level of free ridership and spillover to determine net savings.

On the process side, participant surveys and trade ally surveys, will help gauge program processes and identify needed improvements.

- **Appendix**

Residential HVAC – Bill Insert



Did you know?
Water heaters are the **second-highest source of energy usage** in most homes.

Heat pump water heaters can help you save energy and money every day, plus you can get a $350 rebate when you install an ENERGY STAR® model.

But wait … there are more reasons to upgrade:

- Save $250 each year – or more – on your water-heating costs.
- Easy operation and consistent temperature.
- Long lifespans of up to 13 years and low maintenance.

To learn more or find a participating contractor, check out **duke-energy.com/HotWater.**

Must be a single-family household. Additional restrictions may apply.

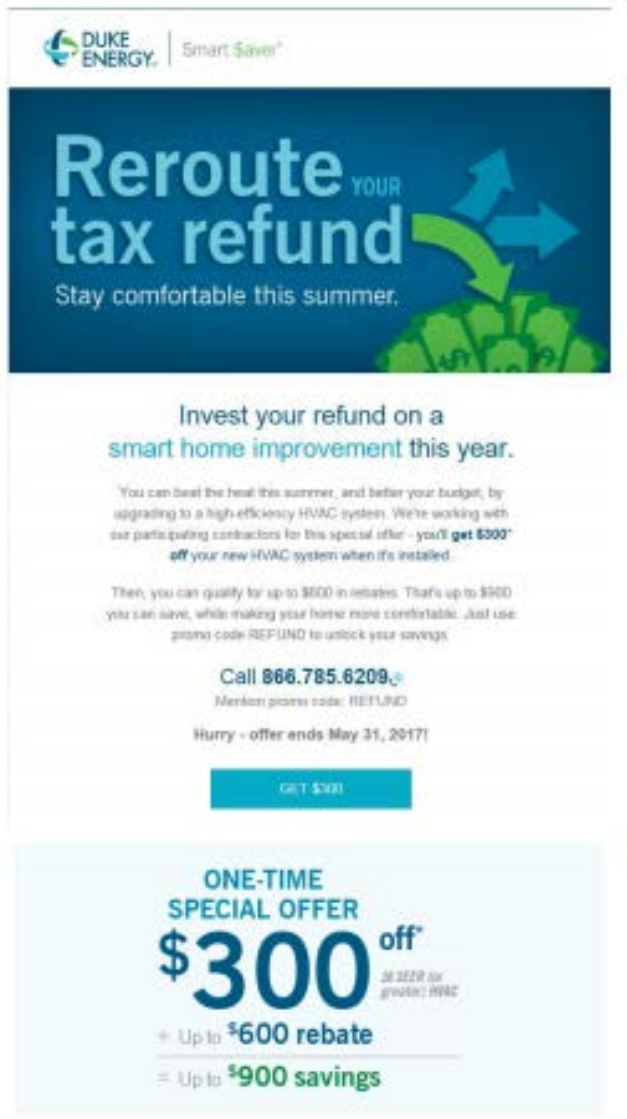
** Department of Energy: Heat pump water heaters provide savings of nearly 55% compared to typical electric water heaters.*

DUKE ENERGY. | Smart $aver®

30827-I-0151

Residential –Smart $aver® Energy Efficiency Program

Residential HVAC – Referral Special Offer Campaigns



Residential –Smart $aver® Energy Efficiency Program

Now is a great time to buy a new HVAC.

$300 off* 16 SEER (or greater) HVAC
+ Up to $600 rebate
= Up to $900
IN SAVINGS!

Smart $aver is available to customers of Duke Energy Carolinas and Duke Energy Progress.

Call **866.785.6209** before March 31 and mention promo code: **WARMUP**

www.duke-energy.com/WarmUp

©2017 Duke Energy Corporation 170141 2/17 *Must use a participating contractor.

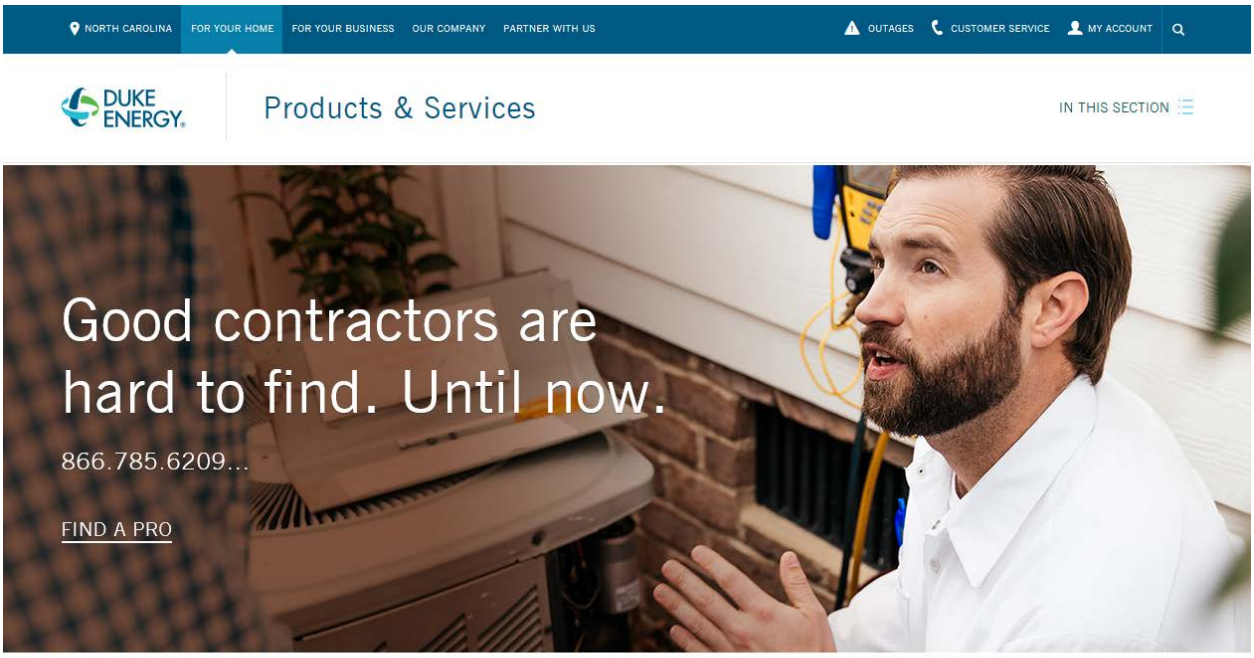
DUKE ENERGY. | Smart $aver®

ST24A | 400 South Tryon Street
Charlotte, NC 28202

Residential –Smart $aver® Energy Efficiency Program

Residential –Smart $aver® Energy Efficiency Program

Residential HVAC Referral Web Landing Page



Find a reputable home improvement professional

When you need to find a reputable pro, the last thing you want is to waste time and money looking for the right one. That's why we've created our FREE referral network. Whether you're looking to improve your HVAC system, insulation, or plumbing and electrical needs, we take the stress out of finding a great pro.

Residential HVAC Referral Social Ad

Residential –Smart $aver® Energy Efficiency Program

A. Description

The Business Energy Report ("BER" or the "Program"), is a periodic comparative usage report that compares a customer's energy use to their peer groups. Comparative groups are identified based on the customer's energy use, type of business, operating hours, square footage, geographic location, weather data and heating/cooling sources. Pilot participants will receive targeted energy efficiency tips in their report informing them of actionable ideas to reduce their energy consumption. The recommendations may include information about other Company offered energy efficiency programs. Participants will receive at least six reports over the course of a year.

Audience

This Pilot was offered to approximately 13,000 customers served on an eligible Duke Energy Carolinas, LLC (the "Company") non-residential rate schedule who are not opted out of the EE portion of the Rider and have at least 12 months of electric usage with the Company. Initial program participants were automatically enrolled in the Program. Program participants could request their removal from the Program at any time.

B & C. Impacts, Participants and Expenses

Business Energy Report[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$0.3	$0.0	0%
Program Cost[4]	$0.2	$0.1	81%
MW[2]	0.4	0.0	1%
MWH	5,663.0	42.4	1%
Units	15,634	109	1%

1) Values are reflected at the system level.

2) Numbers rounded.

3) Program terminated, with final reports mailed in April 2017. MW, MWH and Units reflect average capability and average monthly participation for January through April 2017.

D. Qualitative Analysis

As customers receive subsequent reports, their engagement increases as they learn more about their specific energy use and how they compare to their peer group. The report then provides customers tools to reduce their usage in the form of targeted energy efficiency tips that provide customers with actionable ideas to help them become more efficient. Customers were also encouraged to register for BER Interactive, an online portal that offered additional tips and information on their energy usage. Program participants were encouraged to contact the Company with their questions, comments and report corrections.

Highlights

The Company mailed letters to pilot participants on December 30, 2015 welcoming them to the program. Customers were provided a form and a business reply envelope to update information about the business such as business type, operating hours, square footage, own/lease, heating/cooling information, and a contact name. After providing customers an opportunity to respond, the first report was mailed to customers on February 17, 2016. A customer satisfaction online survey was conducted in October 2016.

The survey was sent to 3,448 treatment group DEC customers and 3,914 control group DEC customers. There was a 4% response rate from both the treatment and control group, with a total of 130 completed surveys received from the treatment group and 167 received from the control group. Key findings indicate that 43% of DEC BER participants recalled receiving the reports. Overall, 73% of BER participants were satisfied with the reports. Customers liked the reports because they found them informative and it helped them manage their usage.

In the course of the Company's efforts to effectively manage the Pilot, concerns have arisen regarding the long term outlook of the Pilot and its ability to be commercialized. First, the preliminary internal energy savings analysis performed by the Company lead it to question the Pilot's ability to achieve the assumed energy savings associated with the program which casts significant doubt as to the Pilot's ongoing cost-effectiveness. Second, the BER program team became aware of future viability issues related to the vendor currently administering the Pilot. In light of these issues and in order to minimize the costs borne by our customers, the Company terminated the Pilot offering effective August 31st 2017.

E. Marketing Strategy

The Company communicated information about the Pilot via the customized proactive reports distributed through, but not limited to, direct mail.

F. Evaluation, Measurement and Verification

There was no further evaluation activity for the Program due to termination of the pilot program

Non-Residential Smart $aver® Custom Assessment

A. Description

Duke Energy Carolinas, LLC's (the "Company's") Non-Residential Smart $aver® Custom Assessment (the "Program") offers financial assistance to qualifying commercial, industrial, and institutional customers to help fund an energy assessment, retro-commissioning design assistance in order to identify energy efficiency conservation measures of an existing or new building(s) or system. The detailed study and subsequent list of suggested energy efficiency measures will reduce energy costs with the intent of also helping customers to utilize the Non-Residential Smart $aver® Custom and/or Prescriptive Programs. The deliverable of the Program is a detailed energy report that includes the above as well as the technical data needed for the Non-Residential Smart $aver® Custom and/or Prescriptive Program and to provide assistance with the Non-Residential Smart $aver® Application. All kWh and kW savings identified from measures implemented as a result of the pre-qualified assessments are solely counted to the Program.

The program was expanded in 2015 to include new construction design assistance. Design assistance assists customers with new construction, major renovations, and additions by providing design assistance to help enable construction beyond the applicable state energy code. Design assistance includes a number of benefits: 1) professional engineering and design resources, 2) computer simulated energy modeling to develop multiple energy efficiency design options providing each customer design choices 3) final computer simulated energy model with selected design, 4) support for application of Non-Residential Smart $aver® Custom and/or Prescriptive Incentives.
The intent of the Program is to encourage the implementation of energy efficiency projects that would not otherwise be completed without the Company's technical and financial assistance. The Program's application requires pre-qualification for eligibility. Currently, all assessments and design assistance are performed by professional engineering firms that have been pre-selected and contracted by the Company. The current engineering firms include: APTIM. and ThermalTech Engineering, Inc., Each offers a diversified set of skills that allow all qualifying commercial, industrial, and institutional customers to be supported.

The program was modified in 2017. The above contracted professional engineering companies are still be utilized for assessments if the customer chooses to select this resource option. Additionally, the Program allows customers to seek third party engineering assistance of their own selection and receive the same financial assistance. Pre-established criteria needs to be met for the funds to be released in order that the Program maintains its high engineering standards and quality of work. By allowing flexibility and choice, the expectation is for the Program's participation to increase.

Audience

Pre-qualified non-residential electric customers, except those that choose to opt-out of the Program, are eligible.

B & C. Impacts, Participants and Expenses

Non Residential Smart Saver Custom Technical Assessments[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$7.1	$10.2	144%
Program Cost	$3.3	$2.1	65%
MW	1.5	1.6	106%
MWH	13,280.9	15,633.2	118%
Units	10,760	6	0%

1) Values are reflected at the system level.

2) Numbers rounded.

D. Qualitative Analysis

Highlights

Customers continue to show interest in the Program. Through Q4 2017, 14 new customers are participating the Program with 6 other considering participation. Over 50 percent of the customers that receive assessments implement the energy efficiency projects. Lack of capital is the primary reason for not moving forward with projects. In addition, if the energy efficiency measures identified do not meet the internal financial criteria needed for a capital project.

The Company has delivered over 15,000 MWh through Q4 2017.

E. Marketing Strategy

The marketing strategy for the Program is to work with those customers that need technical and financial assistance as a companion to their internal resources. Given the facility-wide approach, many of the energy savings opportunities are complex and interactive in nature which fits well with the end-to-end involvement utilized in the Program. Typical customer marketing activity involves direct marketing from assigned Account Managers, electronic postcards, e-mails, and information attained through the Company's website, and direct customer inquiries. Marketing was expanded in 2017 to include professional engineering trade allies as their services to customers may be able to be funded through the Program.

F. Evaluation Measurement and Verification

A process and impact evaluation report for Smart $aver custom assessment measures evaluation was completed in second quarter of 2017.

Samples of participants were selected for the process and impact studies. For the impact evaluation, some blend of selective monitoring and site visits was performed at a sample of facilities, with engineering-based estimation. Evaluation analysis also included identification of spillover impacts from the process of engaging customers in the energy assessment. Participant surveys were collected to estimate net impacts and for the process evaluation.

The verified results include a gross realization of 84% for energy (kWh) and 85% and 86% for Summer and Winter demand (kW), respectively. Free ridership was estimated at 3%, spillover at 9%, for a net to gross of 106%.

Non-Residential Smart $aver® Custom

A. Description

Duke Energy Carolinas, LLC's (the "Company's") Non-Residential Smart $aver® Custom Incentives (the "Program") offers financial assistance to qualifying commercial, industrial and institutional customers (that have not opted-out) to enhance their ability to adopt and install cost-effective electrical energy efficiency projects.

The Program is designed to meet the needs of the Company's customers with electrical energy saving projects involving more complicated or alternative technologies, or those measures not covered by the Non-Residential Smart $aver Prescriptive Program. The intent of the Program is to encourage the implementation of energy efficiency projects that would not otherwise be completed without the Company's technical or financial assistance.

Unlike the Non-Residential Smart $aver Prescriptive Program, the Program requires pre-approval prior to the project initiation. Proposed energy efficiency measures may be eligible for customer incentives if they clearly reduce electrical consumption and/or demand.

The two approaches for applying for incentives for this Program are Classic Custom and Custom-to-Go. The difference between the two approaches focuses on the method by which energy savings are calculated. The documents required as part of the application process vary slightly.

Currently the applications forms listed below are located on the Company's website under the Smart $aver® Incentives (Business and Large Business tabs).

- Custom Application, offered in word and pdf format.
- Energy savings calculation support:
    - Classic Custom excel spreadsheet approach (> 700,000 kWh or no applicable Custom-to-Go calculator)
        - Lighting worksheet (excel)
        - Variable Speed Drive (VFD) worksheet (excel)
        - Compressed Air worksheet (excel)
        - Energy Management System (EMS) worksheet (excel)
        - General worksheet (excel), to be used for projects not addressed by or not easily submitted using one of the other worksheets
    - Custom-to-Go Calculator approach (< 700,000 kWh and applicable Custom-to-Go calculator)
        - HVAC & Energy Management Systems
        - Lighting
        - Process VFDs
        - Compressed Air

The Company contracts with AESC to perform technical review of applications. All other program implementation and analysis is performed by Duke Energy employees or direct contractors.

Audience

All of the Company's non-residential electric accounts billed on eligible rate schedules, except those that choose to opt-out of the Program, are eligible.

B & C. Impacts, Participants and Expenses

Non-Residential Smart $aver® Custom

Non Residential Smart Saver Custom[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$52.6	$35.8	68%
Program Cost	$14.0	$7.3	52%
MW	10.3	6.2	60%
MWH	90,102.0	41,833.3	46%
Units	73,002	40,134	55%

1) Values are reflected at the system level.

2) Numbers rounded.

D. Qualitative Analysis

Highlights

Customers continue to identify energy efficiency offers eligible under this Program. An average of 23 new pre-approval applications per month were received in 2017. The custom program continues to see a large number of small projects and a very small number of large projects from our customers resulting in an overall decrease in kWh savings.

Smart $aver Custom Incentives program uses a flat rate incentive. The current flat rate incentives allows the customer to receive an incentive for both energy and demand savings.

Efforts to educate trade allies and vendors who sell energy efficient equipment have been very successful. In many cases, vendors will submit the paperwork for the customer which eliminates a barrier for customers that do not have the resources to devote to completing the application.

The Program launched a fast track option for 2017 which gives customers the ability pay a fee to speed up their application processing time to seven business days. This fee is passed through to the vendor for their cost in expediting the application. In 2017 the Program received 24 Fast Track applications.

The Program also helped launch a complementary program, Smart $aver Performance Incentives, which will allow customers to apply for projects which are not suitable for Smart $aver Custom. Smart $aver Performance Incentives is filed as a unique program but will initially be implemented in conjunction with Smart $aver Custom to reduce confusion for customers and Trade Allies.

Issues

The Program application process is considered burdensome by some customers due to the individual and technically intensive review required for all projects applying for a custom incentive. Each year the program spends time working on the reduction of the application length. The program has reduced average processing time to under 20 days for all states/jurisdictions by streamlining processes.

The technical review often requires customers (or their vendor) to quantify the projected energy savings from the proposed project. This can be a lengthy process that may require some level of engineering expertise. Where necessary, this requirement will continue, thus ensuring that incentives are being paid for cost-effective verifiable efficiency gains. Indications are that the Custom-to-Go suite and online application portal have relieved some of this burden.

The custom program is subject to large fluctuations in performance due to the importance of a small number of large projects. There are a significant amount of small projects compared to the small number of large projects which can drive the majority of annual impacts.

The custom program is still limited by customers who are opted-out of the EE Rider. Those customers who are opted-out are not eligible to participate and any projects completed for those customers would be considered lost opportunities. The custom program is actively working with internal resources (large account managers and business energy advisors) to see if opting-in to the EE Rider for a potential project is the best option for those customers currently opted-out.

Finally, the custom program continues to see changes in available technologies as specific measures become eligible for Smart $aver Prescriptive.

Potential Changes

The Custom program continues to evaluate additional improvements to enhance participation, processing speed and program efficiency.

E. Marketing Strategy

The Company will continue the Program marketing efforts in 2017 through various marketing channels that include but are not limited to:

- Direct mail (letters and postcards to qualifying customers)
- Duke Energy Progress website
- Community outreach events
- Small Business Group outreach events
- Paid advertising/mass media
- Social media promotions
- Trade ally outreach
- Account managers
- Segmentation managers

These marketing efforts are designed to create customer awareness of the Program, to educate customers on energy saving opportunities and to emphasize the convenience of Program participation.

Non-residential customers are informed of programs via targeted marketing material and communications. Information about incentives is also distributed to trade allies, who in turn sell equipment and services to all sizes of nonresidential customers. Large business or assigned accounts are targeted primarily through assigned Company account managers. Unassigned small to medium business customers are supported by the Company's business energy advisors. The business energy advisors follow up on customer leads to assist with program questions and steer customers to the trade ally search tool who are not already working with a trade ally. In addition, the business energy advisors are contacting customers with electrical costs between $60,000 and $250,000 to promote the Energy Efficiency for Business program.

The internal marketing channel is comprised of assigned Large Business Account Managers and Local Government and Community Relations who all identify potential opportunities as well as distribute program collateral and informational material to customers and trade allies. In addition, the Economic and Business Development groups also provide a channel to customers who are new to the service territory.

The Program launched a new marketing channel in 2017 called New Construction Energy Efficiency Design Assistance (NCEEDA) to help identify energy efficiency projects for customers currently

underserved in the SMB market. This channel will utilize the vendor Weidt Group to help identify those opportunities, complete savings calculations as well as submit applications for the customer. As of January 20, 2018, 79 projects have been enrolled in the DEC - NCEEDA offering representing nine million square feet of floor area, with 32 Smart $aver Custom project applications submitted representing 11.8 million kWh of energy savings. .

F. Evaluation, Measurement and Verification

Currently, evaluation work is underway on the Smart $aver custom measures. The impact and process report is scheduled to be completed in the third quarter of 2018.

For the impact evaluation, some blend of selective monitoring and site visits is planned to be performed at a sample of facilities, with engineering-based estimates and participant billing analysis conducted by the evaluator. Participant surveys will be conducted to collect information needed to estimate net impacts for the process evaluation and to assess satisfaction with the program.

Non-Residential Smart $aver Prescriptive

A. Description

The Non-Residential Smart $aver® Prescriptive Program ("Program") provides incentives to Duke Energy Carolinas, LLC's (the "Company's") commercial and industrial customers to install high efficiency equipment in applications involving new construction and retrofits and to replace failed equipment. The program also uses incentives to encourage maintenance of existing equipment in order to reduce energy usage. Incentives are provided based on the Company's cost effectiveness modeling to assure cost effectiveness over the life of the measure.

Commercial and industrial customers can have significant energy consumption but may lack knowledge and understanding of the benefits of high efficiency alternatives. The Program provides financial incentives to help reduce the cost differential between standard and high efficiency equipment, offer a quicker return on investment, save money on customers' utility bills that can be reinvested in their business, and foster a cleaner environment. In addition, the Program encourages dealers and distributors (or market providers) to stock and provide these high efficiency alternatives to meet increased demand for the products.

The Program promotes prescriptive incentives for the following technologies – lighting, HVAC, pumps, variable frequency drives, food services, process and information technology equipment.

Audience

All of the Company's non-residential opt-in customers billed on an eligible Duke Energy Carolinas rate schedule

B & C. Impacts, Participants and Expenses[1]

Non Residential Smart Saver Prescriptive

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$56.4	$201.0	357%
Program Cost	$16.5	$69.3	420%
MW	15.3	34.8	228%
MWH	87,299.0	239,420.5	274%
Units	381,368	5,322,620	1396%

1) Values are reflected at the system level.

2) Numbers rounded.

D. Qualitative Analysis

Highlights

The Program has developed multiple approaches to reaching the very broad and diverse audience of business customers. This consists of incentive payment applications, with paper and online options, and instant incentives offered through the midstream marketing channel and the Online Energy Savings Store. The 2017 growth over 2016 was strong due to several key factors:

- Customers showed high interest in energy efficiency and had significant funds to invest in efficiency along with the requested rebates which offset a portion of the cost. The program saw the following increases in 2017 incentive payments over 2016:
  - HVAC 5% increase
  - Lighting 69% increase
  - Pumps and motors 24% increase
  - Process equipment 71% increase
  - Foodservice and IT equipment declined
- More applicants are using the online application, an easier way to apply
- Midstream marketing channel continued to attract more distributors to the program

[1] The information reflects results for the Non-Residential Smart $aver Prescriptive program in aggregate. Reference the Appendix for results by technology.

Non-Residential Smart $aver Prescriptive

- Outreach continued to support Trade Allies working with the program
- Targeted marketing reached out to customers and Trade Allies
- High levels of customer service were provided by a dedicated team of representatives answering customer questions via phone and email
- Large account management and business energy advisors continue to provide large and medium businesses with personalized relationships to identify and support new EE projects

Customers have several options to participate in the Program. The following chart summarizes 2017 participating customers by Program channel:

Program Option	Participating Customers*	% 2017 Repeat Customer
Paper and Online Application Form	3,895	63%
Midstream Marketing Channel	2,293	67%
Online Energy Savings Store	560	38%

*May include multiple facilities/sites for one customer.

PAPER AND ONLINE APPLICATIONS

During 2017, 6,174 applications, consisting of 14,405 measures, were paid for Duke Energy Carolinas prescriptive incentives. New application activity during this period was 31% higher than in 2016. During 2017, 46% of applications were submitted via the new online application portal. Similar application increases have been seen in Duke Energy's other jurisdictions. Much of this increase has been attributed to the continued interest in high efficiency LED lighting measures. The average payment per paid application was $5,477.

Many Trade Allies participating in the application process reduce the customer's invoice by the amount of the Smart $aver® Prescriptive incentive and then receive reimbursement from Duke Energy. Customers often prefer this rather than paying the full equipment cost upfront and receiving an incentive check from Duke Energy. More information is provided on the next page, as to how the Program engages with Trade Allies.

Duke Energy utilizes an internal database that allows the Program to self-administer Program applications and track program data.

MIDSTREAM MARKETING CHANNEL

The midstream marketing channel provides instant incentives to eligible customers at a participating distributor's point of purchase. Approved midstream distributors validate eligible customers and selected lighting, HVAC, food service and IT products through an online portal, and use that information to show customers the incentive-reduced price of high efficiency equipment. Upon purchase, the distributor reduces the customer's invoice for eligible equipment by the amount of the Smart $aver® Prescriptive incentive. Distributors then provide the sales information to Duke Energy electronically for reimbursement. The incentives offered through the midstream channel are consistent with current program incentive levels.

In 2016, Duke Energy launched major improvements to this marketing channel by partnering with the third-party Energy Solutions. Energy Solutions provides the online portal for distributors to manage the paperless validation and incentive application, which is expected to help this channel grow significantly. During 2017, approximately 56% of the Smart $aver impacts were from participation through the midstream marketing channel. Duke Energy currently has 205 distributors signed up for the midstream channel. Duke Energy continues to work to add more well-known distributors to this channel. Duke Energy expects this channel to continue increasing participation in the Smart $aver Prescriptive program.

ONLINE ENERGY SAVINGS STORE

Duke Energy also offers the Business Savings Store on the Duke Energy website, with orders fulfilled by the third-party EFI. The site provides customers the opportunity to take advantage of a limited number of incentive measures by purchasing qualified products from an on-line store and receiving an instant incentive that reduces the purchase price of the product. The incentives offered in the store are consistent with current program incentive levels.

TRADE ALLY MANAGEMENT

Over the years, the Program has worked closely with Trade Allies (TA) to promote the program to our business customers at the critical point in time when customers are considering standard or high efficiency equipment options. Currently, there are 2,044 energy-efficiency equipment vendors, contractors, engineers, architects and energy services providers who are based in the Carolinas and registered as a TA with the

Non-Residential Smart $aver Prescriptive

Smart $aver® Non-residential programs (prescriptive and custom). The Smart $aver® outreach team builds and maintains relationships with TAs associated with the technologies in and around Duke Energy's service territory. Existing relationships continue to be cultivated while recruitment of new TAs also remains a focus. Duke Energy's efforts to engage TAs include the following activities:

- Trade Ally Search tool located on the Smart $aver® website
- Inspections of a sample of all projects to ensure quality control
- Trade Ally co-marketing including information about the Smart $aver program in the TA's marketing efforts
- Online application portal training and support
- Midstream channel support
- Trade Ally year-end awards
- Trade Ally newsletter and monthly emails
- Technology- and segment-specific marketing collateral
- Trade Ally discussion group (20 trade allies that give input on program)
- Trade Ally training
- Sponsorship of trade ally events
- Online collateral toolkit for access to marketing materials

The TA outreach team educates TAs on the program rules and the Smart $aver Program expectations for TA conduct.

The Company continues to look for ways to engage the TAs in promotion of the Program as well as more effective targeting of TAs based on market opportunities.

Issues

Feedback from participating customers and Trade Allies is positive overall, and also provides some insight into the barriers to participating in the program. Less than 5% of surveyed customers report dissatisfaction with the program. Reasons include unhappiness with the 90 day time limit to submit an application, communications issues, and changes to eligible products (due to a change in what qualifies for a qualified products list that the program references for eligibility). Less than 10% of surveyed Trade Allies report dissatisfaction with the program, with the most frequent reasons offered that applications are too complex and incentive payment too slow. In response, the program continues to work to improve communications, application forms and processing, as well as promote channels that do not require complex paperwork and offer faster incentive payment. Some TAs feel competition with the vendor implementing Small Business Energy Saver, which is not intended in the programs' designs. Duke Energy also continues to reach out to those customers who have not yet participated in the Smart $aver® program.

Recently, the combination of the Program's incentives and the dropping cost of LED equipment has been very attractive for customers and many have taken advantage of the opportunity to invest in LED upgrades. While there is still significant opportunity for high efficiency lighting, the excitement around LEDs has taken customers' attention away from EE opportunities outside of lighting. The Program has continued to promote non-lighting EE, and encourage customers to go beyond lighting for efficiency. The Company continues to work with outside consultants and internal resources to develop strategies to understand equipment supply/value chains and increase awareness of these measures going forward.

Potential Changes

Standards continue to change and new more efficient technologies continue to emerge in the market. Duke Energy periodically reviews major changes to baselines, standards, and the market for equipment that qualify for existing measures, and explores opportunities to add measures to the approved Program that provide incentives for a broader suite of energy efficient products. This work is underway now, and there are expected to be changes announced for a limited number of new measures and measure updates. These changes are expected to be handled under the flexibility guidelines. For existing measures that are changing, such as a measure removal or reduction to the incentive amount, a 90-day grace period is offered for applications on the past measure and incentive amount to allow customers to apply for incentives on equipment installations that occurred prior to the incentive change.

New measures added include packaged terminal heat pumps, notched v-belts, high efficiency fans for commercial use outside of agricultural sector, residential Energy Star equipment for use in commercial settings (ex: refrigerators, clothes washers and dryers), LED lamp replacements for HID lamps and T5 fluorescent tubes, bi-level stairwell fixtures with integrated sensors, bi-level exterior occupancy sensors and others. The measures passed cost effectiveness tests and were determined to be feasible for offer through the current Prescriptive channels and processes were added as allowed under flexibility guidelines.

Measure removals include high performance and low watt T8 lamps and fixtures, pulse start metal halide, CFL reflector flood lamp, CFL high wattage lamp and CFL specialty lamp measures.

Incentives were reduced for some LED measures, based on updated equipment cost data.

Duke Energy is considering new and innovative ways to reach out to customer segments that have had a lower rate of prescriptive incentive applications, and considering options to partner with other Duke Energy EE programs to cover gaps in the market. In 2017, a new retail marketing channel was tested with the third-party Leidos. Similar to the midstream marketing channel, eligible customers that shop at selected Sam's Club stores located in Duke Energy Carolinas service area may purchase eligible LED lamps at an incentive-reduced price. Leidos provides the sales information to Duke Energy electronically for reimbursement. The test showed minimal results during 2017. The future of this channel is still being reviewed.

Along with the measure updates listed above, the Program is also considering offering new low-cost measures at no out-of-pocket cost to customers. Commission notification will be provided prior to the offering of these future measures.

The Program launched an optional new process for customers to pre-verify equipment eligibility, which is designed to give customers certainty that their selected equipment qualifies for an incentive prior to purchase and will overcome another barrier that can delay investment in EE projects. To date, 70 applications for pre-qualification have been received for customer projects in NC and SC.

E. Marketing Strategy

Nonresidential customers are informed of programs via targeted marketing material and communications. The 2017 marketing plan included direct marketing such as email and direct mail, online marketing (Hero banner), print marketing and supporting partnerships. The marketing team has selected a highlighted topic for each month, and promotes coordinated communication around that topic.

The internal marketing channel is comprised of assigned Large Business Account Managers, small and medium Business Energy Advisors, and Local Government and Community Relations, who all identify potential opportunities as well as distribute program collateral and informational material to customers and Trade Allies. Duke Energy has two business energy advisors in the Carolinas area to perform outreach to unassigned small and medium business customers. The business energy advisors follow up on customer leads to assist with program questions and steer customers to the trade ally search tool who are not already working with a trade ally. In addition, the business energy advisors are contacting customers with revenue between $60,000 and $250,000 to promote the Smart $aver® programs.

In addition, the Economic and Business Development groups also provide a channel to customers who are new to the service territory.

The following chart summarizes the campaigns during the second half of 2017. Example images are found on the following pages.

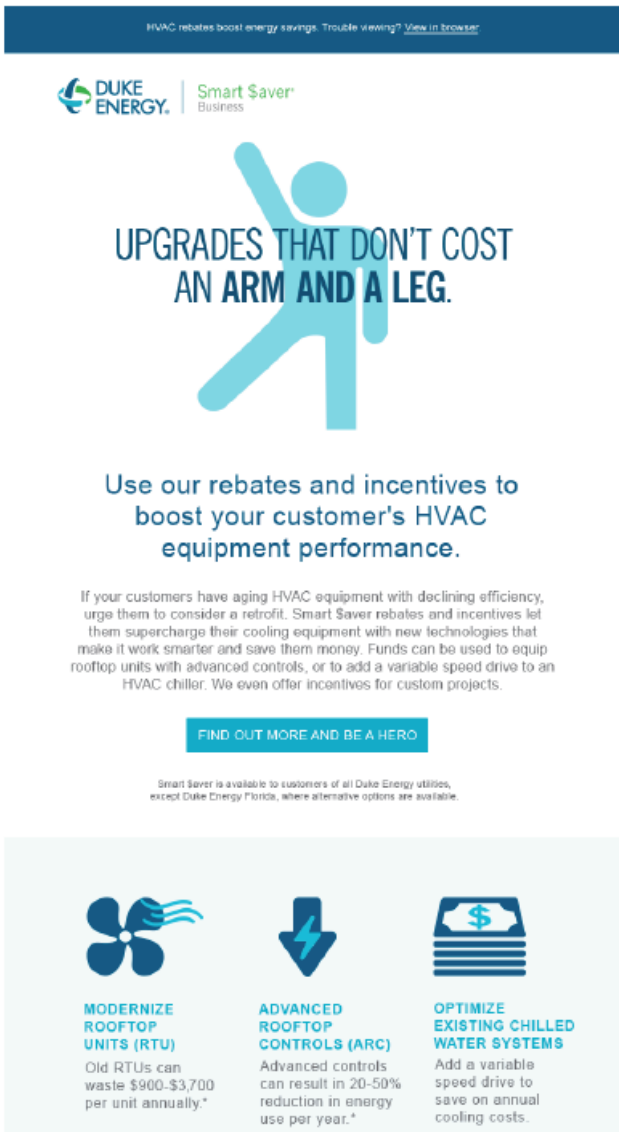
Non-Residential Smart $aver Prescriptive

Month	Channel	Audience	Incentives Highlighted
July	Email, media campaign (digital display, social and preroll video)	Retail, Warehouse, Medical Restaurants, Commercial Real Estate*	ARC and VSD for Chillers
August	Email, media campaign (digital display, social and preroll video)	Data Centers, Commercial Real Estate*	Data Center Cooling
September	All marketing paused while teams responded for storm duty		
October	Email, Direct Mail, media campaign (digital, display, social and preroll video)	Restaurants, Healthcare, Education*	Demand Control Ventilation for Kitchen Exhaust
November	Email, media campaign (digital display, social and preroll video)	All customers*	Prequalification Channel
December	Email, media campaign (digital display, social and preroll video)	Manufacturing, Commercial Real Estate, Education, Water/Wastewater, Government, Retail, Healthcare*	Ductless Mini-splits

* Email also sent to the participating Trade Allies.

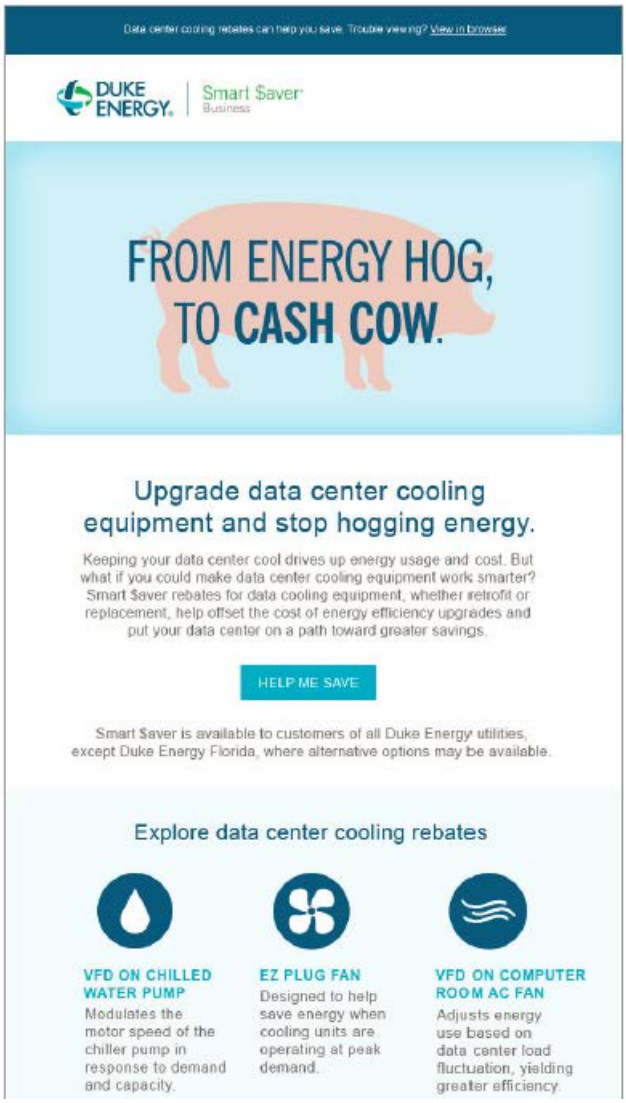
Non-Residential Smart $aver Prescriptive

July ARC and VSD Campaign – Email

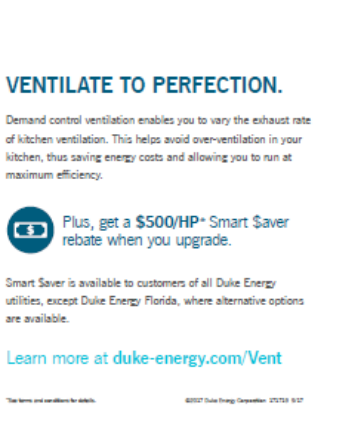


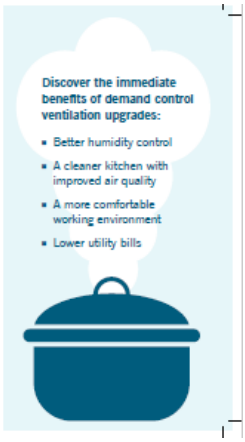
Non-Residential Smart $aver Prescriptive

August Data Center Cooling Campaign – Email

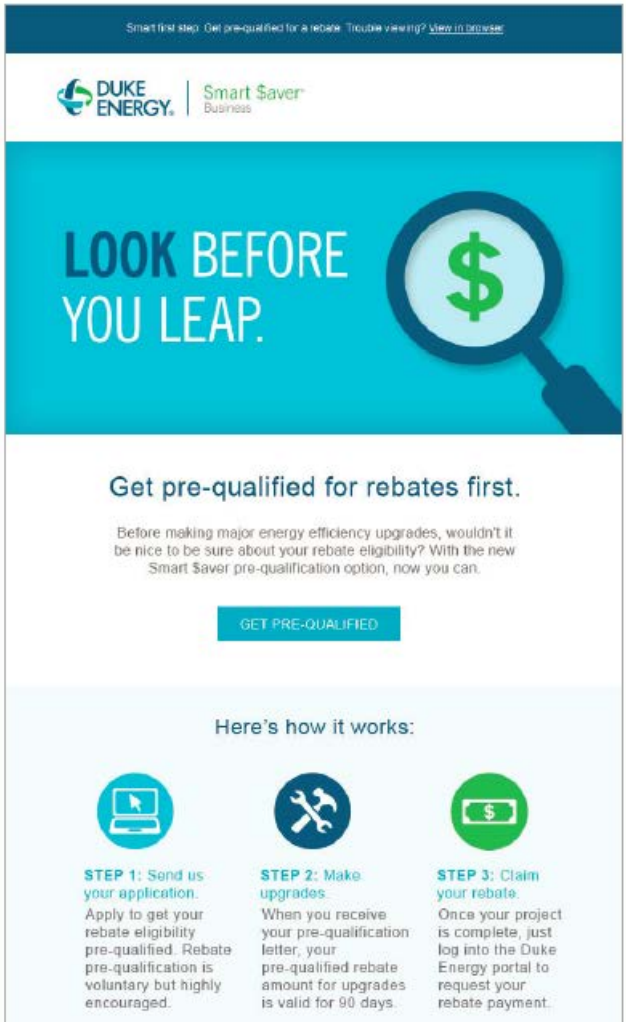


October Demand Control Ventilation Campaign – Email and Direct Mail (DM below)



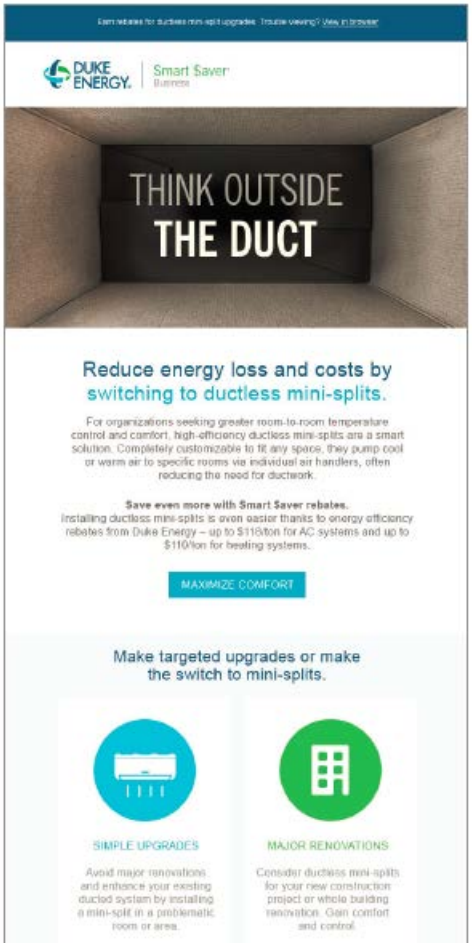


November Prequalification Campaign – Email



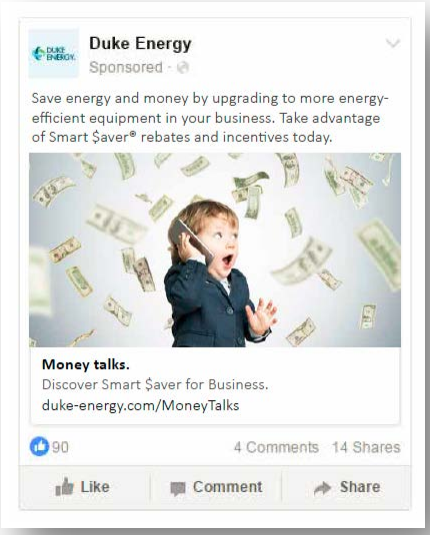
Non-Residential Smart $aver Prescriptive

December Ductless Mini-split Campaign – Email



Media Campaign – Retargeting Ads

Media Campaign – Facebook Ad



F. Evaluation, Measurement and Verification

Evaluation work for a process and impact evaluation began the 3rd quarter of 2016, with a combined DEC and DEP final report in the first quarter of 2018.

The process evaluation will include interviews with program management, Trade Allies and customer participants. Customer and Trade Ally interviews will include data collection to gauge customer satisfaction, free-ridership and spillover.

The impact evaluation will consist of estimating annual energy and demand impacts associated with program participation. The primary activity will involve an engineering-based analysis to estimate the impacts of the various program measures. The analysis will be supplemented by on-site field verification of sampled participants, as well as database and deemed savings reviews.

G. Appendix

Non Residential Smart Saver Energy Efficient Food Service Products[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	**$2.6**	**$1.6**	**61%**
Program Cost	**$0.8**	**$0.3**	**39%**
MW	**0.4**	**0.2**	**54%**
MWH	**3,968.3**	**2,257.3**	**57%**
Units	**5,293**	**2,730**	**52%**

1) Values are reflected at the system level.

2) Numbers rounded.

Non-Residential Smart $aver Prescriptive

Non Residential Smart Saver Energy Efficient HVAC Products[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$7.5	$3.4	45%
Program Cost	$3.3	$1.6	47%
MW	2.8	1.0	37%
MWH	6,253.8	3,382.7	54%
Units	121,841	3,016,407	2476%

1) Values are reflected at the system level.
2) Numbers rounded.

Non Residential Smart Saver Energy Efficient Lighting Products[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$41.4	$193.3	467%
Program Cost	$11.1	$66.7	601%
MW	11.3	33.0	292%
MWH	68,582.5	229,728.9	335%
Units	245,765	2,290,141	932%

1) Values are reflected at the system level.
2) Numbers rounded.

Non Residential Energy Efficient Pumps and Drives Products[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$2.7	$2.2	83%
Program Cost	$0.7	$0.5	71%
MW	0.6	0.5	83%
MWH	4,745.7	3,470.7	73%
Units	4,347	4,361	100%

1) Values are reflected at the system level.
2) Numbers rounded.

Non Residential Energy Efficient ITEE[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$1.4	$0.0	0%
Program Cost	$0.4	$0.1	15%
MW	0.0	0.0	0%
MWH	3,184.7	3.3	0%
Units	2,613	45	2%

1) Values are reflected at the system level.
2) Numbers rounded.

Non-Residential Smart $aver Prescriptive

Non Residential Energy Efficient Process Equipment Products[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	**$0.7**	**$0.4**	**60%**
Program Cost	**$0.1**	**$0.2**	**157%**
MW	**0.1**	**0.1**	**66%**
MWH	**564.1**	**577.6**	**102%**
Units	**1,509**	**8,936**	**592%**

1) Values are reflected at the system level.

2) Numbers rounded.

Non-Residential Smart $aver® Performance Incentive

A. Description

Duke Energy Carolinas, LLC's (the "Company's") Non-Residential Smart $aver® Performance Incentives (the "Program") offers financial assistance to qualifying commercial, industrial and institutional customers (that have not opted-out) to enhance their ability to adopt and install cost-effective electrical energy efficiency projects.

The Program is designed to encourage the installation of new high efficiency equipment in new and existing nonresidential establishments as well as efficiency-related repair activities designed to maintain or enhance efficiency levels in currently installed equipment. The Program provides incentive payments to offset a portion of the higher cost of energy efficient installations that are not eligible under either the Smart $aver® Prescriptive or Custom programs. The types of measures covered by the Program include projects with some combination of unknown building conditions or system constraints, or uncertain operating, occupancy, or production schedules The specific type of measures will be included in the agreement with the Customer. The Program is being delivered in close coordination with the existing Custom program team, and share resources for administrative review and payment processing. The Program requires pre-approval prior to project initiation.

The intent of the Program is to broaden participation in the Company's non-residential efficiency programs by being able to provide incentives for projects that previously were deemed too unpredictable to predictively calculate an acceptably accurate savings amount, and therefore no incentives were offered. It is expected that the program will provide a platform to better understand new technologies.

The key difference between the Performance Incentive Program and the Custom Program is that the Performance Incentive customers will be paid incentives based on actual measure performance. For each project, a plan will be developed to verify actual performance of the project upon completion and will be the basis for the performance portion of the incentive.

The Program incentives will typically be paid out in the following manner:

- Incentive #1: For the portion of savings that are expected to be achieved with a high degree of confidence, an initial incentive will be paid. This incentive is paid once installation is complete.
- Incentive #2: After performance is measured and verified, the performance-based part of the incentive will be paid out as follows:
    - If performance exceeds expectations, the incentive payout may be larger.
    - If performance does not meet expectations, the incentive payout may be smaller.

Application forms for applying for incentives are located on the Company's website.

The Company contracts with Alternative Energy Systems Consulting, Inc. (AESC) to perform technical review of applications. All other program implementation is performed by Duke Energy employees or direct contractors.

Audience

All of the Company's non-residential electric accounts billed on eligible rate schedules, except those that choose to opt-out of the Program, are eligible.

B & C. Impacts, Participants and Expenses

Non-Residential Smart $aver® Performance Incentive

Non Residential Smart Saver Performance Incentive[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	**N/A**	**$0.0**	**-**
Program Cost	**N/A**	**$0.3**	**-**
MW	**N/A**	**0.0**	**-**
MWH	**N/A**	**12.8**	**-**
Units[3]	**N/A**	**19**	**-**

1) Values are reflected at the system level.

2) Numbers rounded.

3) As filed values not included as program was not included in filing.

D. Qualitative Analysis

Highlights

As new technologies are introduced and changes occur in the energy efficiency marketplace, Performance incentives is the perfect tool to influence and reward customers to invest in energy efficiency. The Smart $aver Performance Incentives program was launched on January 1, 2017. Efforts were made to educate internal resources, trade allies and vendors who sell energy efficient equipment, to promote and assist customers to participate in the Program. In addition, the program is being marketed closely with the Smart $aver Custom Program.

Launching of a new program often takes time to create awareness and understanding of the new offering and to identify opportunities. In DEC, the program is beginning to see the fruits of our marketing efforts with an increase in interest and the enrollment of three (3) Performance projects with estimated savings of 7.125 mm kWhrs and several promising projects in the pipeline. With a compelling value proposition and our internal resources and trade allies getting comfortable with this unique program offering. participation should increase significantly.

Issues

Given the infancy of the program, no actual issues have been observed at this time. However, program management is monitoring a few areas of interest.

- The preferred method for measurement and verification of performance is through gathering, monitoring and analyzing customer billing history. However, there may be times when the energy savings are not significant enough to effectively evaluate through the review of billing information. If this is the case, sub-metering will be required at the customer's expense, which may be a hurdle to participate due to the time and expense of monitoring and verifying savings.

- The Performance program cannot be offered to customers who are opted-out of the EE Rider. Performance projects can easily carryover into multiple calendar years because of the monitoring and verification requirement, which could make opting-in more difficult to justify to participate in the Program.

- From a customer's perspective, there is the risk of measured energy savings being less than expected resulting in a smaller incentive payout.

- The Program may be subject to large fluctuations in performance due to long project lead times, long monitoring and verification times, and the timeliness and size of the projects.

Potential Changes

The Company continuously will consider functional enhancements to enhance participation, processing speed and program efficiency.

Beginning in Q4, the Performance team began offering, on a limited basis, until it can be evaluated in action, a software tool that will allow a proactive view of building performance and in turn identify poor performing buildings for energy efficiency programs, such as Performance Incentives/retro-commissioning and energy assessments. This tool should give us an accurate picture of which buildings have the greatest potential for energy savings and where to focus our time and resources to promote the program.

E. Marketing Strategy

The 2017 marketing strategy for the Smart $aver Performance Incentive Program is closely aligned with the Custom Program. The goal is to educate the Company's non-residential customers about the technologies incentivized through both programs, as well as the benefits of installing energy-efficient equipment. These efforts will encompass a multi-channel approach, which will include but not limited to::

- Email (targeted customers)
- Direct Mail (letters to qualified/targeted customers)
- Duke Energy Carolinas website
- Community outreach events
- Print advertising/mass media
- Target customer outreach
- Industry Associations
- Large Account Managers
- Business Energy Advisors
- Trade Ally Outreach

These marketing efforts are designed to create customer awareness of the Program, to educate customers on energy saving opportunities and to emphasize the convenience of Program participation.

Non-residential customers are informed of programs via targeted marketing material and communications. Information about incentives is also distributed to trade allies, who in turn sell equipment and services to all sizes of nonresidential customers. Large business or assigned accounts are targeted primarily through assigned Company account managers. Unassigned small to medium business customers are supported by the Company's business energy advisors. The business energy advisors follow up on customer leads to assist with program questions and steer customers to the trade ally search tool who are not already working with a trade ally. In addition, the business energy advisors are contacting customers with electrical costs between $60,000 and $250,000 to promote the Energy Efficiency for Business program.

The internal marketing channel is comprised of assigned Large Business Account Managers, Business Energy Advisors, and Local Government and Community Relations who all identify potential opportunities as well as distribute program collateral and informational material to customers and trade allies. In addition, the Economic and Business Development groups also provide a channel to customers who are new to the service territory.

Non-Residential Smart $aver® Performance Incentive

F. Evaluation, Measurement and Verification

Due to program launch in January 2017, no evaluation activities are planned in 2018. Future evaluation timing will depend upon sufficient participation.

Small Business Energy Saver

A. Description

The purpose of Duke Energy Carolinas, LLC's (the "Company's" or "DEC") Small Business Energy Saver program (the "Program") is to reduce energy usage through the direct installation of energy efficiency measures within qualifying small non-residential customer facilities. All aspects of the Program are administered by a single Company-authorized vendor. Program measures address major end-uses in lighting, refrigeration, and HVAC applications.

Program participants receive a free, no-obligation energy assessment of their facility followed by a recommendation of energy efficiency measures to be installed in their facility along with the projected energy savings, costs of all materials and installation, and up-front incentive amount from the Company. Upon receiving the results of the energy assessment, if the customer decides to move forward with the proposed energy efficiency project, the customer makes the final determination of which measures will be installed. The energy efficiency measure installation is then scheduled at a convenient time for the customer and the measures are installed by electrical subcontractors of the Company-authorized vendor.

The Program is designed as a pay-for-performance offering, meaning that the Company-authorized vendor administering the Program is only compensated for energy savings produced through the installation of energy efficiency measures.

Audience

The Program is available to existing non-residential customers that are not opted-out of the Company's Energy Efficiency Rider. Program participants must have an average annual demand of 180 kW or less per active account.

B & C. Impacts, Participants and Expenses

Small Business Energy Saver[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$43.9	$69.3	158%
Program Cost	$17.5	$17.4	99%
MW	12.8	19.7	154%
MWH	61,629.0	97,516.7	158%
Units[3]	65,000,000	79,986,749	123%

1) Values are reflected at the system level.

2) Numbers rounded.

3) Units reflect gross kWh.

D. Qualitative Analysis

Highlights

Lime Energy is the Company-authorized vendor administering the Program in both DEC and DEP service areas.

In 2017, the Program remained popular with the Company's small and midsize business customers, with nearly 1,750 Small Business Energy Saver projects completed though year-end in DEC North & South Carolina.

The Company has administered a customer satisfaction survey to Program participants since the Program's launch in DEC. Customers continue to respond very positively to the Program, with 85% of all 2017 survey participants rating their overall satisfaction with the Program experience at an 8 or above (out of a 10 scale). Also, the majority of Program participants continue to respond that the Program has

served to improve their perception of Duke Energy, with 85% of responders indicating that the Program has had a positive effect on their overall satisfaction with the Company.

In order to expand the Program offering to more small and medium business customers who will benefit from the direct install model and turn-key Program process, the Company filed a Program modification proposal in late 2016 with both the NC Utilities Commission and the Public Service Commission of SC to expand Program availability to include all existing non-residential customer accounts with an average annual demand of 180 kW or less, which is an increase from the previous eligibility limit of 100 kW annual average demand per account. This Program expansion modification was approved in October 2016 by both the NCUC and PSC of SC and implemented within the Program shortly thereafter. Customers reacted very positively to this change in 2017, with over 140 projects completed in DEC for 100-180 kW customers.

Issues

While LED lighting measures are expected to remain the primary driver of kWh savings in the Program for the foreseeable future, the Company has been actively working with our vendor Lime Energy to implement initiatives focused on increasing refrigeration and HVAC measure adoption.

The Company began work last year to explore and evaluate potential new HVAC measures to add to the Program, with the goal of offering customers more comprehensive energy efficiency projects. Program management took steps in 2017 to introduce and offer additional HVAC measures, other than system/unit replacements, that are suitable for the small and medium business market, such as HVAC tune-ups, rooftop HVAC unit controls, and HVAC unit optimization devices.

Potential Changes

As the Program matures, the Company will continue to evaluate opportunities to add incentivized measures suitable for the small business market to the approved Program which fit the direct install program model.

Also, the Company is currently evaluating potential changes to the Program incentive design, including exploring the concept of offering higher incentives to deep energy retrofit projects with multiple measure technologies included. Ultimately, the Company would like for the Program to effectively encourage customers to take on more comprehensive energy efficiency upgrades that maximize energy savings.

E. Marketing Strategy

The Program is marketed primarily using the following channels:

- Lime Energy field representatives
- Direct mail (letters and postcards to qualifying customers)
- Duke Energy Carolinas website
- Social media and search engine marketing
- Email & Duke Energy Business E-Newsletters
- Direct marketing & outreach via Program administrator
- Outreach via Duke Energy Business Energy Advisors
- Community events

All marketing efforts are designed to create customer awareness of the Program, to educate customers on energy saving opportunities and to emphasize the convenience of Program participation for the target market.

F. Evaluation, Measurement and Verification

Evaluation activities will begin in the third quarter of 2017 for the next evaluation cycle, with a final report expected in first quarter of 2018. New process evaluation activities will include a customer journey mapping exercise to assess the qualitative experience of the customer, and reveal key information such as loyalty, satisfaction, and frustrations with the program. For the impact evaluation, new activities will include revisiting the sampling methodology based on the current measures mix and customer facility size due to the higher demand consumption cap for participation (180 kW rather than 100 kW).

Program Update:
Effective December 31, 2017 this pilot was closed. A decision was made to proactively close the pilot due to unfavorable EM&V results received for Smart Energy in Offices (SEiO) in the fall of 2017. Energy saving impacts for this pilot were based on SEiO. In addition, at the time of the receipt of the evaluation and the subsequent closure of the pilot no customers had been signed up.

A. Description

The purpose of Duke Energy Carolinas, LLC's (the "Company's) Smart Energy in Offices Program ("Program") is to increase the energy efficiency of program participants. The Program leverages communities to educate and engage building owners, property managers, building operators, tenants and occupants of a building on ways to reduce energy usage in the workplace through simple behavioral changes. This is accomplished by providing participants with detailed information of the account/building's energy usage, support to launch tenant and building operator energy saving campaigns, forums that allow networking and exchange of building operation best management practices, and information showing comparisons between their building's energy performance and others within their community and actionable recommendations to improve their energy performance.

Audience

Non-residential customers with 12 months of usage history with business operations in building with a minimum of 10,000 square feet and 50% of the space dedicated to office space who meet the Program's eligibility requirements.

B & C. Impacts, Participants and Expenses

Smart Energy in Healthcare[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	N/A	$0.0	-
Program Cost	N/A	$0.1	-
MW	N/A	0.0	-
MWH	N/A	0.0	-
Units[3]	N/A	0	-

1) Values are reflected at the system level.
2) Numbers rounded.
3) As filed values not included as program was not included in filing.

D. Qualitative Analysis

A key component of the Program is community engagement from the time of enrollment in the Program and on-going throughout the Program. Program participants identify a single point of contact that is responsible for working with the Company selected vendor's Engagement Managers. This person is responsible for interfacing with Company representatives on all aspects of the Program, including providing assistance to the Company as it relates to coordinating live events, meetings and seminars and assisting with the distribution of Program communication. The customer representative, also referred to as the Coach, is also responsible for dedicating time/resources and implementing the recommendations and guidance provided by the Company. The Coach coordinates with the building operator to carry out building operator campaigns and complete a building profile and benchmark. The Coach also provides the names and contact information for additional customer champions (referred to

as energy captains). The energy captains provide a "grassroots" deployment of energy campaigns to ensure employees are aware and participate in the energy campaigns. In addition, Program participants maintain a high level of engagement with the Company during regular check-ins. The check-in provides the Company and customer an opportunity to discuss campaigns that have been conducted or planned in the near future.

Highlights

The Company received regulatory approval from the Commission to implement the Program in third quarter of 2014.1 Since the Smart Energy in Offices launch on September 3, 2014, about 202 buildings have signed on to participate, representing about 44 customer organizations and over 32 Million Square Feet. SEiO now has active participants in Charlotte Center City, the greater Charlotte area, Greenville, SC, Greensboro, Winston-Salem, and Durham.

# Distinct Coordinating Organizations	# Distinct Duke Energy Customer Names	# Distinct Buildings	# Distinct Duke Energy Accounts	Sum SqFt
44	76	202	242	32,190,166

There has been a significant level of engagement in the building operator campaigns. An Energy Star Portfolio Manager benchmarking score in conjunction with the Smart Energy HQ portal has been generated for 51% of buildings. To date, operator campaigns offered include: Watts With the Weather, Go With the Flow, Clean Sweep, How Low Can You Go, Let It Go, and Wiser Econmizer. 56% of participants have engaged in building operator campaigns. The second Annual Operator forum and awards ceremony was held on May 19, 2016 and was attended by about 38 participants. In the 4th quarter of 2016, 60 minute interval data was made available in the Smart Energy HQ Portal. This new information will be beneficial in creating awareness about spikes in energy usage that are out of the norm, among other things.
Another exciting offering in 2016 was the collaboration with the University of North Carolina-Charlotte (UNCC). Duke has teamed up with Dr. Robert Cox to utilize his fourth year engineering students in his Building Analytics class. These students do a deep dive into program participants building data to look for abnormalities that indicate opportunities for energy efficiency. The students final exam consists of an operational assessment report delivered to the building operator. This has proven to be a highly successful collaboration that has been embraced by many program participants.

Tenant campaigns launched include Add It Up, Butterfly Effect, Occupancy Awareness, and Fall Off. Tenant action campaigns have been completed or initiated in about 66% of buildings. Over 29,623 distinct actions have been recorded in the Smart Energy HQ from campaign participants. The large increase in participation was due in part to the fact that, rather than random campaigns selected by the Coaches, a set schedule of aligned campaigns was initiated in 2016. This made it easier to manage both on the participant and Engagement Manager's sides. It also increased the sense of the community wide competition. In 2016, a mobile device application, the Happen App, was rolled out in order to provide an additional interface for delivering campaign content and energy usage tips. Enhancements to the app, such as Social Sharing, will be introduced in 2017.

[1] The North Carolina Utilities Commission issued an Order in Docket No. E-7, Sub 961 on August 13, 2014 and Public Service Commission of South Carolina issued an Order in Docket No. 2014-253-E- on July 9, 2014 approving the Smart Energy in Offices program.

E. Marketing Strategy

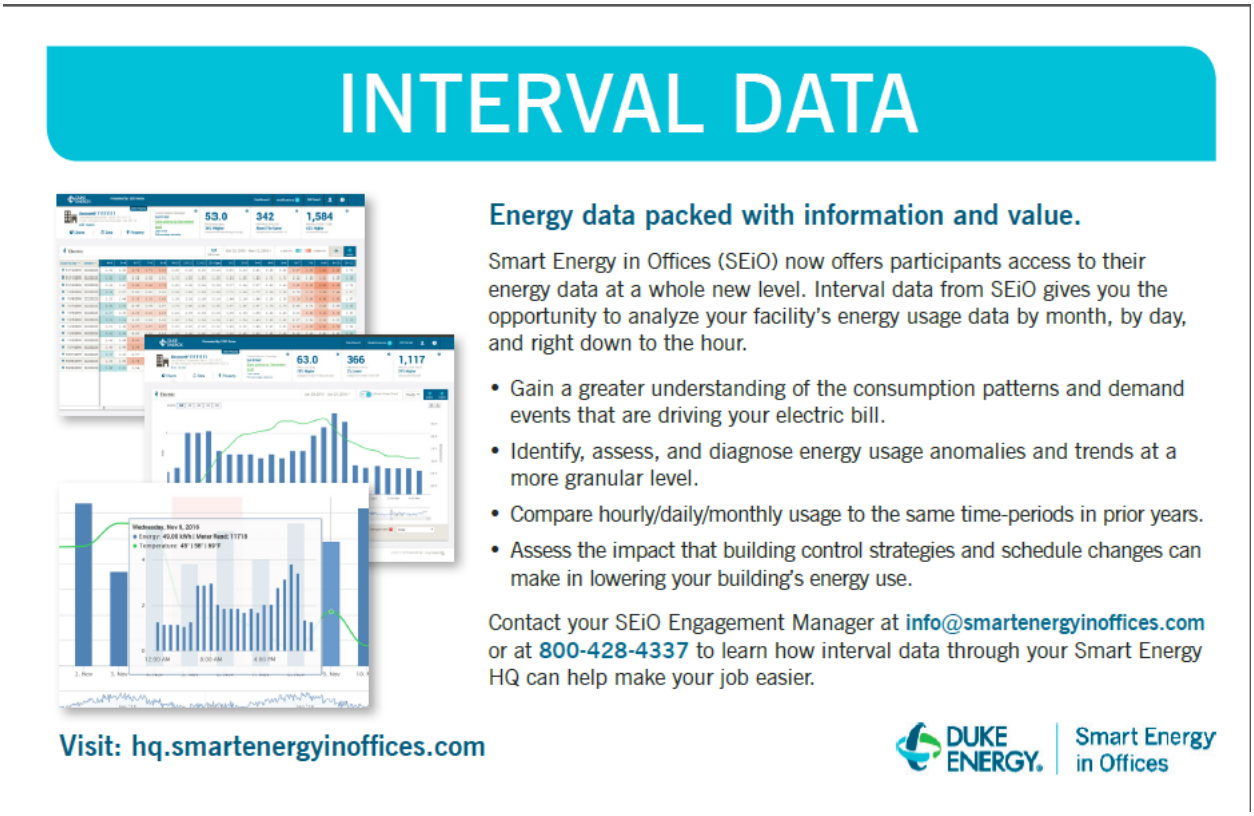
A number of marketing channels have been used including email, print media, social media, videos and presentations at public events. Examples include print ads, popup displays and tables with "spin the wheel" challenges at building sustainability events, per property management requests.. Marketing materials, including a poster with the campaign schedule had been developed for increased participant engagement in tenant and operator campaigns. Additionally, we continue to provide tips on how to reduce wasted energy in the office by utilizing our social media channel Twitter. Online newsletters were distributed to participants in March, June and September. A Smart Energy in Offices testimonial video to drive new enrollment and additional engagement is in the final stages of editing and will be rolled out in early 2017. Two new case studies, highlighting participants success, were created in 2016.

F. Evaluation, Measurement and Verification

Due to the EM&V results for Smart Energy in Offices, we will not be rolling out Smart Energy in Healthcare. No EM&V activities are planned in 2018.

G. Appendix

Link to Smart Energy Newsletter Articles



DUKE ENERGY | Smart Energy in Offices

SEiO Successes Case Study

Trinity Partners Ally Center Building

Overview

For Shane Woycik, the Ally Center feels somewhat like his own child. From an engineering perspective, having the privilege of being the building operator since its construction is priceless. As he explained, "You really get to see the structure and you literally know what's behind every wall." This unique perspective combined with a stellar engineering and property management team, as well as an active partnership with Duke Energy's Smart Energy in Offices (SEiO) program, has led to some impressive energy-saving success stories from the Ally Center.

Woycik is a senior chief engineer with Trinity Partners, and the Ally Center in uptown Charlotte is where he spends his days. Prior to joining Trinity Partners, Woycik spent about five years with Jones Lang LaSalle as a building engineer at a Delphi plant in Detroit, Mich. Although buildings up north run primarily on boilers versus the south where heat pumps are more typical, he noted that "all of the systems are ultimately trying to do the same thing, which is keeping the occupants comfortable."

As he focuses on keeping folks comfortable across the Ally Center's 15 floors, Woycik explained that the building has several unique features and benefits. For example, "All of our fan motors run on variable frequency drives (VFDs), which greatly reduces electrical usage. The fact that the building is only 8 years old and is still considered new gives it that advantage, whereas some older buildings have to budget for updates like VFDs," Woycik said. He noted a couple of the main benefits of the VFDs: to control speed better and allow fans to run more smoothly.

Another energy-saving feature at the Ally Center is the lighting; it is modern, with low-wattage lamps. "We even have one tenant with an entire floor full of LED lights," Woycik said, "and we are pushing for all of the can lights to retrofit to LEDs as well."

"Even though the building is only 8 years old and still considered new, there is still room for improvement. Some of the stuff we have discovered was because of SEiO, and we are really glad we participate!"

Shane Woycik, senior chief engineer

Trinity Partners Ally Center Building

Location: 440 S Church St., Charlotte, NC 28202

Campaigns Completed: 12 Operator campaigns

SEiO Awards for 2015/2016:
Diamond Award Winner for Operator Level
Diamond Award Winner for Building Level

ENERGY STAR Score: 92

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SEiO Successes Case Study

Trinity Partners Ally Center Building

Starting with SEiO

At first, Woycik was not sure there would be time for the SEiO program, or if it would be worth the effort. But, he soon realized that "although it's tough to find time to participate in other programs, since day one SEiO has paid off." He has relied upon the program and its campaigns as a type of preventive maintenance tool and "to reinforce the need to check and recheck things in the building that we are and should be doing anyway."

Luckily for Woycik, there was no need to convince Ally Center management – they were immediately on board. The Ally Center even takes the SEiO program a step further by using it to help UNC Charlotte students with real-life work experience in using automation systems to teach and provide on-the-job training for up-and-coming building operators.

SEiO offers both operator- and tenant-focused campaigns and challenges. The former focuses on building systems and controls, and things that operators can do behind the scenes to maximize savings while maintaining optimal system efficiency and occupant comfort. The latter focuses on the building occupants and working with volunteer coaches to encourage and ultimately ask tenants to consider making small changes in their day-to-day life that can add up to a big impact.

The Ally Center's first participation experience was with the completion of a SEiO operator campaign. Most recently they completed Where you at Thermostat?, where they calibrated space temperature sensors and thermostats to verify the accuracy of room sensor readings. Regarding operator campaigns, Woycik noted, "Damper Derby was really great. We were out there making sure outside air dampers were working and no infiltration or leakage was occurring."

Ally Center has also participated in tenant campaigns such as Crab, You're It!, a fun and catchy campaign that encourages office workers to power down energy-using equipment in their workspace, lest they find their desk covered in toy crabs. SEiO also offers community challenges such as Butterfly Effect, which relies on the theory that even the smallest occurrences can change the course of the universe and that simple energy-saving changes can make a big difference in our environment.

Lending Library Success

SEiO has recently launched the Lending Library, an assortment of tools available to borrow to help identify savings opportunities and assist with operator campaigns. While attending the Semi-Annual Operator Forum in May of 2016, Woycik took a look at the Lending Library display table and signed up to borrow a HOBO light sensor. To test a hunch, he placed it in an elevator at the Ally Center and quickly confirmed what he had feared: the elevator lights were not turning off after hours. The elevator company has since been contacted and is addressing the problem.

With regard to the Lending Library, Woycik said, "By borrowing the HOBO light sensor, not only did I prove my assumption on the elevator lights, but I was also able to validate the need for purchasing our own HOBO light sensor for the Ally Center." He added, "The Lending Library is great; we are making discoveries with these tools that SEiO has made available to us!"

Recognizing the Success

Woycik pointed out some additional benefits of participating in the Operator Forums: to network with industry peers, share best practices with building operators in the area, and stay up-to-date with program offerings, campaigns and materials. At the first annual SEiO Awards Ceremony immediately following the Operator Forum in May of 2016, Trinity Partners (and specifically the Ally Center) was recognized as a Diamond Level Operator and Diamond Level Building Award winner – the highest awards achievable!

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SEiO Successes Case Study

Tobin Freid, sustainability manager

Sustainability is not just a buzz word for Tobin Freid, it is a passion. And it takes passion in your field to dedicate time and energy toward it, as Freid has done with sustainability over the past 17 years. Eight of those years have been spent sharing her knowledge and passion with the city and county of Durham. Her recent successful involvement in Duke Energy's Smart Energy in Offices (SEiO) program has been a natural progression to help her meet admirable and lofty sustainability goals.

As a sustainability manager, Freid's main focus is to make sure the city and county of Durham's office buildings are running in a manner that satisfies their day-to-day operational needs, without negatively impacting the environment. Beyond that, she aims to make Durham an energy efficiency role model. She continuously seeks to utilize new and creative ways to help Durham "be green." Freid has studied other cities around the country and watched them transform themselves into prime examples of effective, sustainable cities and is excited to be helping Durham reach its sustainability goals.

Freid's proactive and purposeful approach toward energy efficiency naturally led her toward the SEiO program in 2015, which came as a pleasant surprise. She explains, "We had a meeting with Duke Energy to discuss the migration of our energy data into ENERGY STAR® Portfolio Manager® to help track energy efficiency across all of our properties. SEiO was introduced as a complete solution." Freid's interest was instantly piqued. "Smart Energy, what's that?," she said, "and of course I needed to hear more."

Upon learning just a fraction of what SEiO offers at that initial meeting, Freid understood the potential energy efficiency benefits for the buildings across the city and county. As Freid started communicating with the SEiO team, she learned that SEiO is a no-cost, voluntary behavioral-based program that aims to create a new culture concerning energy savings.

"Lasting behavioral change takes time. SEiO aims to help people understand the value of changing habits for long-term impact."

Tobin Freid, sustainability manager

Success for the city and county of Durham

Number of campaigns
Three communitywide tenant challenges since April, 2016

Participation levels achieved
Add it Up: 217 participants
Butterfly Effect: 207 users taking 6,021 actions

Secrets of success
Personalizing SEiO weekly emails
Creating a buzz among employees
Offering LED bulbs as added incentives to active participants

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SEiO offers both operator and tenant focused campaigns and challenges. Operator campaigns focus on building systems and controls to help maximize savings while maintaining optimal system efficiency and occupant comfort. Tenant challenges focus on building occupants and encourages them to make small changes in their work day that can add up to a big impact.

Despite her already busy workload, Freid's interest in the program and action as a SEiO coach was the driving force behind engaging the city and the county. She prioritized SEiO involvement which helped provide the push Freid needed to get through to the majority and the decision makers. She says, "People can be iffy about joining programs if they don't understand the value, or see an instantaneous benefit. But any lasting behavioral change takes time."

Freid's perseverance made her a natural choice for an energy coach, the liaison between the SEiO program and the participating tenants and employees. While the SEiO team organizes the challenges and provides all of the materials and communications necessary to participate, coaches are the ones to implement the challenges among their tenants, encourage participation and create the buzz amongst their co-workers.

Fried oversaw the implementation of the communitywide challenge, "Add It Up" with the city of Durham in April, 2016. The city responded with the highest participation numbers of any community in the program. She followed suit with Durham county and the "Butterfly Effect" challenge in July, 2016. Again, the Durham community had some of the highest participation overall in the SEiO tenant challenge.

While Freid notes appreciation that the SEiO team provides implementation support and awareness building materials, she recognizes that personalization and customization for her teams would help her make the program more successful. She explains that one of the advantages of being a SEiO energy coach is that each will best understand their own audience, making them the ideal communicators and motivators.

Another key to Freid's success was the use of an incentive. She had an extra stash of LED bulbs on-hand from a prior event, which she used to reward active participants. Freid notes, "People were excited about the bulbs. They are useful and a great reminder of what we're trying to do here."

Tobin Freid insists that being a SEiO energy coach doesn't take much time, and is a fun and easy way to help realize sustainability goals. She concludes, "It's about getting what you give."

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Smart Energy in Offices

Program Update:
Due to the results of the evaluation report delivered in the 4th quarter of 2017, this program is no longer accepting new participants and will close on June 30, 2018. Existing participants will continue to be offered tenant and building challenges (included in the calendar below). In addition, the UNCC Spring 2018 Semester will include student assessments for approximately 25 of our program participant's buildings.

A. Description

The purpose of Duke Energy Carolinas, LLC's (the "Company's) Smart Energy in Offices Program ("Program") is to engage commercial building stakeholders in energy management best practices that address operational and behavioral opportunities to achieve energy savings. The program combines engagement strategies that aim build awareness and drive impact through targeted action campaigns and challenges, with mechanisms to recognize and reward building operators, tenant champions and individual employees stepping up to make a difference in their community.

Audience

Non-residential customers with 12 months of usage history with business operations in a building with a minimum of 10,000 square feet and 50% of the space dedicated to office space who meet the Program's eligibility requirements.

B & C. Impacts, Participants and Expenses

Smart Energy in Offices[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$4.4	$1.1	24%
Program Cost	$1.7	$0.8	45%
MW	8.8	2.1	24%
MWH	42,174.7	10,272.2	24%
Units[3]	48,421,359	26,824,711	55%

1) Values are reflected at the system level.
2) Numbers rounded.
3) Units reflect gross kWh.

D. Qualitative Analysis

The program relies on in-field Engagement Manager resources to guide customers in electing to participate at no additional cost and gain access to the program's resources and staff support. Property and facility managers ("coaches") along with building engineers ("building operators") and tenant champions ("tenants") are provided with orientation training and onboarding to ensure participants can make use of the program's energy use feedback, benchmarking, and employee engagement capabilities. Participants are also equipped with messaging templates and tools to ensure their success in gaining the support of other key building stakeholders and attract a large population of building employee occupants to join the initiative.

Participants benefit from access to an online platform (the "Smart Energy HQ") that provides access to energy use feedback (e.g., monthly billing, interval consumption and demand data) and automates

benchmarking through web services integration with ENERGY STAR Portfolio Manager. Building operators can also access educational content and technical resources as part of a series of operator action campaigns where operators earn points and compete by recording targeted actions addressing various energy efficient maintenance and operations best practices.

The campaigns are promoted throughout the building to draw tenant attention to the behind-the-scenes efforts of facilities staff to be a part of a commitment to save energy. Each campaign is run over the course of several weeks with ongoing messaging and direct outreach from the program Engagement Manager. Many of the campaigns guide operators in analyzing interval data usage profiles and investigating building automation settings and schedules to optimize building systems performance. Additional building operator engagement comes in the form of semi-annual operator forums where building engineers gather with their peers to share their experiences and highlight success stories. Finally, an equipment lending library serves to provide access to sensors, data loggers and imaging cameras with associated software to gain additional insights.

In addition to focus on building operations and maintenance, the program aims to raise awareness among the broader tenant employee population that has significant control over the lighting and plug load end uses that can account for more than half of all electricity use in commercial office buildings. With community-wide challenges where buildings earn recognition and compete with other buildings in the communities, individuals are encouraged to join the initiative by pledging their support, characterizing their individual workstation energy use profile and recording simple energy-saving behaviors. Some building energy challenges invite participants to help their co-workers address energy waste in the office and give individuals the chance to take accountability for shared energy end uses (e.g., common area light switches, networked printers, etc.).

Tenant challenge participation, along with benchmarking performance improvement, and operator campaign participation determine the annual awards (e.g., bronze, silver, gold, diamond) given to participating buildings.

Highlights

The Company received regulatory approval from the Commission to implement the Program in the third quarter of 2014.[1] Since the Smart Energy in Offices launch on September 3, 2014, the program has grown to include more than 190 participating buildings across 41 organizations and over 31 Million Square Feet. SEiO now has active participants in Charlotte Center City, the greater Charlotte area, Greenville, SC, Greensboro, Winston-Salem, and Durham.

# Distinct Coordinating Organizations	# Distinct Duke Energy Customer Names	# Distinct Buildings	# Distinct Duke Energy Accounts	Total Floor Area (SqFt)
44	76	202	242	32,190,166

[1] The North Carolina Utilities Commission issued an Order in Docket No. E-7, Sub 961 on August 13, 2014 and Public Service Commission of South Carolina issued an Order in Docket No. 2014-253-E- on July 9, 2014 approving the Smart Energy in Offices program.

Engagement is most significant in the building operator campaigns. An ENERGY STAR Portfolio Manager benchmarking score in conjunction with the Smart Energy HQ portal has been generated for 62% of buildings. For the 2016-2017 program year,, operator campaigns offered included: Where You at Thermostat, Watts with the Weather, Go with the Flow, Clean Sweep, How Low Can You Go, Let It Go, Wiser Economizer, Invader Crusader, Elevate Your Game and All About that BAS. On average, close to one in three buildings had engaged in each of the building operator campaigns during the current campaign cycle. The second Annual Operator forum and awards ceremony was held on June 6, 2017 and was attended by about 35 participants.

A relationship between SEiO and the University of North Carolina Charlotte (UNCC) was initiated in 2015 via Envision Charlotte's partnership with UNCC enabled by a grant from the US Department of Energy (DOE). Using the DOE-generated processes and tools, UNCC developed an advisory service designed to help those in the commercial real estate field to identify energy savings opportunities. Given the commonality of the goals between the Envision Charlotte/UNCC initiative and SEiO, in the spring of 2016, SEiO launched its partnership with UNCC as well. This partnership continues to be highly beneficial to both UNCC students and to participating SEiO building operators. Through the partnership, SEiO leverages UNCC's manpower and objectivity to perform detailed assessments that most operators do not have the time to perform. Meanwhile, UNCC students receive the opportunity to gain real world experience in downtown Charlotte office buildings. An overview of the deliverables and activities resulting from the SEiO/UNCC partnership are summarized below.

UNCC Student Assessment:

- A team of students is brought into participating building(s) to perform an initial walk-through operational assessment
- Students partner/collaborate with the building over the course of a semester and are leveraged to help investigate available data

Participating Building Provides:

- Access/escort for an initial operational assessment
- Access for a brief after-hours visit
- Access to BAS data (if available)

Participating Building Receives:

- High level report on the building's performance and operational savings opportunities based on available data analyses (may include monthly billing or interval usage data)
- Detailed reports for use in key SEIO operator campaigns throughout the year
- Direct assistance with operator campaigns conducted throughout the semester

In addition to the Student Assessments as described above. The collaboration with UNCC faculty has also afforded the SEiO program a wealth of benefits including guidance on and for building operator training, best practice videos and Operator Campaign content

Tenant campaigns launched during the 2016-2017 program year included Add It Up, Butterfly Effect, Occupancy Awareness, Fall Off, Winter Warm Up, Spring in Your Step and Get Started. Tenant action campaigns have been completed or initiated in more than two thirds of participating buildings. Over 30,000 distinct actions have been recorded in the Smart Energy HQ from campaign participants, with more than 14,000 actions recorded from the summer of 2016 to date.

The timeline shown below provides a snapshot of how the operator and tenant engagement campaigns and activities line up in the 2017-2018 program year in order to maximize program awareness and opportunity for total building recognition.

Recently the team has worked closely with the UNC Charlotte faculty and staff to align the HQ tools and operator campaigns with industry-identified best practices for building re-tuning and ongoing commissioning. The team's goal is to allow for participants to access a library of control strategies and interventions organized by building systems and prioritized by the likelihood of applicability, the level of effort to execute, and the magnitude of potential energy savings. The Engagement Manager will work with customers to identify applicable actions to be taken or verified, and support the implementation of these actions with any needed guidance, tools and resources.

E. Marketing Strategy

The Company's vendor, Accelerated Innovations supports the coordination of marketing and engagement efforts with community stakeholders, industry associations, and delivery partner entities. Resulting efforts help Duke Energy commercial-office customers reduce their energy consumption through simple behavioral modification actions.

SEiO leverages a full catalogue of communication mediums (from social and earned media to field exhibits and direct outreach) to engage with and influence targeted customers with both objective and subjective messaging.

Field Engagement:

The SEiO vendor team provides promotional and outreach for the program through the locally placed Engagement team, which is fully supported by additional program management, technical and marketing staff, as well as additional resources, as needed. Field engagement activities include the following:

- **Field visits.** The SEiO engagement team visits both targeted and participating organizations to identify recruitment and engagement opportunities.
- **Association Events and Meetings.** The SEiO team drives awareness among the targeted communities by participating and presenting (when possible) at building association meetings, including, but not limited to IFMA, IREM, GBC, BOMA, etc.
- **Interactive displays.** In an effort to engage participants and in collaboration with participating organizations Coaches, the SEiO team sets up informational, interactive program displays in eligible buildings and distributes program information to building tenants that pass through and interact with the exhibits.
- **Promotional material distribution.** In collaboration with Duke Energy, The SEiO team has produced an expansive and comprehensive portfolio of informational program marketing materials for electronic and direct distribution to potential participants in the field. All materials are produced in accordance with Duke Energy brand guidelines and are reviewed and approved by Duke Energy Corporate Communications prior to release to the public.
- **Exhibits.** SEiO registers for and exhibits frequently throughout the year at both large and small-scale events that are popular with the workforce in the Duke Energy territory. The team distributes low-cost, SEiO branded giveaway items at these occasions, to further promote the program and build awareness.
- **Events.** The SEiO team hosts a number of program events each year, inclusive of the Annual Awards ceremony and specifically targeted events, such as the Coaches Dinner held in March of 2016 and the Semi-Annual Operator's Forums, which take place in spring and fall.

Social media channels:

- **Online marketing - promotional emails.** The SEiO team uses Duke Energy's online email engagement resource platform (SilverPop) to send relevant, personalized, targeted emails to Operators and Coaches to promote campaigns and encourage participation. Additionally, all registered SEiO participants receive an email announcement at the release of each Program newsletter.
- **Facebook, Twitter** Working with Duke Energy Corporate Communications staff, the SEiO team provides a social media calendar to designate specific topics and timelines for posts to Duke Energy's Smart Energy in Offices Twitter Handle as well as Duke Energy's Facebook posts. When special events or program-related activities occur, the SEiO team will report opportunities to tweet or post back to Duke Energy Corporate Communications.

Engagement Portals/Websites:

- **Program Website**. SmartEnergyinOffices.com, the program website, is publicly available and hosted by Duke Energy's contracted firm, Union. The SEiO team collaborates with Union to update website content and produce a quarterly newsletter, inclusive of SEiO engagement news, participant highlights, events, and program updates, which is published on the website. In Q4 2017, Duke Energy anticipates bringing all control of the SmartEnergyinOffices.com website in-house.

- **Smart Energy HQ.** Tenants (users) can connect to the Smart Energy HQ to participate in program challenges by logging in to "MyEnergyChallenge.com." Coaches and Operators can also log in to MyEnergyChallenge.com to participate in campaigns but will primarily access their organizations' energy data, Portfolio Manager accounts and Operator Campaigns via HQ.SmartEnergyinOffices.com.
- **Happen.** As of September, 2016, SEiO participants were able to access the Smart Energy HQ portal and participate in challenges via the Happen community engagement App. Awareness of the availability of the App is promoted through word of mouth from the SEiO engagement team in the field, through additional messaging/verbiage included in already scheduled emails and on the landing page of the Smart Energy HQ.
- **Instructional/Promotional Videos.** Brief, informational promotion videos are used to generate program awareness, highlight program benefits and instruct customers on how to participate. Duke Energy's Corporate Communications produced an animated promotional video which was uploaded to the Smart Energy in Offices website in April, 2016. The SEiO team, in collaboration with Duke Energy Corporate Communications, produced a testimonial video with successful program participants. The testimonial was posted to the SmartEnergyinOffices.com website in Q12017. Building Operations and Maintenance Best Practices videos that correlate to the Operator campaigns are currently being produced and will be provided to the participant customer base in Q4, 2017.

Tactical Materials

The following marketing vehicles and materials have been designed according to the Duke Energy Branding Guidelines and reviewed and approved by Duke Energy's Marketing and Communications team. These materials will be updated and enhanced as needed to support program changes or additions. The SEiO team manages production, delivery and distribution of each tactic and maintains inventories as needed, based on demand.

- **Customized email templates** – created through Duke Energy's trackable online email marketing vendor (SilverPop) for program announcements, promotion, etc.
- **Presentations** – to explain program purpose, approach and availability and provide participation instruction. For display at events, meetings, trainings, etc.
- **Banners** – pop-up banners, exhibit stand tablecloths, display booth signage
- **Posters** – foam-core mounted and digital for print and display at various locations
- **Stickers –** to promote various actions taken and devices adopted
- **Brochures/flyers** – for use as handouts when canvassing, at events, trainings, meetings, exhibits and events, etc.
  - Program overview for Tenants
  - Program overview for Operators
  - Program overview for General Audience
  - Half-pagers for each campaign (double as digital overlays on the HQ)
  - Tenant posters to raise awareness for Operator Campaigns
- **Case Studies** – customer success stories for use in ongoing recruitment efforts
- **Playbooks** – Created for Coaches and Operators
- **Digital overlays** – For instructional purposes within the Smart Energy HQ, to highlight new campaigns, features, etc.
- **Digital signage** – for display in participating building elevators and lobby kiosk

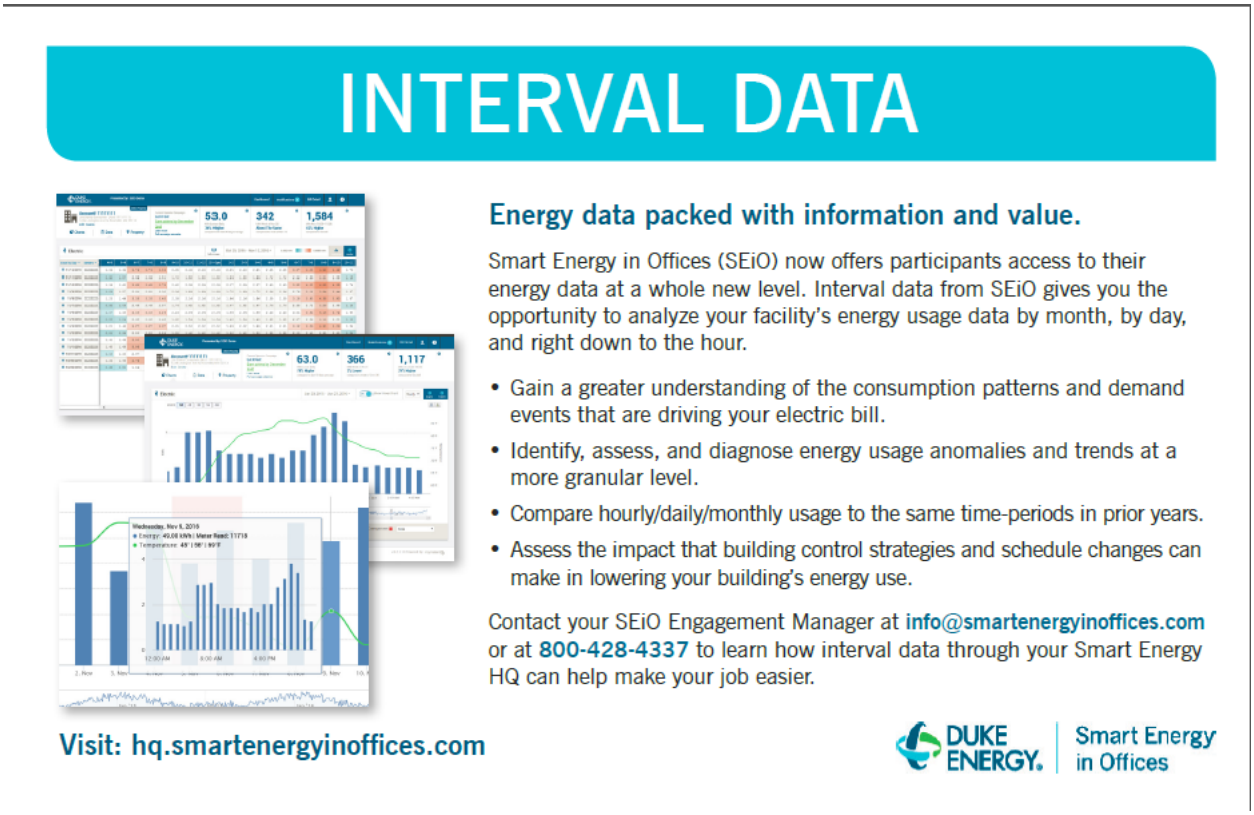
F. Evaluation, Measurement and Verification

The completed evaluation report was finalized in the fourth quarter of 2017. Due to the results of the EM&V report, we will be shutting down this program as of June 30, 2018.

G. Appendix

[Link to Smart Energy Newsletter Articles]

Please see the next page for an example of a recent program case study highlighting success with tenant employee engagement.



DUKE ENERGY | Smart Energy in Offices

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SEiO Successes Case Study

Trinity Partners Ally Center Building

Starting with SEiO

At first, Woycik was not sure there would be time for the SEiO program, or if it would be worth the effort. But, he soon realized that "although it's tough to find time to participate in other programs, since day one SEiO has paid off." He has relied upon the program and its campaigns as a type of preventive maintenance tool and "to reinforce the need to check and recheck things in the building that we are and should be doing anyway."

Luckily for Woycik, there was no need to convince Ally Center management – they were immediately on board. The Ally Center even takes the SEiO program a step further by using it to help UNC Charlotte students with real-life work experience in using automation systems to teach and provide on-the-job training for up-and-coming building operators.

SEiO offers both operator- and tenant-focused campaigns and challenges. The former focuses on building systems and controls, and things that operators can do behind the scenes to maximize savings while maintaining optimal system efficiency and occupant comfort. The latter focuses on the building occupants and working with volunteer coaches to encourage and ultimately ask tenants to consider making small changes in their day-to-day life that can add up to a big impact.

The Ally Center's first participation experience was with the completion of a SEiO operator campaign. Most recently they completed Where you at Thermostat?, where they calibrated space temperature sensors and thermostats to verify the accuracy of room sensor readings. Regarding operator campaigns, Woycik noted, "Damper Derby was really great. We were out there making sure outside air dampers were working and no infiltration or leakage was occurring."

Ally Center has also participated in tenant campaigns such as Crab, You're It!, a fun and catchy campaign that encourages office workers to power down energy-using equipment in their workspace, lest they find their desk covered in toy crabs. SEiO also offers community challenges such as Butterfly Effect, which relies on the theory that even the smallest occurrences can change the course of the universe and that simple energy-saving changes can make a big difference in our environment.

Lending Library Success

SEiO has recently launched the Lending Library, an assortment of tools available to borrow to help identify savings opportunities and assist with operator campaigns. While attending the Semi-Annual Operator Forum in May of 2016, Woycik took a look at the Lending Library display table and signed up to borrow a HOBO light sensor. To test a hunch, he placed it in an elevator at the Ally Center and quickly confirmed what he had feared: the elevator lights were not turning off after hours. The elevator company has since been contacted and is addressing the problem.

With regard to the Lending Library, Woycik said, "By borrowing the HOBO light sensor, not only did I prove my assumption on the elevator lights, but I was also able to validate the need for purchasing our own HOBO light sensor for the Ally Center." He added, "The Lending Library is great; we are making discoveries with these tools that SEiO has made available to us!"

Recognizing the Success

Woycik pointed out some additional benefits of participating in the Operator Forums: to network with industry peers, share best practices with building operators in the area, and stay up-to-date with program offerings, campaigns and materials. At the first annual SEiO Awards Ceremony immediately following the Operator Forum in May of 2016, Trinity Partners (and specifically the Ally Center) was recognized as a Diamond Level Operator and Diamond Level Building Award winner – the highest awards achievable!

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SEiO Successes Case Study

Tobin Freid, sustainability manager

Sustainability is not just a buzz word for Tobin Freid, it is a passion. And it takes passion in your field to dedicate time and energy toward it, as Freid has done with sustainability over the past 17 years. Eight of those years have been spent sharing her knowledge and passion with the city and county of Durham. Her recent successful involvement in Duke Energy's Smart Energy in Offices (SEiO) program has been a natural progression to help her meet admirable and lofty sustainability goals.

As a sustainability manager, Freid's main focus is to make sure the city and county of Durham's office buildings are running in a manner that satisfies their day-to-day operational needs, without negatively impacting the environment. Beyond that, she aims to make Durham an energy efficiency role model. She continuously seeks to utilize new and creative ways to help Durham "be green." Freid has studied other cities around the country and watched them transform themselves into prime examples of effective, sustainable cities and is excited to be helping Durham reach its sustainability goals.

Freid's proactive and purposeful approach toward energy efficiency naturally led her toward the SEiO program in 2015, which came as a pleasant surprise. She explains, "We had a meeting with Duke Energy to discuss the migration of our energy data into ENERGY STAR® Portfolio Manager® to help track energy efficiency across all of our properties. SEiO was introduced as a complete solution." Freid's interest was instantly piqued. "Smart Energy, what's that?," she said, "and of course I needed to hear more."

Upon learning just a fraction of what SEiO offers at that initial meeting, Freid understood the potential energy efficiency benefits for the buildings across the city and county. As Freid started communicating with the SEiO team, she learned that SEiO is a no-cost, voluntary behavioral-based program that aims to create a new culture concerning energy savings.

"Lasting behavioral change takes time. SEiO aims to help people understand the value of changing habits for long-term impact."

Tobin Freid, sustainability manager

Success for the city and county of Durham

Number of campaigns
Three communitywide tenant challenges since April, 2016

Participation levels achieved
Add it Up: 217 participants
Butterfly Effect: 207 users taking 6,021 actions

Secrets of success
Personalizing SEiO weekly emails
Creating a buzz among employees
Offering LED bulbs as added incentives to active participants

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SEiO offers both operator and tenant focused campaigns and challenges. Operator campaigns focus on building systems and controls to help maximize savings while maintaining optimal system efficiency and occupant comfort. Tenant challenges focus on building occupants and encourages them to make small changes in their work day that can add up to a big impact.

Despite her already busy workload, Freid's interest in the program and action as a SEiO coach was the driving force behind engaging the city and the county. She prioritized SEiO involvement which helped provide the push Freid needed to get through to the majority and the decision makers. She says, "People can be iffy about joining programs if they don't understand the value, or see an instantaneous benefit. But any lasting behavioral change takes time."

Freid's perseverance made her a natural choice for an energy coach, the liaison between the SEiO program and the participating tenants and employees. While the SEiO team organizes the challenges and provides all of the materials and communications necessary to participate, coaches are the ones to implement the challenges among their tenants, encourage participation and create the buzz amongst their co-workers.

Fried oversaw the implementation of the communitywide challenge, "Add It Up" with the city of Durham in April, 2016. The city responded with the highest participation numbers of any community in the program. She followed suit with Durham county and the "Butterfly Effect" challenge in July, 2016. Again, the Durham community had some of the highest participation overall in the SEiO tenant challenge.

While Freid notes appreciation that the SEiO team provides implementation support and awareness building materials, she recognizes that personalization and customization for her teams would help her make the program more successful. She explains that one of the advantages of being a SEiO energy coach is that each will best understand their own audience, making them the ideal communicators and motivators.

Another key to Freid's success was the use of an incentive. She had an extra stash of LED bulbs on-hand from a prior event, which she used to reward active participants. Freid notes, "People were excited about the bulbs. They are useful and a great reminder of what we're trying to do here."

Tobin Freid insists that being a SEiO energy coach doesn't take much time, and is a fun and easy way to help realize sustainability goals. She concludes, "It's about getting what you give."

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SEiO CITY OF CHARLOTTE CASE STUDY

Motivating Employees and Taking Charge

OVERVIEW

The city of Charlotte and Mecklenburg County have many buildings throughout the region and one office decided to really set themselves apart – by cutting energy use. The Charlotte Mecklenburg Government Center (CMGC) signed up to participate in Duke Energy's Smart Energy in Offices (SEiO) program in 2016.

The CMGC is a 15-story high-rise building located in the government district of uptown Charlotte with approximately 1,100 employees. It houses both the city and county offices, and the city council and county commissioners hold sessions in the building's chamber.

WHAT HAPPENED

Two CMGC employees became involved in SEiO and led their fellow co-workers in tenant challenges. Energy Captains send teammates reminder emails, encourage participation, provide general guidance on how to take part in the challenges and demonstrate how to use the Happen App to record actions. Krystal King, an SEiO Energy Captain, motivated her fellow employees to get involved with SEiO challenges.

Participation and outcomes are reported after employees record their actions online either by using the Happen App or by visiting the website, www.myenergychallenge.com.

SMART ENERGY IN OFFICES AT A GLANCE

SEiO is a program dedicated to helping reduce energy consumption in commercial office buildings. It empowers property managers to educate tenants about simple changes to their daily routine, which can add up to big energy consumption savings. SEiO also provides energy data, tools, education and recognition to building operators to help them increase their buildings' energy efficiency while improving their ENERGY STAR® scores through automated benchmarking.

> "For us, the SEiO energy challenges are a fun way to bring friendly competition to the workplace with the common goal to save energy."
>
> – Amelia Beonde, an SEiO participant

RESULTS

CMGC has become a top-performing office in SEiO's energy-saving challenges. Having motivated Energy Captains and offering an additional special incentive are the key to such remarkable participation. The city of Charlotte management offered a half-day of vacation to the individual with the most SEiO points and a half-day of vacation to the Energy Captain whose floor had the most points.

The results have paid off. During the Fall Off Challenge in the fall of 2016, CMGC was the top-participating building. King and Beonde logged almost 15 percent of the actions reported for the challenge. For the subsequent Winter Warm Up Challenge in early 2017, even more CMGC employees participated. City staff ended up with a clean sweep of the top five participants for overall SEiO challenge participation, and more than 20 percent of the total actions for the Winter Warm Up Challenge were taken by CMGC employees.

"Our floor was probably the most active in challenges because we're a very competitive group, but what was neat to see was how many more people got involved after the first challenge," said Amelia Beonde, an SEiO participant.

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Power Manager®

A. Description

Power Manager® ("Program") is a demand response program that cycles residential central air conditioning to ensure power reliability during high summer peak demand periods. Duke Energy Carolinas, LLC (the "Company") installs a load cycling device near the outdoor unit of a qualifying air conditioner. This enables the customer's air conditioner to be cycled off and on when the Company initiates a control event. During these events, the Company can perform cycling or full shed interruptions of participating customers' air conditioning systems at any time to mitigate capacity constraints in the generation, transmission or distribution systems.

Program participants receive a financial incentive as a bill credit in the amount of $8 per month from July through October ($32 annually).

There is no adverse impact on the customer's air-conditioning system. The load control device has built-in safeguards to prevent the "short cycling" of the air-conditioning system. Cycling simply reduces the amount of time the air-conditioning system runs in a given period. Additionally, the indoor fan will continue to run and circulate air during the cycling event.

Audience

The Program is available to the Company's residential customers residing in owner-occupied, single-family residences with a qualifying central air-conditioning unit.

B & C. Impacts, Participants and Expenses

PowerManager[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	**$59.7**	**$61.1**	**102%**
Program Cost	**$13.9**	**$14.0**	**101%**
MW[2]	**503.0**	**501.1**	**100%**
MWH	**0.0**	**N/A**	**-**
Units[3]	**473,525**	**471,780**	**100%**

Notes on Tables:

1) Values are reflected at the system level.

2) MW capability at the generator derived from the average reduction during the June - September control season achieved by a full shed of participating air conditioners. At month-end September 2017, we had the ability to shed 505.9 MW (at the plant), representing 101% of the as filed capability.

3) Units included in filing represented average kW at the meter during the June - September control season. YTD value is based on an average of 252,289 Power Manager devices during the June - September control season.

4) Numbers rounded.

D. Qualitative Analysis

Power Manager was used twice during the summer of 2017. The Company initiated a full shed test event in coordination with Duke Energy Carolinas' System Operations Center to ensure system readiness. On the afternoon of July 13, a Power Manager cycling event was initiated by the System Operations Center to help reduce demand due to a generation site transformer switchyard issue. Although not actually activated, Power Manager was counted as part of the Company's operating reserves on a number of occasions. In this capacity, the available load reduction from Power Manager contributed to the Company's required reserve margin – in effect, Power Manager served as a virtual generation source providing the Company with an effective, economical and environmentally friendly power plant alternative.

E. Marketing Strategy

The Company's success in marketing the Power Manager program continued throughout 2017. Utilizing telephone marketing and a highly successful email offer, Power Manager had a net growth of 19,913 customers (a 10.2% increase); resulting in a total of 257,527 air conditioners on the program by year-end.

The Company also conducted a test of two versions of a direct mail offer mailed to higher propensity customer segments. Each was sent to 24,000 customers in May, resulting in 48,000 offers. Unfortunately, the results were disappointing with slightly over .5% acceptance (255 enrollments), The results support the Company's view that the marketing of this program is better suited to channels that provide more information to customers such as the personal interaction of a telephone offer and the supporting website information linked to an email offer.

In mid-May, Duke Energy Carolinas mailed its annual notification to participating Power Manager customers:

- Reminding them of their participation in the program
- Thanking them for making a difference by being on the program
- Providing information about Power Manager explaining: how it works, its benefits, summer-time tips, and other information

Program information and an enrollment form are available to customers on the Power Manager website located at http://www.duke-energy.com/north-carolina/savings/power-manager.asp.

F. Evaluation, Measurement and Verification

The results of the 2016 evaluation of the program were presented in the July 2017 Collaborative meeting. For this evaluation, data loggers were installed on 144 devices, and spot measurements of voltage, amps, kW, and connected load were conducted at 122 sites. Whole house interval meters were installed at the same households along with the air conditioner end use data loggers. A key objective was to compare the AC end use to whole building demand reductions and assess if customers compensated for air conditioner curtailments. Data from these sources was used to determine the baseline usage on non-event days.

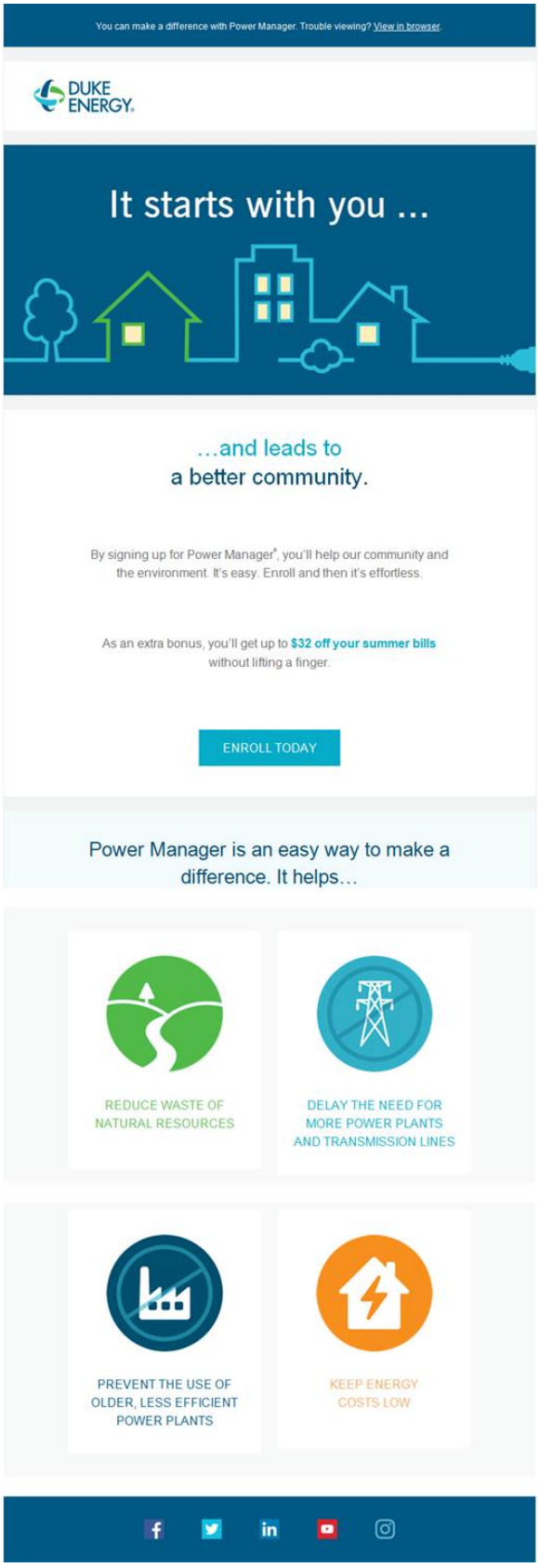
In addition, the process evaluation included a survey of Power Manager participants in the 24 hours immediately following an event, as well as a survey of Power Manager participants on a hot, nonevent day (a control day). By design, the survey mirrored the event day survey and served to establish the baseline response, absent curtailments, for customer responses about comfort, awareness, and other program features. For the process findings, Nexant also interviewed program managers and implementers, and reviewed data files, enrollment, and operation processes.

G. Appendix

Thank You/Reminder Postcard

Power Manager®

Email



Power Manager®

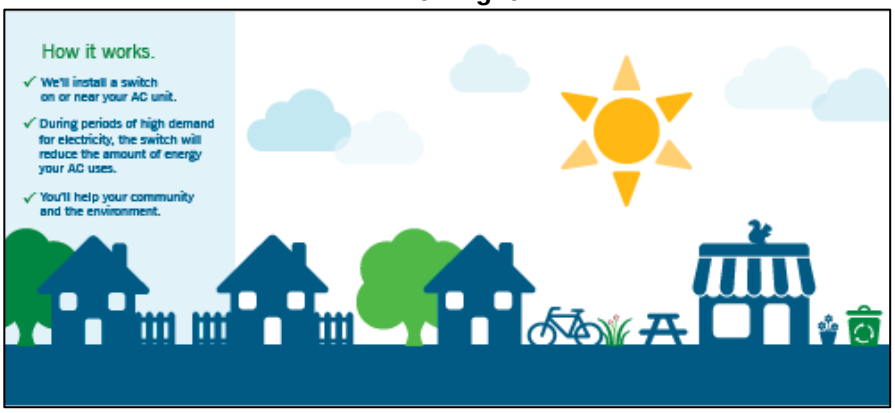
Direct Mail Offer 1

Outer Front

Outer Back

Inner Left

Inner Right



Power Manager®

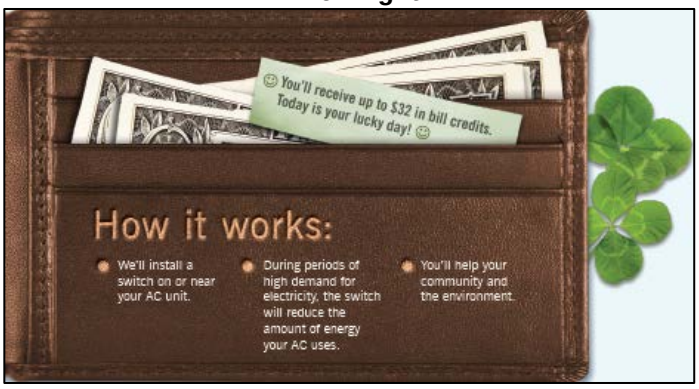
Direct Mail Offer 2

Outer Front

Outer Back

Inner Left

Inner Right



EnergyWise Business

A. Description

The purpose of Duke Energy Carolinas, LLC's (the "Company's" or "DEC") EnergyWise Business (the "Program") is an energy efficiency and demand response program for non-residential customers that will allow the Company to reduce the operation of participants AC units to help manage the power grid. The Program provides customers with options on how they would like to participate in the Program. For participation in the program, Company provides participants with an annual incentive applied directly to their bill.

Program participants can choose between a Wi-Fi thermostat or load control switch that will be professionally installed for free by the program for each air conditioning or heat pump unit that they have. In addition to equipment choice, the participants also can choose at what cycling level they would like to participate. There are three levels of cycling, 30%, 50% or 75%. The levels are the percentage reduction of the normal on/off cycle of the unit. During a conservation period, Company will send a signal to the thermostat or switch to reduce the on time of the unit by the percentage selected by the participant. For participating at the 30% level the customer will receive a $50 annual bill credit for each unit, $85 for 50% cycling or $135 for 75% cycling. Finally, participants that have a heat pump unit with electric resistance emergency/back up heat and choose the thermostat can also participate in a winter option that will allow the Company to control the emergency/back up heat. For the 100% control of the emergency/back up heat, Company will provide an additional $25 annual bill credit.

Participants choosing the thermostat will be given access to a portal that will allow them to control their units from anywhere they have internet access. They can set schedules, adjust the temperature set points and receive energy conservation tips and communications from the Company. In addition to the portal access, participants will also receive conservation period notifications. This will allow participants to make adjustments to their schedules or notify their employees of the upcoming conservation period. Finally, the participants will be allowed to override two conservation periods per year. They can do this before the conservation period starts or during the conservation period.

Audience

The Program is available to existing non-residential customers that are not opted-out of the DSM portion of the Company's EE/DSM rider, Rider DSM, have at least one air conditioner or heat pump that operates to maintain a conditioned space on weekdays during the calendar months of May through September, and are not served under Schedules BC and HP, Riders NM, SCG, IS, PS or PSC. Also, customers must have an average minimum usage of 1,000 kWh during those same calendar months.

B & C. Impacts, Participants and Expenses

EnergyWise for Business[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$2.5	$2.5	103%
Program Cost	$1.5	$2.5	168%
MW	9.0	5.5	61%
MWH	1,757.4	2,943.9	168%
Units[3]	3,342	8,537	255%

1) Values are reflected at the system level.
2) Units represent average monthly kW at meter for demand response measures (4,211), plus individual participants for smart thermostat energy efficiency measure (4,326).
3) As filed values not included as program was not included in filing.
4) Numbers rounded.

D. Qualitative Analysis

Highlights

During 2017, the Program has experienced tremendous growth. At the end of the year the Program had enrolled 4,528 accounts and completed installation on 2,632 accounts. The total number of installed devices during 2017 was 4,544. The door to door marketing (canvassing) efforts kick off in 2016 has continued to produce enrollments, installations and positive customer interactions. At this point the Program is canvassing in Charlotte, the greater Charlotte region, Greenville/Spartanburg and Chapel Hill/Durham areas. Through the canvassing efforts we touched over 14,000 customers during 2017.

During the summer control season the Program completed 5 energy conservation events: June 14th, July 13th, July 21st, August 17th and August 22.

Issues

The Program experienced issues with customers canceling appointments when our installer arrives for the installation. These cancellations cause inefficiencies and increased cost. To help with reducing these cancellations we have implemented two program changes. The first is a leave behind used by our canvassers as a reminder of the appointment and installation requirements and the second is a 24 to 48 hour call by our technician as a reminder of the appointment.

Potential Changes

The Program will expand the canvassing markets to include the Winston-Salem/Greensboro market. This market should be live by the end of the first quarter 2018.

E. Marketing Strategy

In 2017 the Program has continued the efforts of door to door marketing using a dedicated canvassing vendor. The canvassing efforts are being used in Charlotte, the greater Charlotte region, Greenville/Spartanburg and Chapel Hill/Durham areas. Through the canvassing efforts we have touched over 14,000 customers during 2017.

In addition to the dedicated canvassers, the Program continues to see enrollments through the cross promotion efforts with the Small Business Energy Savor program and through the Duke Energy Business Energy Advisors.

F. Evaluation, Measurement and Verification

During the July 14, 2017 Collaborative Meeting, the findings from the first evaluation of the program were presented. Due to program start up in 2016, this first impact evaluation was planned as an engineering-based analysis. There were two recommendations by the evaluator, Opinion Dynamics (OD), in the review of the first year of the program: 1) Adopt more conservative HVAC average tonnage values and 2.) increase promotion of higher cycling strategies among program enrollees.

For the EE savings, OD will use IPMVP Option C (utility billing analysis) to estimate EE impacts for calendar year 2017. They will estimate net demand impacts by using linear regression models, comparing demand by customers for event days compared to non-event days. For the process evaluation, OD will conduct program staff interviews, program data and document reviews, early participant interviews, non-participant and drop-out interviews, and conduct a participant online survey. The final report is expected early in the 3rd quarter of 2018.

PowerShare®

A. Description

PowerShare® ("Program") is a demand response program offered to commercial and industrial customers. The Program is comprised of Mandatory ("PS-M"), Generator ("PS-G"), Voluntary ("PS-V") and CallOption options, and customers can choose from a variety of offers. Under PS-M, PS-G and CallOption, customers receive capacity credits for their willingness to shed load during times of peak system usage. Energy credits are also available for participation (shedding load) during curtailment events. The notice to curtail under these offers can be rather short (15-30 minutes), although every effort is made to provide as much advance notification as possible. Failure to comply during an event will result in penalties.

Audience

The Program is offered to Duke Energy Carolinas, LLC's (the "Company's") non-residential customers who have not opted-out and are able to meet the load shedding requirements.

B & C. Impacts, Participants and Expenses

PowerShare[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$45.3	$41.5	92%
Program Cost	$16.2	$13.3	82%
MW[2]	371.4	340.4	92%
MWH	0.0	N/A	-
Units[3]	349,625	320,442	92%

Notes on Tables:
1) Values are reflected at the system level.
2) MW capability derived by taking average over specific PowerShare contract periods.
At month-end December 2017, we had the ability to shed 333.5 MW (at the plant), representing 90% of the as filed capacity.
3) Units included in filing represented KW at meter, rather than number of participants. The average participation for 2017 is 168.
4) Numbers rounded.

PowerShare CallOption[1]

$ in millions, rounded	Vintage 2017 As Filed	Vintage 2017 YTD December 31, 2017	% of Target
NPV of Avoided Cost	$0.0	$0.0	-
Program Cost	$0.0	$0.0	-
MW[2]	0.0	0	-
MWH	0.0	N/A	-
Units[3]	0	0	-

Notes on Tables:
1) Values are reflected at the system level.
2) MW capability derived by taking average over specific PowerShare contract periods.
3) Units included in filing represented KW at meter, rather than number of participants. There was no participation in 2017.
4) Numbers rounded.

D. Qualitative Analysis

Highlights

PS-M and PS-G continue to be well received by customers in both North Carolina and South Carolina who have the flexibility to curtail load upon request. Final Environmental Protection Agency ("EPA")

regulations still prevent many customers with standby generators from participating, but the rules should not lead to the loss of any additional existing participants.

Issues

No current issues beyond potential impact of increased number of curtailment events on retaining current and attracting new participants.

Potential Changes

No changes anticipated.

E. Marketing Strategy

To date, marketing efforts for the Program have focused on the relationship between the Company's account executives and their assigned customers. As part of their normal contact with customers, the account executives introduce the Program, including any new options/offers, while explaining the value proposition to the customer. Account executives share in-house analytical spreadsheets that show the specific incentives for each offer as applied to the customer's specific load profile as well as collateral to explain the details of all the Program offers.

F. Evaluation, Measurement and Verification

One of the primary objectives of the 2016 evaluation was to validate the detailed DR baseline approach and calculations, as well as the monthly and seasonal capability calculations performed by Duke Energy. For this, Navigant conducted a detailed audit of the SAS code used by Duke Energy to determine participant baselines and monthly and seasonal capability. In addition, Navigant, the evaluator audited the hourly kW DR event load shed for participating customers by replicating the Schneider Electric Energy Profiler Online (EPO) methods used to calculate the energy (kWh) and demand (kW) impacts that are used to determine settlement payments.

As a result of this, Navigant provided several recommendations for improvement in the SAS code and documentation. During the 2017 evaluation, Navigant is reviewing the modifications to the SAS code and also conducting an audit of the baseline development and the EPO system calculations.

Evans Exhibit 7

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Duke Energy Carolinas, LLC
Estimate - January 1, 2019 - December 31, 2019
Docket Number E-7, Sub 1164
Projected Program/Portfolio Cost Effectiveness - Vintage 2019

Program	UCT	TRC	RIM	PCT
Residential Programs				
· Energy Education Program for Schools	1.22	1.69	0.53	
· Energy Efficient Appliances & Devices	2.40	2.17	0.42	6.11
· HVAC EE Products & Services	0.94	0.59	0.45	1.52
· Income-Qualified EE Products & Services	0.19	0.83	0.16	
· Multi-Family EE Products & Services	2.82	4.71	0.59	
· My Home Energy Report	1.56	1.56	0.57	
· Power Manager	4.33	8.86	4.33	
· Residential Energy Assessments	1.41	1.55	0.54	
Residential Total	**2.22**	**2.60**	**0.70**	**7.69**
Non-Residential Programs				
· Custom Assessment / Incentive	2.35	1.04	0.67	2.12
· EnergyWise for Business	0.83	1.21	0.68	
· Food Service Products	2.68	1.95	0.61	3.18
· HVAC	2.04	1.63	0.88	1.82
· Lighting	3.48	1.44	0.74	2.17
· Motors, Pumps & VFDs	2.54	2.45	0.54	3.56
· Non Res Information Technology	2.36	1.77	0.59	3.79
· Process Equipment	2.13	2.23	0.47	4.21
· Performance Incentive	2.70	0.81	0.69	1.50
· Small Business Energy Saver	2.59	1.61	0.77	3.00
· Power Share	2.90	41.14	2.90	
Non-Residential Total	**2.69**	**1.67**	**0.85**	**2.41**
Overall Portfolio Total	**2.46**	**1.98**	**0.78**	**3.48**

Evans Exhibit 8

Duke Energy Carolinas
Changes to DSM/EE Cost Recovery Vintage 2017 True Up January 1, 2017 - December 31, 2017
Changes from Prior Filing Due to Application of M&V and Participation
System kWh and kW Impacts Net Free Riders at the Plant

Residential Programs

Program Name	Filed in Docket E-7, Sub 1105		Filed in Docket E-7, Sub 1164		Overall Variance		E-7 Sub 1105	E-7 Sub 1164	Delta	Variance attributable to Participation		Variance attributable to Mix of Measures		Variance attributable to EM&V		Sum of Variances	
	kWh	kW	kWh	kW	kWh	kW	System Participation		Participation	kWh	kW	kWh	kW	kWh	kW	kWh	kW
Appliance Recycling Program	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Efficiency Education Program for Schools	5,604,364	1,316	5,932,086	1,393	327,722	77	26,250	27,785	1,535	327,722	77	-	-	-	-	327,722	77
Energy Efficient Appliances and Devices	63,591,491	8,139	141,300,087	23,860	77,708,596	15,721	2,544,764	6,819,189	4,274,425	61,439,666	7,409	38,308,038	4,671	(22,039,109)	3,640	77,708,596	15,721
Residential – Smart $aver Energy Efficiency Program	-	-	8,545,577	2,478	8,545,577	2,478	-	27,311	27,311	-	-	8,545,577	2,478	-	-	8,545,577	2,478
Income Qualified Energy Efficiency and Weatherization Assistance	5,309,863	1,048	4,951,901	782	(357,962)	(266)	10,538	11,726	1,188	(538,363)	(13)	-	-	180,401	(253)	(357,962)	(266)
Multi-Family Energy Efficiency	12,687,532	1,190	19,056,155	1,918	6,368,623	729	186,948	356,003	169,055	(2,279,878)	(217)	8,648,501	946	-	-	6,368,623	729
Energy Assessments	7,923,133	981	8,131,752	1,274	208,618	293	8,038	52,546	44,508	-	-	208,618	293	-	-	208,618	293
My Home Energy Report	211,047,528	56,979	311,368,855	79,070	100,321,327	22,091	1,050,000	1,394,693	344,693	23,101,306	6,241	20,441,940	5,516	56,778,082	10,334	100,321,327	22,091
PowerManager	-	502,972	-	501,118	-	(1,854)	473,525	471,780	(1,745)	-	(1,854)	-	-	-	-	-	(1,854)
Residential Programs Total	306,163,911	572,625	499,286,413	611,894	193,122,502	39,269	4,300,063	9,161,033	4,860,970	82,050,453	11,643	76,152,674	13,905	34,919,374	13,721	193,122,502	39,269

Non-Residential Programs

Program Name	Filed in Docket E-7, Sub 1105		Filed in Docket E-7, Sub 1164		Overall Variance		E-7 Sub 1105	E-7 Sub 1164	Delta	Variance attributable to Participation		Variance attributable to Mix of Measures		Variance attributable to EM&V		Sum of Variances	
	kWh	kW	kWh	kW	kWh	kW	System Participation		Participation	kWh	kW	kWh	kW	kWh	kW	kWh	kW
Non Residential Smart Saver Custom Technical Assessments	13,280,913	1,516	15,684,406	1,623	2,403,493	106	10,760	7	(10,753)	-	-	2,403,493	106	-	-	2,403,493	106
Non Residential Smart Saver Custom	90,101,969	10,286	41,782,082	6,204	(48,319,887)	(4,082)	73,002	40,133	(32,869)	-	-	(48,319,887)	(4,082)	-	-	(48,319,887)	(4,082)
Energy Management Information Systems	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non Residential Smart Saver Energy Efficient Food Service Products	3,968,253	420	2,257,329	226	(1,710,925)	(195)	5,293	2,730	(2,563)	71,124	16	(1,884,089)	(227)	102,041	16	(1,710,925)	(195)
Non Residential Smart Saver Energy Efficient HVAC Products	6,253,763	2,791	3,382,708	1,031	(2,871,056)	(1,760)	121,841	3,016,407	2,894,566	722,995	(85)	(3,594,051)	(1,675)	-	-	(2,871,056)	(1,760)
Non Residential Smart Saver Energy Efficient Lighting Products	68,582,518	11,286	229,728,893	32,963	161,146,374	21,677	245,765	2,290,141	2,044,376	131,112,903	22,064	28,773,306	(336)	1,260,165	(51)	161,146,374	21,677
Non Residential Energy Efficient Pumps and Drives Products	4,745,697	599	3,470,697	496	(1,274,999)	(103)	4,347	4,361	14	464,688	15	-	-	(1,739,688)	(118)	(1,274,999)	(103)
Non Residential Energy Efficient ITEE	3,184,721	25	3,330	-	(3,181,391)	(25)	2,613	45	(2,568)	(50,144)	-	(3,131,247)	(25)	-	-	(3,181,391)	(25)
Non Residential Energy Efficient Process Equipment Products	564,086	131	577,560	87	13,474	(45)	1,509	8,936	7,427	170,159	41	200,454	27	(357,139)	(113)	13,474	(45)
Non Residential Smart Saver Performance Incentive	-	-	12,810	3	12,810	3	-	19	19	-	-	12,810	3	-	-	12,810	3
Smart Energy in Offices	42,174,681	8,778	10,272,154	2,138	(31,902,527)	(6,640)	48,421,359	26,824,711	(21,596,648)	(3,844,131)	(800)	(18,436,903)	(3,837)	(9,621,493)	(2,003)	(31,902,527)	(6,640)
Small Business Energy Saver	61,629,002	12,840	97,516,700	19,726	35,887,698	6,886	65,000,000	79,986,749	14,986,749	14,143,243	5,121	(31,069)	(6)	21,775,524	1,772	35,887,698	6,886
Business Energy Report	5,663,041	395	42,398	3	(5,620,643)	(392)	15,634	109	(15,525)	(5,620,643)	(392)	-	-	-	-	(5,620,643)	(392)
EnergyWise for Business	1,757,389	8,966	2,943,906	5,453	1,186,517	(3,512)	3,342	8,537	5,195	4,905,392	7,891	-	-	(3,718,875)	(11,403)	1,186,517	(3,512)
PowerShare CallOption	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PowerShare	-	371,367	-	340,369	-	(30,998)	349,625	320,442	(29,184)	-	(30,998)	-	-	-	-	-	(30,998)
Non-Residential Programs Total	301,906,034	429,400	407,674,973	410,321	105,768,939	(19,078)	114,255,090	112,503,327	(1,751,764)	142,075,586	2,873	(44,007,182)	(10,051)	7,700,535	(11,900)	105,768,939	(19,078)
Total Residential and Non-Residential Programs	608,069,945	1,002,025	906,961,386	1,022,216	298,891,440	20,191	118,555,154	121,664,360	3,109,206	224,126,039	14,516	32,145,492	3,854	42,619,909	1,821	298,891,440	20,191

Duke Energy Carolinas, LLC
List of Industrial and Commercial Customers that have opted-out Vintage 2017
Docket No. E-7, Sub 1164

	Number of Accounts
DSM RIDER OPT-OUT YR 2017	4,863
EE RIDER OPT-OUT YR 2017	4,075

Customer Bill Name	DSM YR17(1/1/17-12/31/17) RIDER OPT-OUT	EE YR17(01/01/17-12/31/17) RIDER OPT-OUT	Grand Total
A & T STATE UNIV	13	10	23
A W NORTH CAROLINA INC	6	6	12
ABERCROMBIE TEXTILES LLC		1	1
ABSS FACILITIES DEPT	7	7	14
AIR PRODUCTS & CHEMICALS, INC	1	1	2
ALDERSGATE	9	9	18
ALLIED DIE CASTING CO OF NC	2	2	4
ALLVAC, A DIVISION OF TDY INDUSTRIES, INC	1	1	2
AMERICAN & EFIRD LLC	8	9	17
AMERICAN FIBER & FINISHING	1	1	2
ANDALE INC	4	4	8
BALDOR ELECTRIC COMPANY	5	5	10
BANK OF AMERICA	5	3	8
BARNHARDT MANUFACTURING COMPANY INC	4		4
BASF CORPORATION	4	4	8
BB&T	8	7	15
BEMIS MANUFACTURING CO	3	3	6
BERRY TRI PLASTICS		1	1
BI-LO, LLC	21	21	42
BIOMERIEUX, INC	4	3	7
BISSELL COMPANIES	59	1	60
BISSELL GOLF	1		1
BISSELL HOTEL 6 LLC	1		1
BISSELL HOTELS 8, LLC	1		1
BONSET AMERICA CORP	1	1	2
BSN MEDICAL INC	1	1	2
BURLINGTON TECHNOLOGIES INC	4	4	8
CARAUSTAR INC	4	2	6
CARAUSTAR INDUSTRIES	3	2	5
CARGILL, INCORPORATED	4	4	8
CAROLINA CONTAINER	5	4	9
CAROLINA TRACTOR & EQUIPMENT COMPANY	4	4	8
CASE FARMS	3	3	6
CASTLE & COOKE NORTH CAROLINA LLC	4	4	8
CATAWBA COLLEGE	1		1
CATAWBA VALLEY MEDICAL CENTER	1	1	2
CATERPILLAR	1	1	2
CERTAINTEED CORP	1	3	4
CHARLOTTE LATIN SCHOOLS, INC	13	13	26
CHARLOTTE OBSERVER PUBLISHING COMPANY	1	1	2
CHARLOTTE PIPE & FOUNDRY	14	14	28
CITY OF CHARLOTTE	87	101	188
CITY OF DURHAM	4	4	8
CITY OF WINSTON SALEM	24	29	53
CLEMENT PAPPAS NC, INC	4	3	7
CLEVELAND COUNTY SCHOOLS	61	25	86
CMBE	184		184
COATS AMERICAN	2	2	4
COLONIAL PIPELINE		5	5
COMMONWEALTH BRANDS	2	2	4
COMMSCOPE, INC.	10	10	20
CORMETECH INC	1	1	2
CORNING CABLE SYSTEMS	5	5	10
CORNING INC	6	6	12
CPCC	45	36	81
CREE INC	11	11	22
CSHV SOUTHPARK 6100 FAIRVIEW, LLC	1	1	2
CULP INC	1	1	2
DAVIDSON COLLEGE	15	15	30
DUKE UNIVERSITY	12	12	24
DURHAM COUNTY GOVERNMENT	2	2	4
DURHAM COUNTY HOSPITAL CORPORATION	1	1	2
E I DUPONT CO	1	1	2
EASTERN BAND OF CHEROKEE INDIANS	6	6	12
ELON UNIVERSITY	69	69	138
EMC CORPORATION	2	2	4

Customer Bill Name	DSM YR17(1/1/17-12/31/17) RIDER OPT-OUT	EE YR17(01/01/17-12/31/17) RIDER OPT-OUT	Grand Total
FERGUSON SUPPLY & BOX	1	1	2
FLEXTRONICS AMERICA, LLC	3	3	6
FOOD LION	226	180	406
FRONTIER SPINNING MILLS, INC		2	2
FURNITURELAND SOUTH	8	8	16
GARDNER WEBB UNIV	1	1	2
GBORO NEWS & RECORD	2	2	4
GENERAL ELECTRIC	2	2	4
GERDAU AMERISTEEL US INC	2	2	4
GLEN RAVEN INC	2	1	3
GUILFORD COUNTY SCHOOLS	243	238	481
GUILFORD TECH COMM COLL	17	17	34
HANSON BRICK EAST LLC	3	3	6
HARRIS TEETER INC	65	15	80
HENDERSON COUNTY SCHOOLS	14	15	29
HENKEL CORPORATION	6	6	12
HICKORY CITY SCHOOLS	13	13	26
HIGHWOODS PROPERTIES	51	51	102
HIGHWOODS REALTY LIMITED PARTNERSHIP	1	1	2
HIGHWOODS REALTY LTP	1	1	2
HONDA POWER EQUIPMENT	1	1	2
IBM CORPORATION	1	1	2
INGLES MARKETS, INC.	58	58	116
INGREDION INCORPORATED	1	1	2
INTERNATIONAL TEXTILE GROUP INC	1	2	3
JACKSON PAPER MFG CO	1	1	2
JPS COMPOSITE MATERIALS CORP		1	1
KAYSER ROTH CORPORATION	2	2	4
KEATING GRAVURE USA, LLC	1	1	2
KIMBERLY CLARK	5	5	10
KINDER MORGAN SOUTHEAST TERMINAL	3	3	6
KINDER MORGAN TRANSMIX GROUP	1	1	2
KROGER CO	5	5	10
KROGER LIMITED PARTNERSHIP I	1	1	2
L B PLASTICS INC	6	6	12
L S STARRETT CO	1	3	4
LINDE LLC	1	1	2
LOUISIANA-PACIFIC CORPORATION	1	1	2
LOWES FOODS	46	39	85
MARTIN MARIETTA MATERIALS INC	69	72	141
MAUSER CORP		4	4
MECK CNTY JAIL CENTRAL	1	1	2
MECKLENBURG COUNTY	19	2	21
MERITOR HEAVY VEHICLE SYSTEMS	1	1	2
MICHELIN AIRCRAFT TIRE CO	1	1	2
MICHELIN NORTH AMERICA	10	10	20
MILLERCOORS LLC	1	1	2
MILLIKEN & COMPANY	2	2	4
MOM BRANDS COMPANY	1	1	2
MOUNT VERNON MILLS INC	1	1	2
NATIONAL PIPE & PLASTICS	2	2	4
NC CENTER FOR PUBLIC TV	7	8	15
NEW GENERATION YARNS		1	1
NGK CERAMICS USA	2	2	4
NORTHROP GRUMMAN GUIDANCE & ELECTRONICS COMPANY, INC	2	2	4
NOVANT HEALTH INC	18	18	36
O'MARA, INC.	1	1	2
OMNISOURCE SOUTHEAST	5	10	15
ORACLE FLEXIBLE PACKAGING	5	5	10
OWENS ILLINOIS, INC	2	2	4
PARKDALE AMERICA LLC	9	9	18
PARKDALE MILLS, INC	2	3	5
PARTON LUMBER CO	6	8	14
PERFORMANCE FIBERS OPERATIONS INC	5	5	10
PHARR YARNS, LLC	4	4	8
PINE HALL BRICK COMPANY, INC	2	2	4
PLANTATION PIPE LINE	3	3	6
POLYMER GROUP, INC	1	1	2
PPG INDUSTRIES INC	2	2	4
PRESBYTERIAN HOSPITAL	9	9	18
R F MICRO DEVICES	3	3	6
RJ REYNOLDS TOBACCO CO	5	5	10
ROCKINGHAM COMM COLLEGE	1	1	2

Customer Bill Name	DSM YR17(1/1/17-12/31/17) RIDER OPT-OUT	EE YR17(01/01/17-12/31/17) RIDER OPT-OUT	Grand Total
ROWAN SALISBURY SCHOOLS	5		5
RUTHERFORD COUNTY SCHOOLS	3	2	5
SANS TECHNICAL FIBERS, LLC	4	4	8
SCHAEFER SYSTEMS	8		8
SCHNEIDER MILLS, INC	1	1	2
SCM METAL PRODUCTS INC	3	3	6
SEALED AIR CORPORATION	3	3	6
SHAMROCK CORPORATION	4		4
SHAW INDUSTRIES GROUP, INC	8	8	16
SHURTAPE TECHNOLOGIES	7	7	14
SOUTH GRANVILLE WATER AND SEWER AUTHORITY	3	3	6
SUMITOMO ELECTRIC ESC, INC	1	1	2
SYNGENTA BIOTECHNOLOGY INC	1	1	2
THE LINCOLN NATIONAL LIFE INSURANCE COMPANY	2	1	3
THE TIMKEN COMPANY	3	3	6
TRELLEBORG COATED SYSTEMS US, INC	1	1	2
TROPICAL NUT & FRUIT CO	1	1	2
UNC - CHAPEL HILL	12	12	24
UNC GREENSBORO	24	24	48
UNCC	17	17	34
UNIFI INC	1	1	2
UNIFI MANUFACTURING, INC	3	5	8
UNILIN FLOORING NC LLC	4	4	8
UNITED STATES COLD STORAGE	1	1	2
UNIVERSAL FOREST PRODUCTS	2	2	4
UPM - RAFLATAC, INC	1	1	2
VULCAN CONSTRUCTION MATERIALS, L P	50	49	99
W S FORSYTH COUNTY SCHOOLS	94	88	182
WATTS REGULATOR COMPANY	7	7	14
WAYNE FARMS LLC	8	8	16
WBTV LLC	2	2	4
WELLS FARGO BANK NA	8	4	12
WESTERN CAROLINA UNIVERSITY	1	1	2
WIELAND COPPER PRODUCTS LLC	1	1	2
WINGATE UNIVERSITY	20	20	40
ZINK IMAGING INC	1		1
PACTIV LLC		3	3
HORSEHEAD CORPORATION	1	1	2
KENDRION-SHELBY	2	2	4
DOOSAN INFRACORE PORTABLE POWER - A DIVISION OF CLARKE EQUIPMENT	2	2	4
APPLE INC	1	1	2
CONSOLIDATED METCO INC		1	1
TRIBAL CASINO GAMING ENTERPRISES HARRAH'S CASINO & HOTEL	1		1
WAL-MART STORES EAST,LP	84	83	167
CBL ASSOCIATES MANAGEMENT, INC	1	1	2
REGAL CINEMAS INC	5	5	10
SAMS EAST INC	19	19	38
TARGET STORES	23	6	29
UNITED PARCEL SERV	2	2	4
GLAXOSMITHKLINE LLC	4	4	8
SGL CARBON, LLC	1	1	2
TRANSYLVANIA COUNTY SCHOOLS	11	11	22
MERCK SHARP & DOHME CORP	4	4	8
SOUTHWESTERN COMMUNITY COLLEGE	12	12	24
KYOCERA INDUSTRIAL	1	1	2
TRANSYLVANIA COMMUNITY HOSPITAL	1		1
POLK COUNTY SCHOOLS	6	6	12
EAST DECK INC	1	1	2
CHAPEL HILL/ CARRBORO SCHO	64		64
BISSELL HOTELS #7, LLC	1		1
CINEBARRE, LLC	2	2	4
COSTCO WHOLESALE INC	5	5	10
LOWES OF FRANKLIN #717	2	2	4
SAPA BURLINGTON LLC	3		3
CAROLINAS HEALTHCARE SYSTEM	21		21
CONTINENTAL AUTOMOTIVE SYSTEMS, INC	2	2	4
CAPITAL BROADCASTING COMPANY	8	8	16
GE LIGHTING SOLUTIONS LLC	6	6	12
CITY OF GREENSBORO	26	28	54
GUILFORD COLLEGE	42	30	72
KOURY CORPORATION	53	53	106
CHEMTURA CORPORATION	1	1	2
LOWE'S HOME CENTERS, INC	90	89	179

Customer Bill Name	DSM YR17(1/1/17-12/31/17) RIDER OPT-OUT	EE YR17(01/01/17-12/31/17) RIDER OPT-OUT	Grand Total
BOYLE BUILDING, LLC	1		1
NC OWNER LLC	8		8
KOURY VENTURES	5	5	10
PARDEE MEMORIAL HOSPITAL	7	7	14
MCMICHAEL MILLS INC	3	3	6
US FOODS, INC	1	1	2
ROUNDPOINT FINANCIAL GROUP	1		1
CMC-NORTHEAST INC	9		9
SECURITY NATIONAL PROPERTIES HOLDINGS LLC	15		15
NCFLA II OWNER LLC	3		3
THE GC NET LEASE (CHARLOTTE) INVESTORS LLC	1		1
BJ'S WHOLESALE CLUB	3	3	6
BELLSOUTH	9	7	16
CITY OF HENDERSONVILLE	4	4	8
NEW SOUTH LUMBER COMPANY INC	3	3	6
RALPH LAUREN CORPORATION	3	3	6
BREVARD COLLEGE	19	19	38
CMHA	5		5
PARK RIDGE HOSPITAL	8	9	17
PET DAIRY	2	2	4
JACKSON BOE	7	7	14
PBM GRAPHICS INC	5	5	10
STEFANO FOODS	3	3	6
PROCTER & GAMBLE MANUFACTURING COMPANY	6	6	12
LOWE'S OF FRANKLIN #717	1	1	2
AT&T BELLSOUTH	3	3	6
BISSELL CO	4		4
BELLSOUTH COMMUNICATIONS, LLC	1	1	2
GILDAN ACTIVE WEAR INC	3		3
ARMACELL LLC	8	6	14
LYDALL THERMAL ACOUSTICAL INC	4	1	5
PAPER STOCK DEALERS	1	1	2
200 NORTH COLLEGE CHARLOTTE LLC	1		1
ING CLARION REALTY SERVICES LLC	1		1
THE DAVID H MURDOCK CORE LABORATORY BUILDING OWNERS ASSOCIATION, INC.	1	1	2
HENDERSON COUNTY GOVERNMENT	3	4	7
CENTURY FURNITURE, LLC	7	12	19
QUALICAPS INC	3	3	6
NORDSTROM INC	2	1	3
NORFOLK SOUTHERN	3	3	6
301 S MCDOWELL STREET HOLDING LLC	1		1
HANES COMPANIES INC	2	2	4
FIRESTONE FIBERS & TEXTILES COMPANY, LLC	2		2
THE NC A&T UNIVERSITY	1	1	2
CHEROKEE INDIAN HOSPITAL	1	1	2
SELEE CORP	2	2	4
STAR PAPER TUBE INC	1		1
CAROLINA YARN	2	2	4
GOLF CLUB AT BALLANTYNE RESORT	2		2
CITY OF BURLINGTON	5	3	8
BAY STATE MILLING	4	4	8
SWAIN COUNTY SCHOOLS	6		6
TIMKENSTEEL CORPORATION	1	1	2
PARKWAY 214 N TRYON LLC	1		1
CENTURION MOREHEAD LLC	1		1
FLINT TRADING CO	2	2	4
GENPAK LLC	3	3	6
RUTHERFORD HOSPITAL INC	6	6	12
RITE AID CORPORATION	1	1	2
PLYCEM USA, INC	1	1	2
DALCO NONWOVENS, LLC	2	2	4
BELLSOUTH BSC	13	7	20
HINES GLOBAL REIT HOCK PLAZA I LLC	1	1	2
BOYLE BUILDING,LLC	1		1
BLUE RIDGE COMMUNITY COLLEGE	17	15	32
BERNHARDT FURNITURE COMPANY	8	6	14
GILDAN YARNS, LLC		1	1
MERITOR HEAVY VEHICLE SYSTEMS LLC	1	1	2
SIERRA NEVADA BREWING CO	1	1	2
AMERICAN TOBACCO POWER HOUSE LLC	2	2	4
GALENOR DESIGNS, LLC	1	1	2
BELL SOUTH MOBILITY	1	1	2
JOHNSON CONTROLS BATTERY GROUP, INC	1	1	2

Customer Bill Name	DSM YR17(1/1/17-12/31/17) RIDER OPT-OUT	EE YR17(01/01/17-12/31/17) RIDER OPT-OUT	Grand Total
BISSELL DEVELOPMENT	1		1
CAROLINA PERLITE CO	1	1	2
SUNSET HILL INVESTMENTS LLC	1	1	2
DIAMOND VIEW II	2	2	4
DAIRY FRESH	3	3	6
PITTSBURGH GLASS WORKS LLC	1	1	2
OPTICAL EXPERTS MANUFACTURING	1	1	2
ENGINEERED CONTROLS INTERNATIONAL INC	4	4	8
THE NC AT UNIVERSITY A&T FOUNDATION LLC	1	1	2
WINSTON TOWER MAIN LLC	1	1	2
FRITO-LAY, INC	1	1	2
WINDWARD PRINT STAR INC	1	1	2
ALCAN PACKAGING FOOD AND TOBACCO,INC	2	2	4
GASTON COLLEGE	7	6	13
PARKWAY 550 SOUTH CALDWELL LLC	1		1
CAMFIL USA INC	2	2	4
CAROLINA VILLAGE	4	4	8
CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT	1		1
DIAMOND VIEW I LLC	2	2	4
HITACHI METALS NC LTD	1	1	2
AT&T MOBILITY LLC	4	3	7
TEAM INDUSTRIES	1	1	2
HERITAGE HOME GROUP LLC	3	6	9
MANUAL WOODWORKERS & WEAVERS INC	2	2	4
BLUE RIDGE HEALTH CARE	1		1
T5@KINGS MOUNTAIN II, LLC	1	1	2
DISNEY WORLDWIDE SERVICES INC	1	1	2
BAKER FURNITURE COMPANY	9	9	18
AMERICAN CAMPUS LLC	1	1	2
ALEXANDER COUNTY SCHOOLS	2	2	4
SONOCO CRELLIN INC	2	2	4
LEXINGTON FURNITURE IND	2	2	4
WEYERHAEUSER COMPANY	1		1
ELASTIC FABRICS OF AMERICA	2	1	3
SALISBURY MACHINERY	1	1	2
MCDOWELL HOSPITAL INC	1		1
BISSELL HOTELS 5 LLC	1		1
CARLISLE FOOD SERVIC	1	1	2
PRINTPACK INC	1	1	2
PINE NEEDLE LNG COMPANY	1	1	2
VALASSIS COMMUNICATIONS	1	1	2
MOORE WALLACE NORTH AMERICA INC	1	1	2
CARDINAL FLOAT GLASS	1	1	2
CITY OF ASHEVILLE	1	2	3
GLEN HIGH SCHOOL	1	1	2
JOHNSON CONTROLS INC	2		2
MODERN DENSIFYING		2	2
COCA COLA BOTTLING CO CON	5	5	10
HALYARD NORTH CAROLINA, INC		1	1
NEW EXCELSIOR, INC		1	1
RITZ CARLTON CHARLOTTE	1	1	2
CITY OF HICKORY	4	4	8
COPLAND FABRICS INC		1	1
CITY OF KANNAPOLIS		1	1
CHESAPEAKE TREATMENT COMPANY, LLC	1	1	2
AT&T WIRELESS SERVICE	1	1	2
PRECOR MANUFACTURING LLC	1	1	2
CHARLOTTE COUNTRY DAY SCHOOL	12		12
ALADDIN MANUFACTURING CORPORATION		2	2
PARKER HANNIFIN CORPORATION	10	8	18
FREUDENBERG IT LP	4	4	8
SHERATON IMPERIAL	3	3	6
THE CYPRESS OF CHARLOTTE CLUB, INC	11	11	22
MAGNOLIA CASTLE LLC	1	1	2
WAKE FOREST UNIVERSITY	4	3	7
AFFILIATED COMPUTER SERVICE	3	3	6
CLARIANT CORPORATION	11	10	21
CELGARD, LLC	5	5	10
VERIZON WIRELESS	5	5	10
TRANSCONTINENTAL GAS	2	3	5
TAYLOR KING FURNITUR	2	1	3
CHEROKEE BOYS CLUB	3	3	6
LIGGETT GROUP INC	1		1

Customer Bill Name	DSM YR17(1/1/17-12/31/17) RIDER OPT-OUT	EE YR17(01/01/17-12/31/17) RIDER OPT-OUT	Grand Total
KOHLER COMPANY	1	1	2
CEDAR FAIR SOUTHWEST, INC	3	3	6
DAIMLER TRUCKS NORTH AMERICA, LLC	5	5	10
TIME WARNER CABLE, INC.	1	1	2
VALDESE WEAVERS	6	6	12
SOUTHERN METALS CO	7	3	10
JDL CASTLE CORP	1	1	2
BESTCO	4	4	8
THE NC OFFICE OF INFORMATION TECHNOLOGY SERVICES	3	3	6
IPEX USA, INC	2	1	3
MANNINGTON WOOD FLOORS	1		1
GASTON CO SCHOOLS	38	36	74
FORESTVIEW HIGH SCHOOL PTA	1		1
CK THREE TOWER CENTER,LLC	1	1	2
ITG BRANDS LLC	2	2	4
NC BAPTIST HOSPITAL	9	8	17
WAKE FOREST UNIVERSITY HEALTH SCIENCES	11	10	21
SENTINEL NC-1,LLC	3	3	6
DYNAYARN USA, L.L.C.	1	1	2
JAMES M PLEASANTS CO	1		1
PEPSI BOTTLING VENTURES, LLC	5	5	10
GENUINE PARTS COMPANY	2		2
BESTREADS INC	2	2	4
RD AMERICA LLC	1	1	2
PERMA TECH INC	1	1	2
BANK NOTE CORP	3	3	6
HICKORY SPRINGS MANUFACTURING COMPANY	22	25	47
CALICO TECHNOLOGIES INC	3	3	6
TRIAD HOSPITALITY CORPORATION	1		1
STIEFEL LABORATORIES INC	3	3	6
E J VICTOR INC	1	1	2
BRIGHT ENTERPRISES INC	2	2	4
GRAY MANUFACTURING TECHNOLOGIES LLC	2	2	4
MCCREARY MODERN INC	8	6	14
CLEARWATER PAPER CORPORATION	4	4	8
CONOVER LUMBER CO	2	2	4
JOWAT CORPORATION	6	6	12
HUNTSMAN INTERNATIONAL LLC	2	2	4
ABCO AUTOMATION INC	1	1	2
ALEXANDER FABRICS, INC	2	2	4
MARVES INDUSTRIES, LLC	1	1	2
GRIFFIN INDUSTRIES	2	2	4
AMERICAN CONVERTING, CO. LTD	2	2	4
MEREDITH WEBB PRINT	4	4	8
BAKERY FEEDS INC	2	2	4
ECMD INC	4	4	8
TECHNIMARK INC	14	14	28
JOHNSTON PROP INC	1	2	3
IQE INC	2	2	4
BEVERLY KNITS INC	5	5	10
CHILDRENS HOME INC	2	2	4
TRIAD WINDOW DES & I	1	1	2
HENDERSONVILLE HEALTH & REHAB	1	1	2
STEWART SUPERABSORBENTS, LLC	1	1	2
FILTRONA GREENSBORO, INC	3	3	6
CAROLINA BEVERAGE GROUP, LLC	4	4	8
THOMAS BUILT BUSES	4	4	8
METROMONT CORPORATION	2	2	4
BALLANTYNE RESORT, LLC	1		1
CIM URBAN REIT PROPERTIES VIII LP	1		1
BOXBOARD PROD INC	2	2	4
ADVANCED TECHNOLOGY	2	2	4
SYNTHETICS FINISHING	10	10	20
CABARRUS COUNTY SCHOOLS	63	63	126
BIC CORPORATION	5	5	10
ADVANCED MACHINE & FABRICATION, INC.	2	2	4
FAIRYSTONE FABRICS	4	4	8
CLAPPS NURSING HOME CENTER	1	1	2
FOCKE & CO, INC	1	1	2
AQUA PLASTICS INC	2	2	4
MEDIA GENERAL OPERATIONS INC	1	1	2
STONEVILLE LUMBER CO	2	2	4
VALSPAR CORP	3	3	6

Customer Bill Name	DSM YR17(1/1/17-12/31/17) RIDER OPT-OUT	EE YR17(01/01/17-12/31/17) RIDER OPT-OUT	Grand Total
VANGUARD FURNITURE INC	8	8	16
NETAPP, INC	2	2	4
OAK FOREST HEALTH AND REHABILITATION CO	1	1	2
STAMPSOURCE	1	1	2
J E HERNDON CO	1	1	2
MILES TALBOTT	2	2	4
STONEFIELD CELLARS WINERY LLC	1	1	2
KOOPMAN DAIRIES INC	2	2	4
NC BLUMENTHAL PAC	2	2	4
ONEAL STEEL INC	4	4	8
COLUMBIA PLYWOOD CORPORATION	7	7	14
INFO-GEL, LLC	3	3	6
AMERICAN YARNS LLC	3	3	6
DAVIDSON COUNTY COMMUNITY COLLEGE	3	3	6
MORTON CUSTOM PLASTICS, LLC	2	2	4
CISCO SYSTEMS INC	1	1	2
INCHEM CORPORATION	2	2	4
FMC-LITHIUM CORP	5	5	10
TECHNIBILT LTD	3	3	6
EAST COAST LUMBER CO	1	1	2
INDUSTRIAL WOOD PRODUCTS	3	2	5
INDUSTRIAL WOOD PROD	3	3	6
KINCAID FURNITURE	13	13	26
HERBALIFE INTERNATIONAL OF AMERICA INC	1	1	2
SNIDER TIRE,INC	2	2	4
DISCOVERY PLACE INC	2	2	4
CAMBRIDGE CC HOLDING COMPANY LLC	1		1
TOWN OF VALDESE	3	1	4
SHUFORD YARNS,LLC	2	2	4
MINT MUSEUM OF CRAFT & DESIGN	1	1	2
KEN SMITH YARN CO	1	1	2
FIBER & YARN PRODUCTS, INC	1	2	3
AMERICAN EXPRESS TRAVEL RELATED SERVICES COMPANY, INC	1	1	2
ESSENTRA PACKAGING US, INC		4	4
BRASS CRAFT MFG CO		1	1
HAN FENG INC		1	1
IGM RESINS USA INC		1	1
TOWN OF MOORESVILLE		1	1
TERRA-MULCH PRODUCTS, LLC	3	4	7
AMERICAN CAMPUS OPERATING CO LLC	3	3	6
ISOTHERMAL COMMUNITY COLLEGE	5	5	10
NC A&T UNIV FOUNDATION	1	1	2
TIME WARNER CABLE SE LLC	15	15	30
KSM CASTINGS USA INC	1		1
KERRS HICKORY READY MIXED CONCRETE COMPANY INC	3	3	6
U.S. COTTON, LLC	4	4	8
DANNY TERRELL	2	2	4
CKS PACKAGING INC	4	4	8
PIONEER COMMUNITY HOSPITAL OF STOKES	1		1
FREUDENBERG PERFORMANCE MATERIALS LP	3	2	5
CATAWBA COUNTY SCHOOLS	23	20	43
CITY OF CHARLOTTE REGIONAL VISITORS AUTHORITY	4	4	8
ELDER HOSIERY MILLS INC	1	1	2
AMERICAN TOBACCO HH LLC	6	6	12
DURHAM ACADEMY	7	7	14
CITY OF BELMONT	1	1	2
BECO MANAGEMENT	2	2	4
BRIT CHARLOTTE LLC	1	1	2
BRIT-CHARLOTTE HOLDING LLC	3	3	6
ST LUKES HOSPITAL	1		1
UNIVERSITY OF NC HOSPITALS	7	7	14
INSTEEL INDUSTRIES, INC	2	2	4
DURHAM PUBLIC SCHLS	107		107
ROGER MARK PENDLETON	4	4	8
CITY OF SALISBURY	10	10	20
DURHAM TECH COMM COL	2		2
AE & T COMPANY INC	1	1	2
IAC OLD FORT, LLC	3	3	6
IAC OLD FORT II LLC	1		1
SIEMENS ENERGY, INC	2	2	4
MDI MANAGEMENT	1		1
PRESBYTERIAN MEDICAL CARE CORP	1	1	2
GEORGIA-PACIFIC MT HOLLY LLC	1	1	2

Customer Bill Name	DSM YR17(1/1/17-12/31/17) RIDER OPT-OUT	EE YR17(01/01/17-12/31/17) RIDER OPT-OUT	Grand Total
BROAD RIVER WATER AUTHORITY	1		1
TOSAF USA, INC	1	1	2
GKN DRIVELINE NORTH AMERICA, INC	1	1	2
CONSOLIDATED CONTAINER COMPANY	4	7	11
CONRAD HILL FEED &	1	1	2
LIDL US OPERATIONS LLC	1	1	2
BARTIMAEUS BY DESIGN INC	3	3	6
DURHAM FALCON HOTEL, LLC	1	1	2
CAROLINA GLOVE COMPANY	6	5	11
CAREFUSION MANUFACTURING, LLC	1	1	2
PLASTIC REVOLUTIONS	1	1	2
PACKRITE LLC	7	7	14
WAGER,ROBERT CO,INC	4	4	8
CAROLINA PRECISION COMPONENTS, INC.	1	1	2
MARKET AMERICA	3	3	6
LINCOLN COMM HEALTH	1	1	2
DAVIS AMBULATORY SURGICAL CENTER	1	1	2
IMAGES OF AMERICA	2	2	4
RENWOOD MILLS LLC	1	1	2
LEESONA CORP	1	1	2
INTELLIGENT IMPLANT SYSTEMS	1	1	2
JACKSON CREEK MFG INC	1	1	2
TELERX MARKETING INC	1	1	2
UNION COUNTY PUBLIC SCHOOLS	2	2	4
TKC MANAGEMENT SERVICES	1	1	2
STANDARD TOOLS AND EQUIPMENT	2	2	4
SOUTHERN PRECISION SPRING CO INC	2	2	4
ATRIUM WINDOWS & DOORS	7	7	14
BELK	7		7
SOUTHERN FURNITURE	4	4	8
SPORTS SOLUTIONS INC	2	2	4
BED,BATH & BEYOND	1	1	2
GREENSBORO COLLEGE	13	13	26
EARTH FARE INC	3	3	6
W&G ASSOCIATES	1	1	2
PEAK 10 INC.	2	2	4
CKA LAKEPOINTE TWO OWNER LLC	1	1	2
CKA LAKEPOINTE ONE OWNER LLC	1	1	2
CITY OF REIDSVILLE	2	2	4
SOCIAL SECURITY ADMINISTRATION	1	1	2
KURZ TRANSFER PRODUCTS LP	4	4	8
CARPENTER COMPANY	4	4	8
KEYSTONE FOODS LLC	2	2	4
AFRO AMERICAN CULTUR	1	1	2
EVANS,JAMES R	2	2	4
BEAL MANUFACTURING CORP	1	1	2
INSTITUTION FOOD HOUSE, INC	7	7	14
B/E AEROSPACE, INC	15	15	30
NATIONAL GYPSUM CO	1	1	2
SPORTS MENAGERIE	2	2	4
DIZE COMPANY	3	3	6
PHARR YARNS LLC	1	1	2
DIZE AWNING TENT CO	1	1	2
ECOFLO INC	3	3	6
GLOBAL TEXTILE ALLIANCE INC	5	5	10
EXOPACK-THOMASVILLE, LLC	6	6	12
COVERIS ADVANCED COATINGS US LLC	5	5	10
CARDINAL HEALTH 200, LLC	1	1	2
VIC INC	1	1	2
FOSS AUTO RECYCLING INC	5	5	10
CAROLINA PRECISION PLASTICS LLC	6	6	12
DEERE HITACHI CONST MACH	16	16	32
CONCRETE SUPPLY	3	3	6
CONCRETE SUPPLY CO	7	7	14
CONCRETE SUPPLY COMPANY LLC	1	1	2
PEAK RESOURCES-ALAMANCE, INC	2	2	4
WORLD MEDIA ENTERPRISES, INC	1	1	2
PUBLIX NORTH CAROLINA LP	8	8	16
GRASS AMERICA INC	4		4
NIAGARA BOTTLING LLC	1	1	2
CENTRAL CAROLINA PRODUCTS	1	1	2
CENTRAL CAROLINA PLASTICS INC	2	2	4
FORSYTH TECHNICAL COLLEGE	13	8	21

Customer Bill Name	DSM YR17(1/1/17-12/31/17) RIDER OPT-OUT	EE YR17(01/01/17-12/31/17) RIDER OPT-OUT	Grand Total
GATEWAY UNIVERSITY RESEARCH PARK	4	4	8
GRANDEUR MFG	1	1	2
METROLINA GREENHOUSES INC	20	18	38
BURLINGTON COAT FACTORY	4		4
BURKE COUNTY SCHOOLS	27	22	49
CARMEL COUNTRY CLUB	25	25	50
HOME DEPOT	18	18	36
CARMEL CTRY CLUB	1	1	2
WINSTON SALEM STATE UNIVERSITY	21	21	42
REYNOLDA MANUFACTURING SOLUTIONS, INC	4	4	8
REMATTR, INC	2	2	4
FUJITSU AMERICA INC	1	1	2
CPP INTERNATIONAL LLC	1	1	2
WSOC TELEVISION INC	4	2	6
SHERRILL FURNITURE	4	5	9
CV PRODUCTS CONSOLIDATED LLC	2	2	4
CITY OF GRAHAM	2	2	4
GOLDING FARMS FOODS	2	2	4
PERFORMANCE LIVESTOCK & FEED CO, INC.	1	1	2
BORAL BRICKS INC	1	1	2
UNC SCHOOL OF THE ARTS	34	34	68
CARMIKE CINEMAS, INC	4	4	8
ALLTEL MOBILE	1	1	2
SOUTH COLLEGE STREET LLC	1	1	2
AMERICAN ROLLER BEARING CO OF NC	1	1	2
AMERICAN ROLLER BEARING	1	1	2
SOUTHERN PIPE INC	1	1	2
POLY PLASTIC PRODUCTS OF NC INC	4	4	8
SPRINT	1	1	2
CAROLINA LASER CUTTING INC	1	1	2
CARDINAL HEALTH INC	2	2	4
CARDINAL HEALTH	1	1	2
ITL LLC	2	2	4
U S POSTAL SERVICE	5	5	10
CAROLINA SUNROCK CORP	10	10	20
AMERICAN AIRLINES	6	3	9
DURHAM COCA COLA	4	4	8
TURBOCOATING CORP	1	1	2
301 COLLEGE STREET CENTER LLC	1	1	2
AVAGO TECHNOLOGIES WIRELESS(USA) MANUFACTURING, INC	1	1	2
MULTI SHIFTER INC	1	1	2
PIONEER DIVERSITIES CO	1	1	2
WXII TELEVISION	2	1	3
SONESTA INTERNATIONAL HOTELS CORPORATION	1		1
AMSTAR SUGAR CORP	1	1	2
ATLANTIC SWEETNER CO	2	2	4
YMCA GREENSBORO	7	7	14
JAMESTOWN YMCA	1	1	2
TJX COMPANIES	3	3	6
GRIFOLS THERAPEUTICS INC	1	1	2
STEEL SPECIALTIES	2	2	4
RONNIE D MILES	1	1	2
JOHNSON & WALES UNIVERSITY	3	3	6
PIERRE FOODS	7	7	14
NORDIC WAREHOUSE INC	1	1	2
TIERPOINT, LLC	4	4	8
MERCHANTS DISTRIBUTORS INC	2	2	4
ALAMANCE REGIONAL MEDICAL CENTER	2	2	4
FAMILY DOLLAR STORES OF NORTH CAROLINA INC	4	4	8
INDEPENDENT BEVERAGE CORPORATION	4	4	8
FULLSTEAM BREWERY, LLC	1		1
NORANDAL USA INC	1	1	2
IMC-METALSAMERICA, LLC	1	1	2
PRYSMIAN CABLE AND SYSTEMS USA, LLC		1	1
MORINAGA AMERICA FOODS INC		1	1
ASHLEY FURNITURE INDUSTRIES INC	5	5	10
ELECTRIC GLASS FIBER AMERICA,LLC	3	4	7
INTERNATIONAL PAPER COMPANY	6	5	11
LENOVO (UNITED STATES) INC	1	1	2
SYNGENTA CROP PROTECTION, LLC	1		1
TE CONNECTIVITY CORPORATION	18	18	36
SONOCO CORRFLEX D & P LLC	3	3	6
ROCK-TENN CONVERTING COMPANY	28	28	56

Customer Bill Name	DSM YR17(1/1/17-12/31/17) RIDER OPT-OUT	EE YR17(01/01/17-12/31/17) RIDER OPT-OUT	Grand Total
WESTROCK CONVERTING COMPANY	1	1	2
SPENCERS INCORPORATED OF MOUNT AIRY, NC	1		1
SOUTH FORK INDUSTRIES	4	4	8
BRAXTON SAWMILL INC	3	3	6
ETHAN ALLEN OPERATIONS INC	2	2	4
SIEMENS ENERGY INC	2	3	5
ALEVO MANUFACTURING, INC.	19	19	38
B & E WOODTURNING INC	1	1	2
BARRDAY CORP	3	3	6
PRECISION FABRICS GROUP INC	2	2	4
THE INSPIRATIONAL NETWORK INC	2	2	4
LSC COMMUNICATIONS US, LLC	5	5	10
BENJAMIN THOMAS COOPER		1	1
MOORESVILLE ICE CREAM COMPANY LLC	2	2	4
QORVO US INC	4	3	7
QORVO US , INC	1	1	2
CITY OF WINSTON -SALEM	1	1	2
ALEVO MANUFACTURING, INC	1	1	2
PARMER RTP, LLC	3	3	6
LINDYS HOMEMADE, LLC	1	1	2
AMERICAN ZINC PRODUCTS LLC	1	1	2
UNILIN NORTH AMERICA, LLC	1	1	2
FIBRIX, LLC	2	2	4
ARJOBEX AMERICA	2		2
CANDLE CORPORATION OF AMERICA	2	2	4
COVERIS FLEXIBLES (THOMASVILLE) US LLC	6	6	12
COUSINS PROPERTIES LP	4	3	7
COMMONWEALTH HOSIERY	3	3	6
CHARLOTTE GATEWAY VILLAGE	2	2	4
TAYLOR BROS	6	6	12
THIEMAN MANUFACTURING TECHNOLOGIES LLC	1	1	2
PRESBYTERIAN HOMES,INC	9	8	17
SANDY RDG GOLF CLUB	3	3	6
FFNC INC	5	4	9
CAMCO MANUFACTURING, INC	5	5	10
GUILFORD COUNTY	8	7	15
CAROLINA INVESMENT PROPERTIES	1	1	2
BRF-A1,LLC	1	1	2
REPLACEMENTS LTD	7	7	14
LIBERTY HARDWARE	3	1	4
EDS PALLETT WORLD INC	4	4	8
LAKE HICKORY COUNTRY CLUB	6	6	12
LABELTECH INCORPORATED	2	2	4
HUITT MILLS,INC	2	2	4
CROWN CONVERTING	4	4	8
PIEDMONT CHEMICAL	2	2	4
TRIANGLE ORTHOPEDIC	1	1	2
CB RICHARD ELLI	12	12	24
LEE INDUSTRIES	3	3	6
COUSINS PROP INC	1	1	2
OWENS & MINOR MEDICA	1	1	2
STURM RUGER & CO INC	2	2	4
ELLIS LUMBER CO	3	2	5
SPECIALTY MANUFACTURING INC	1	1	2
DILLARDS DEPARTMENT STORE	5	3	8
SPECIALIZED PACKAGING FLEXO	1	1	2
MERIDIAN HOSPITALITY HOLDINGS LLC	1	1	2
LIBERTY HEALTHCARE PROPERTIES OF MECKLENBURG COUNTY LLC	1	1	2
MASONIC & EASTERN STAR HOME	3	3	6
NORTHERN HOSP OF SURRY CO	2		2
HOUSE OF RAEFORD FARMS INC	2	2	4
R & R POWDER COATING INC	1	1	2
DE FEET INTERNATIONA	3	2	5
CAMBRO MANUFACTURING CO	2	2	4
AMERICAN HEBREW ACADEMY	11	7	18
NORDFAB	5	4	9
PNEUMAFIL CORPORATION	6	6	12
CONVATEC INC	2	2	4
MAY DEPT STORE	5	2	7
UNDERWRITERS LABORATORIES	1		1
SHERWIN WILLIAMS COMPANY	5	5	10
BRIDGESTONE AIRCRAFT TIRE USA INC	3	3	6
AERODYN WIND TUNNEL LLC	1	1	2

Customer Bill Name	DSM YR17(1/1/17-12/31/17) RIDER OPT-OUT	EE YR17(01/01/17-12/31/17) RIDER OPT-OUT	Grand Total
BEOCARE INC	2	3	5
LEMCO MILLS INC	2	2	4
SYNTEC SEATING SOLUTIONS LLC	1	1	2
THE CLEARING HOUSE PAYMENTS COMPANY LLC	1	1	2
O T SPORTS IND INC	1	1	2
RALEIGH RC GREEN LLC	3	3	6
TALBERT BUILDING SUPPLY INC	1	1	2
TYSON FARMS INC	21	21	42
SONOCO PRODUCTS COMPANY	2	2	4
BILLY GRAHAM EVANGELISTIC	6	5	11
CSHV SOUTHPARK, LLC	1	1	2
ADVANCE STORES CO	1	1	2
WEIL MCLAIN	2	2	4
CAROLINA STALITE CO	11	11	22
DATACHAMBERS, LLC	1	2	3
SALEM ACADEMY & COLLEGE	14	12	26
THOMASVILLE,CITY OF	3	3	6
THE FRESH MARKET	1	1	2
NATIONAL GENERAL MANAGMENT CORP.	5	2	7
TICONA POLYMERS, INC	1	1	2
MCLEOD LEATHR & BELT	1	1	2
ALTEC INDUSTRIES INC	1	1	2
GETRAG GEARS OF NA	2	2	4
SV CENTER LLC	2	2	4
RACK ROOM SHOES	1	1	2
MOORESVILLE CITY SCHOOLS	8	7	15
WFMY TV INC	2	2	4
ARROW INTERNATIONAL INC	2	2	4
NW CHANDLER BUILDING LP	1	1	2
NW BRIXHAM GREEN ONE LP	1		1
NW WINSLOW BUILDING LP	1	1	2
NW BETSILL BUILDING LP	1		1
NW SIMMONS BUILDING LP	1	1	2
NW BOYLE BUILDINGS LP	2	2	4
NWBH 1 LP	2	2	4
NW GRAGG BUILDING LP	1	1	2
PUROLATOR FACET INC	3		3
UNIQUETEX	1		1
RH MANUFACTURING LLC	2	2	4
T5@KINGS MOUNTAIN VII LLC	1		1
MOSES CONE HEALTH SYS	16	14	30
OWASA	6	5	11
GRANGES AMERICAS INC	1	1	2
POPPELMANN PLASTICS USA LLC	1		1
VALLEY HILLS MALL	9	9	18
STARPORT I,LLC	1		1
CONTINENTAL STRUCTURAL PLASTICS	1	3	4
PIEDMONT ROW DRIVE, LLC	1		1
NW BRIXHAM GREEN TWO LP	1	1	2
NW BALLANTYNE ONE LP	1	1	2
NW HIXON BUILDING LP	1	1	2
NW BALLANTYNE TWO LP	1	1	2
NW JJH BUILDING LP	2	2	4
NW RICHARDSON BUILDING LP	1	1	2
NW WOODWARD BUILDING LP	1	1	2
NW BRIXHAM GREEN THREE LP	1	1	2
HUGH CHATHAM MEM HOSPITAL	39	39	78
J C PENNEY CO	4	4	8
FLOWERS BAKING COMPANY	2	1	3
WESTROCK COMPANY	4	3	7
FLOWERS BAKERY OF WINSTON SALEM LLC	4	3	7
SPX FLOW INC.	1	1	2
RANDY D MILLER	1	1	2
ULTIMATE TEXTILE INC	2	2	4
LIBERTY COMMONS NURSING AND REHABILITATION CENTER OF MATTHEWS	1	1	2
DEBOTECH INC	1	1	2
REEP-OFC WATER RIDGE NC HOLDCO LLC	5	5	10
WELLSPRING RETIREMNT COMM INC	5	4	9
WELL SPRING RET	5	2	7
MINNESOTA MINING & MFG CO	2	2	4
THE POLYMERS CENTER OF EXCELLENCE	2	2	4
LIBERTY HEALTHCARE PROPERTIES OF BALLANTYNE LLC	1	1	2
ROCKWOOD LITHIUM INC	1	1	2

Customer Bill Name	DSM YR17(1/1/17-12/31/17) RIDER OPT-OUT	EE YR17(01/01/17-12/31/17) RIDER OPT-OUT	Grand Total
HICKORY PRINTING SOLUTIONS, LLC	2	2	4
WALNUT CIRCLE PRESS	2	2	4
NC DEPT OF PUBLIC SAFETY	23	22	45
101 SOUTH TRYON LP	2	1	3
NOVOZYMES NORTH AMERICAN INC	1	1	2
NC STATE UNIVERSITY	1	1	2
MARVEL-SCHEBLER AIRCRAFT CARBORATORS	2	2	4
ALL GRANITE INC	3	3	6
FRYE REGIONAL MEDICAL CENTER	6	5	11
ALEXANDRIA REAL ESTATE EQUITIES INC	5	2	7
AERO ACCESSORIES INC	3	3	6
SOUTHERN CAST	3	3	6
KBSIII CARILLON LLC	1	1	2
DURHAM BULLS	2	2	4
PIEDMONT TOWN CENTER ONE, LLC	1		1
NW CALHOUN BUILDING LP	1	1	2
NW CULLMAN PARK LP	1	1	2
NW BRIGHAM BUILDING LP	1		1
NW EVERETT BUILDING LP	1		1
NW IRBY BUILDING LP	1	1	2
AUTOMATED SOLUTIONS LLC	2	2	4
CORNERSTONE CHARTER ACADEMY INC	2	2	4
DELTA PHOENIX, INC.	1	1	2
SCA PACKAGING NORTH AMERICA	2	2	4
ARE-NC REGION NO 11, LLC	2	2	4
NW CRAWFORD BUILDING LP	1	1	2
NR CHARLOTTE LLC	1	1	2
NW BALLANTYNE THREE LP	1	1	2
NW HAYES BUILDING LP	1	1	2
NW FRENETTE BUILDING LP	1	1	2
YMCA OF NORTHWEST NORTH CAROLINA	3	2	5
CRONLAND LUMBER CO	5	5	10
GIBSON ACCUMULATOR, LLC	3	2	5
US NATIONAL WHITEWATER CENTER, INC	13	13	26
FIBER COMPOSITES CORPORATION	2	4	6
GILBARCO INC	1	1	2
HANCOCK & MOORE, INC		7	7
ALAMANCE FOODS INC		4	4
TRUE TEXTILES, INC		1	1
MECK AREA CATH SCHLS		3	3
CASCADE DIE CASTING GRP INC		2	2
CENTRAL REGIONAL HOSPITAL		5	5
JOHN UMSTEAD HOSPITAL		4	4
MEAT AND SEAFOOD SOLUTIONS LLC		7	7
DOW CORNING CORP		11	11
TOWN OF CHAPEL HILL		2	2
RESEARCH TRIANGLE INSTITUTE		1	1
Grand Total	4,863	4,075	8,938

Duke Energy Carolinas, LLC
List of Industrial and Commercial Customers Opted-Out Vintage 2016 and Opted-In Vintage 2017
Docket No. E-7, Sub 1164

EE Rider

Customer Bill Name	Number of Accounts
ALADDIN MANUFACTURING CORPORATION	2
BIOMERIEUX, INC	1
BURLINGTON COAT FACTORY	2
CAROLINA CONTAINER	1
CATAWBA COUNTY SCHOOLS	3
CENTURY FURNITURE, LLC	1
CLARIANT CORPORATION	1
CPCC	4
ELASTIC FABRICS OF AMERICA	1
FOOD LION	87
GENUINE PARTS COMPANY	2
GLEN RAVEN INC	1
GUILFORD COLLEGE	6
GUILFORD COUNTY SCHOOLS	2
HARRIS TEETER INC	38
HERITAGE HOME GROUP LLC	1
INDUSTRIAL WOOD PROD	2
INDUSTRIAL WOOD PRODUCTS	3
JAMES M PLEASANTS CO	1
LEXINGTON FURNITURE IND	1
LOWES FOODS	2
MCCREARY MODERN INC	2
PARKER HANNIFIN CORPORATION	1
PBM GRAPHICS INC	1
ROWAN SALISBURY SCHOOLS	1
SPENCERS INCORPORATED OF MOUNT AIRY, NC	1
TARGET STORES	17
TAYLOR KING FURNITUR	1
TE CONNECTIVITY CORPORATION	1
THE GC NET LEASE (CHARLOTTE) INVESTORS LLC	1
TOWN OF VALDESE	2
UNCC	1
W S FORSYTH COUNTY SCHOOLS	5
WAKE FOREST UNIVERSITY HEALTH SCIENCES	1
WXII TELEVISION	1
ZINK IMAGING INC	1
Total	199

DSM Rider

Customer Bill Name	Number of Accounts
CITY OF CHARLOTTE	1
IPEX USA, INC	1
TE CONNECTIVITY CORPORATION	1
Total	3

Evans Exhibit 10

Duke Energy Carolinas, LLC
Share Savings Incentive Calculation
Docket Number E-7, Sub 1164
Estimate January 1, 2019 - December 31, 2019

			System
NPV of AC - Res EE[1]		$	93,815,645
NPV of AC - Non Res EE			158,328,908
NPV of AC - DSM			102,613,710
Total NPV of Avoided Costs	**A**	**$**	**354,758,264**
Program Costs - Res EE[1]		$	48,409,981
Program Costs - Non Res EE			57,234,649
Program Costs - DSM			31,286,990
Total Program Costs	**B**	**$**	**136,931,619**
Net Savings	**C=A-B**	**$**	**217,826,644**
Sharing Percentage	**D**		**11.50%**
Shared Savings - Res EE		$	5,221,651
Shared Savings - Non Res EE			11,625,840
Shared Savings - DSM			8,202,573
Total Shared Savings	**E=(A-B)*D**	**$**	**25,050,064**

1) Excludes AC and Program Costs associated with Income Qualified Energy Efficiency and Weatherization Assistance, which is deemed to be cost recovery only.

EM&V Activities

Planned Evaluation, Measurement and Verification (EM&V) Activities through the rate period (Dec. 31, 2018)

Evaluation is a term adopted by Duke Energy Carolinas (DEC), and refers generally to the systematic process of gathering information on program activities, quantifying energy and demand impacts, and reporting overall effectiveness of program efforts. Within evaluation, the activity of measurement and verification (M&V) refers to the collection and analysis of data at a participating facility/project. Together this is referred to as "EM&V."

Refer to the accompanying Evans Exhibit 12 chart for a schedule of process and impact evaluation analysis and reports that are currently scheduled.

Energy Efficiency Portfolio Evaluation

DEC has contracted with independent, third-party evaluation consultants to provide the appropriate EM&V support, including the development and implementation of an evaluation plan designed to measure the energy and demand impacts of the residential and non-residential energy efficiency programs.

Typical EM&V activities:

- Develop evaluation action plan
- Process evaluation interviews
- Collect program data
- Verify measure installation and performance through surveys and/or on-site visits
- Program database review
- Impact data analysis
- Reporting

The process evaluation provides unbiased information on past program performance, current implementation strategies and opportunities for future program improvements. Typically, the data collection for process evaluation consists of surveys with program management, implementation vendor(s), program partner(s), and participants; and, in some cases, non-participants. A statistically representative sample of participants will be selected for the analysis.

The impact evaluation provides energy and demand savings resulting from the program. Impact analysis may involve engineering analysis (formulas/algorithms), billing analysis, statistically adjusted engineering methods, and/or building simulation models, depending on the program and the nature of the impacts. Data collection may involve surveys and/or site visits. A statistically representative sample of participants is selected for the analysis. Duke Energy Carolinas intends to follow industry-accepted methodologies for all measurement and

verification activities, consistent with International Performance Measurement Verification Protocol (IPMVP) Options A, C or D depending on the measure.

The field of evaluation is constantly learning from ongoing data collection and analysis, and best practices for evaluation, measurement and verification continually evolve. As updated best practices are identified in the industry, DEC will consider these and revise evaluation plans as appropriate to provide accurate and cost-effective evaluation.

Demand Response Program Evaluation

DEC has contracted with independent, third-party evaluation consultants to provide an independent review of the evaluation plan designed to measure the demand impacts of the residential and non-residential demand response programs and the final results of that evaluation.

Typical EM&V activities:

- Collect program data
- Process evaluation interviews
- Verify operability and performance through on-site visits
- Collect interval data
- Program database review
- Benchmarking research
- Dispatch optimization modeling
- Impact data analysis
- Reporting

The process evaluation provides unbiased information on past program performance, current implementation strategies and opportunities for future improvements. Typically, the data collection for process evaluation consists of surveys with program management, implementation vendor(s), program partner(s), and participants; and, in some cases, non-participants. A statistically representative sample of participants will be selected for the analysis.

The impact evaluation provides demand savings resulting from the program. Impact analysis for Power Manager involves a simulation model to calculate the duty cycle reduction, and then an overall load reduction. Impact analysis for PowerShare involves statistical modeling of an M&V baseline load shape for a customer, then modeling the event period baseline load shape and comparing to the actual load curve of the customer during the event period.

The field of evaluation is constantly learning from ongoing data collection and analysis, and best practices for evaluation, measurement and verification continually evolve. As updated best practices are identified in the industry, DEC will consider these and revise evaluation plans as appropriate to provide accurate and cost-effective evaluation.

Evans Exhibit 12

EM&V EFFECTIVE DATE TIMELINE

This chart contains the expected timeline with end of customer data sample period for impact evaluation and when the impact evaluation report is expected to be completed.
Unless otherwise noted, original impact estimates are replaced with the first impact evaluation results, after which time subsequent impact evaluation results are applied prospectively.

Program	Program/Measure	2014				2015			
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Appliance Recycling	Refrigerator, Freezer	1st EM&V	Report					2nd EM&V	Report
Energy Efficiency Education (K12 Curriculum)	Energy Efficiency Education (K12 Curriculum)							3rd EM&V	Report
Energy Efficient Appliance and Devices	Lighting - Smart Saver RCFL							3rd EM&V	Report
	Lighting - Specialty Bulbs			1st EM&V	Report				
	SF Water EE Products							1st EM&V	Report
	HP Water Heater & Pool Pumps								
HVAC Energy Efficiency	Residential Smart $aver AC and HP								
	Tune & Seal Measures			1st EM&V	Report				
Income-Qualified Energy Efficiency	Weatherization								
	Refrigerator Replacement								
	Low Income Neighborhood			1st EM&V	Report				
Multi-Family Energy Efficiency	MF Water EE Products							1st EM&V	Report
	Lighting (CFL Property Manager)								
My Home Energy Report	MyHER	Report							
Residential Energy Assessments	Home Energy House Call								
Non-Residential Smart $aver Energy Efficiency Custom	Non-Res Smart$aver Custom Rebate								
Non-Residential Smart $aver Energy Effiency Food Service	Non-Res Smart $aver Energy Efficiency Food Service								2nd EM&V
Non-Residential Smart $aver Energy Effiency HVAC Products	Non-Res Smart $aver Energy Efficiency HVAC Products								2nd EM&V
Non-Residential Smart $aver Energy Effiency Lighting	Non Re Smart Saver Prescriptive Lighting								
	Non Res Smart $aver Prescriptive Other								
Non-Residential Smart $aver Energy Effiency Motors Pumps Drives	Non-Res Smart$aver Prescriptive (VFDs or other)								2nd EM&V
Non-Residential Smart $aver Energy Effiency Process Equipment	Non-Res Smart $aver Energy Efficiency Process Equip								2nd EM&V
Small Business Energy Saver	SBES								
Smart Energy in Offices	SEiO	Report							

Key

	Original Estimate
	1st EM&V
	2nd EM&V
	3rd EM&V
	4th EM&V

Program	Program/Measure	2016				2017				2018				2019			
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
~~Appliance Recycling~~	~~Refrigerator, Freezer~~																
Energy Efficiency Education (K12 Curriculum)	Energy Efficiency Education (K12 Curriculum)											4th EM&V	Report				
Energy Efficient Appliance and Devices	Lighting - Smart Saver RLED (Free LED)							1st EM&V	Report								
	Lighting - Smart Saver Retail								1st EM&V	Report							
	Lighting - Specialty Bulbs										2nd EM&V	Report					
	SF Water EE Products							2nd EM&V	Report					3rd E&MV	Report		
	HP Water Heater & Pool Pumps									Report							
HVAC Energy Efficiency	Referral and Non-Referral HVAC Measures								2nd EM&V	Report							
Income-Qualified Energy Efficiency	Weatherization								1st EM&V	Report							
	Refrigerator Replacement								1st EM&V	Report							
	Low Income Neighborhood			2nd EM&V	Report									3rd E&MV	Report		
Multi-Family Energy Efficiency	Lighting & Water EE Products			2nd EM&V	Report										3rd E&MV	Report	
My Home Energy Report	MyHER				3rd EM&V	Report						4th EM&V	Report				
Residential Energy Assessments	Home Energy House Call										3rd EM&V	Report					4th EM&V
~~Business Energy Reports~~	~~BER~~								~~1st EM&V~~	~~Report~~				~~Report~~			
EnergyWise Business	EnergyWise Business (EE measure)					1st EM&V	Report			2nd EM&V	Report						
Non-Residential Smart $aver Energy Efficiency Custom	Custom Rebate & Custom Assessment				2nd EM&V	Report					3rd EM&V	Report					
Non-Residential Smart $aver Prescriptive	All Prescriptive Technologies	Report							3rd EM&V	Report							
Non-Residential Energy Assessment							1st EM&V	Report									
Small Business Energy Saver	SBES			1st EM&V	Report				2nd EM&V	Report							
Smart Energy in Offices	SEiO							1st EM&V	Report								

Note: Residential Smart $aver AC and HP and Non-Residential Prescriptive lighting measures have completed a additional EM&V report in the past. Future reports combine measures for the respective programs.

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2016 Evaluation Report for the Duke Energy Carolinas PowerShare® Program

Prepared for:

Duke Energy

January 27, 2017

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CONTENTS

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EXECUTIVE SUMMARY

This document presents Navigant's evaluation of the Duke Energy Carolinas (DEC) PowerShare® Program for Program Year 2016. The PowerShare Program is a demand response (DR) program offered to commercial and industrial customers that is part of the portfolio of demand side management and energy efficiency (DSM/EE) programs offered by Duke Energy. PowerShare offers participating companies and agencies a financial incentive to reduce their electricity consumption when called upon by Duke Energy.

The DEC program offers customers four options to choose between:

- **Mandatory Curtailment:** In exchange for a monthly availability payment and event performance payments, participants must reduce load during each Mandatory Curtailment Period (MCP) to a contracted firm level.
- **Voluntary Curtailment:** In exchange for an event performance payment, participants may reduce load to a pre-nominated level during Voluntary Curtailment Periods (VCPs).
- **Generator Curtailment:** In exchange for a monthly availability payment and event performance payments, participants must transfer load from a Duke Energy source to a private generation source during Generator Curtailment Periods (GCPs).
- **CallOption Curtailment:** In exchange for a monthly availability payment and event performance payments, participants must reduce load during Emergency or Economic Curtailment periods to a contracted firm level. There are currently no DEC customers enrolled in the CallOption PowerShare option and so this option is not addressed in this report.

No Voluntary curtailment events were called in the period of analysis.

Evaluation Objectives

The research objectives of this evaluation are as follows:

1. Validate Duke Energy's DR baseline approach and calculations, as well as the monthly and seasonal capability calculations.

2. Audit the hourly kW DR event load shed for participating customers by replicating the Schneider Electric Energy Profiler Online™ (EPO) methods used to calculate the energy (kWh) and demand (kW) impacts that are used to determine settlement payments.

To complete the first objective, Navigant conducted a detailed audit of the SAS code used by Duke Energy to determine participant baselines and monthly and seasonal capability. To complete the second objective, Navigant replicated the EPO energy and demand calculations used by Duke Energy to determine settlement payments.

Key Findings

This section presents Navigant's key evaluation findings for the two principal evaluation objectives:

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Duke Energy Baseline SAS Code Audit

Code performing correctly. Navigant performed a detailed audit of the SAS code used by Duke Energy to calculate settlement baselines, as well as monthly and seasonal capabilities, and found that the code was performing correctly. Navigant's approach to reviewing the SAS code was to document the flow of the datasets with high-level annotations along with making notes of the datasets utilized in each SAS script. These notes provide Duke Energy with a basis for improving the flow of the code and help identify datasets that can be deleted after each step to improve data management.

Opportunities for improved functionality. Navigant identified several opportunities to improve the functionality of the SAS code along with organizational suggestions that may reduce the potential for errors. Additionally, there is unnecessary code that has been used to explore alternative baseline calculations that can be removed from the code. Navigant's detailed recommendations provide actionable revisions to the SAS code that will simplify and consolidate the analysis. Follow-up discussions with Duke Energy indicate the unnecessary code, which is represented as comments, is being reviewed and either eliminated or simplified.

Verification and Validation of Settlement Energy and Demand Calculations

Settlement calculations verified as correct. EPO is used by Duke Energy to determine the energy (kWh) and capacity (kW) values that are the basis for calculating monthly settlement amounts. Navigant replicated the calculations for all of the participants in the period from June through September of 2016**.** A comparison of Navigant's replicated calculations with the output of EPO revealed no deviations beyond what could be expected as a result of rounding error, meaning that Duke Energy's estimates are accurate per the settlement algorithms defined by the program literature. A summary of the validation results, by option and credit type, may be found in Table 1 below.

Table 1: Verification of EPO Calculations

Program Option	Credit Type	Customers	Unique Accounts	# of EPO Results Replicated[a]	Average % Absolute Error[b]
Mandatory Curtailment	Energy	93	168	663	0.00%
Mandatory Curtailment	Capacity	93	168	663	0.01%
Generator Curtailment	Energy	9	12	48	0.00%
Generator Curtailment	Capacity	9	12	48	0.01%

a. The number of calculations reproduced by Navigant for this analysis. For energy there is one credit calculated per participating account per event. For capacity there is one credit calculated per participating account per month. The period of analysis for this evaluation included four months and four curtailment events.

b. The absolute error represents the difference between Navigant's replicated settlement results and the EPO estimates used by Duke Energy. The near-zero error demonstrates that Navigant was able to replicate settlement calculations using the algorithms provided by Duke Energy.

Source: EPO Settlement Data and Navigant analysis

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1. INTRODUCTION

This document presents Navigant's evaluation for the Duke Energy Carolinas (DEC) PowerShare Program for Program Year 2016. The PowerShare Program is a demand response program offered to commercial and industrial customers that is part of the portfolio of demand side management and energy efficiency (DSM/EE) programs offered by Duke Energy. PowerShare offers participating customers a financial incentive to reduce their electricity consumption when called upon by Duke Energy.

1.1 Program Overview

The customer contracts for DEC's PowerShare Program commence on the first day of the month and the initial contract term is three years. Customers can sign up for PowerShare at any time during the year if their DSM rider status is either Opted-In or Not Opted-Out (Opt-In then required to join the program). If they are Opted-Out, they must wait until one of the two Opt-In/Opt-Out election windows during the year (November-December or first week in March) is open in order to change their designation to Opt-In.

The DEC program offers customers four options to choose between: Mandatory Curtailment, Voluntary Curtailment, Generator Curtailment, and CallOption. There are currently no DEC customers enrolled in the CallOption PowerShare option; therefore, this option is not addressed in this report. No Voluntary curtailment events were called in the period of analysis. Curtailment options are defined as follows:

- **Mandatory Curtailment:** In exchange for a monthly availability payment and event performance payments, participants must reduce load during each Mandatory Curtailment Period (MCP) to a contracted firm level.
- **Voluntary Curtailment:** In exchange for an event performance payment, participants may reduce load to a pre-nominated level during Voluntary Curtailment Periods (VCPs).
- **Generator Curtailment:** In exchange for a monthly availability payment and event performance payments, participants must transfer load from a Duke Energy source to a private generation source during Generator Curtailment Periods (GCPs).

The PowerShare Program is designed to encourage the participating organizations to reduce their electricity consumption for up to 100 hours each year on system peak days. Duke Energy contracts with Schneider Electric to calculate monthly customer settlements for the PowerShare Program. Schneider Electric is a specialized firm providing services in energy management and automation. The PowerShare settlements are calculated with the use of Schneider Electric's Energy Profiler Online (EPO), a third-party hosted software application designed to assist utilities with energy data analysis. EPO uses participant interval data, Duke Energy-generated participant baselines and a set of program option-specific calculations to determine the event energy (kWh) and monthly capacity (kW) values that determine participant settlement payments.

1.2 Evaluation Objectives

The research objectives of this evaluation are:

1. Validate the detailed DR baseline approach and calculations, as well as the seasonal and monthly capability calculations performed by Duke Energy.

2. Audit the hourly kW DR event load shed for participating customers by replicating the Schneider Electric Energy Profiler Online™ (EPO) methods used to calculate the energy (kWh) and demand (kW) impacts that are used to determine settlement payments.

1.2.1 Validate Detailed DR Baseline Approach and Capability Calculations

To complete the first objective, Navigant conducted a detailed audit of the SAS code used by Duke Energy to determine participant baselines, monthly, and seasonal capabilities.

As established in a series of conversations with Duke Energy in August of 2016, Navigant was tasked with conducting a detailed review of the SAS code used by Duke Energy to determine participant baselines (sometimes referred to as "pro forma") and the manner in which these were used to determine monthly capability.

As specified by Duke Energy, this review focused on two key issues:

a. Identifying technical flaws in the code (e.g., code that fails to do what the author intends it to do, or else does more than it is intended to do).

b. Ensuring that the in-line commenting is sufficiently clear and complete that the code is useable by a competent SAS programmer with experience and understanding of demand response programs.

Navigant did not execute the code, however the Navigant analyst performed a detailed assessment of output extracts from each section of the code, and coordinated closely with the Duke Energy SAS code author throughout the review process.

1.2.2 Verify Energy and Demand Calculations Used for Settlement

To complete the second objective, Navigant replicated the energy and demand calculations used by Duke Energy to determine settlement payments and compared these with the energy and demand values reported in the program's operational tracking database for the calculation of settlement payments.

The energy and demand calculations used by Duke Energy to determine settlement payments are generated by the Energy Profiler Online (EPO) tool, a Schneider Electric software product. Schneider Electric's EPO outputs a settlement report for each participant settlement (monthly capacity and event energy settlements). Each report contains the data (including the Duke Energy baseline and the participant actuals) used and the arithmetic applied to calculate the settlement payment.

To fulfill this task, Duke Energy directed Navigant to replicate the settlement arithmetic for the population of Schneider Electric reports for all PowerShare participants from June through September of 2016. The purpose of this replication was effectively to audit the process and ensure that all algorithms were applied as specified in the program literature.

1.3 Program Rules

This sub-section provides some additional detail regarding the program rules, specifically, those rules that define how much DR participants are required to provide, and a summary of the participant credits.

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This information is a summary of the DEC PowerShare Program brochure to which interested readers should refer for additional detail.[1] This section does not address the CallOption PowerShare option because, although it is available to DEC customers, there are currently no DEC customers enrolled in that option.

As noted above, there are four PowerShare program options in DEC territory, but one (CallOption) has no participants enrolled, and another (Voluntary) had no events during the summer of 2016. Each of these options is associated with one of two compliance plans:

- Fixed. A "Fixed" compliance plan is a "down by" requirement (i.e., when called participants must reduce demand by X kW).
- Firm. A "Firm" compliance plan is a "down to" requirement (i.e., when called participants must reduce demand to X kW).

The Mandatory, Voluntary and CallOption options operate under the "Firm" compliance plan, whereas the Generator option operates under the "Fixed" compliance plan.

All options require participants to commit to curtailing a minimum of 100kW per event.

Table 2, below, presents some additional detail regarding the program rules for the three PowerShare options in DEC territory with enrolled participants. Note that participants enrolled in the Mandatory option may also enroll for the Voluntary option.

[1] Duke Energy Carolinas, *PowerShare Carolinas* (Program Brochure), Accessed November 2016 https://www.duke-energy.com/business/products/powershare

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Table 2: Detailed PowerShare Option Rules

	Mandatory	Voluntary	Generator
Eligibility	Available to customers served on rate schedules LGS, I, OPT, MP, and HP.	Available to customers served on rate schedules LGS, I, OPT, and MP.	Available to customers served on rate schedules LGS, I, OPT, and MP.
Notice	30 Minutes	Day ahead	15 Minutes
Curtailment Frequency and Timing	Curtailment may occur at any time, but may last no more than 10 hours per event. A maximum of 100 hours of curtailment may be called per year.	Curtailment may occur at any time, length of curtailment periods and number of curtailment periods are at Duke Energy's discretion, but event-by-event participation is entirely voluntary.	Curtailment may occur at any time, but may last no more than 10 hours per event. A maximum of 100 hours of curtailment may be called per year.
Energy Payment	***Event Energy Credits.*** Energy eligible for credit is calculated as the difference between Forecasted Demand and Firm Demand during the curtailment period times. Participants earn $0.1 of credit per kWh curtailed.	***Event Energy Credits.*** Energy eligible for credit is calculated as the difference between Forecasted Demand and Firm Demand during the curtailment period times. Energy Credit payments for energy curtailed are market-based. Participants are eligible for payment only when 50% or more of their day-ahead nominated energy is curtailed during a Curtailment Period.	***Event Energy Credits.*** Energy eligible for credit is the amount of energy transferred to the generator during Curtailment Period times and monthly tests. Participants earn $0.1 of credit per kWh curtailed.
Capacity Payment	***Capacity Credits.*** Capacity eligible for credit (i.e., "Effective Curtailable Demand") is calculated by averaging the actual hourly load less the Firm Demand (the amount participant must curtail to) over the Exposure Period (hours of overall peak demand during which curtailment is most likely). Customer credits are $3.5/kW of Effective Curtailable Demand per month.	None	***Capacity Credits.*** The capacity eligible for credit is determined based on the average capacity generated during all Curtailment Periods and monthly tests, and is capped at participant Maximum Curtailable Demand. Eligible capacity is calculated monthly, and participants are paid $3.5/kW.
Penalty	Failure to reduce to Firm Demand levels incurs a penalty of $2/kWh for every kWh consumed above the Firm Demand level.	None	Failure to reduce by more than 50% of Maximum Curtailable Demand results in an energy charge of $2/kWh for energy shortfall below 50% of Maximum Curtailable Demand.

Source: Duke Energy

2. EVALUATION METHODS

This section of the PowerShare evaluation outlines the methods employed by the evaluation team to complete the evaluation.

This section is divided into two sub-sections:

- **Duke Energy Baseline SAS Code Audit.** This sub-section describes Navigant's approach to auditing the SAS code developed by Duke Energy to estimate participant baselines and calculate capabilities.
- **Replication of EPO Calculations.** This sub-section describes the approach and data used to replicate the EPO calculations that deliver the energy and demand used by Duke Energy to determine settlement payments.

2.1 Duke Energy Baseline SAS Code Audit

Navigant's approach to reviewing the SAS code was to document the flow of the datasets with high-level annotations along with making notes of the datasets utilized in each SAS script. The notes taken on the datasets utilized in each script were provided to Duke Energy in an Excel workbook. These technical notes are intended to provide Duke Energy with a basis for improving the flow of the code and to help identify datasets that can be deleted after each step to improve data management. The high-level annotations are included in Navigant's documentation of the SAS code process flow, which may be found in Appendix A of this report.

2.2 Replication of EPO Calculations

This sub-section describes the approach and data used by Navigant to replicate the EPO calculations for energy and demand used by Duke Energy to determine settlement payments.

It is divided in two parts:

- **Input Data.** This part lists the key data and documents used as inputs for this analysis.
- **Description of EPO Calculations.** This part provides the algebraic descriptions of the calculations replicated by Navigant.

2.2.1 Input Data

Navigant used the following key input data and documents to replicate the EPO settlement calculations:

1. EPO settlement results data
2. DEC PowerShare participants' interval consumption data
3. DEC PowerShare Program brochure[2]

[2] The DEC PowerShare Program brochure can be found at https://www.duke-energy.com/business/products/powershare

4. The Schneider Electric summary of data required to complete settlement algorithms, provided to Navigant by Duke Energy.
5. PowerShare program guidelines, provided to Navigant by Duke Energy.

2.2.2 Description of EPO Calculations

This section summarizes Navigant's replication of the EPO calculations that estimate the energy and demand values used by Duke Energy to determine settlement. There are several key terms that are worth formally defining in order to clarify their use in equations that follow. These terms are:

- **Exposure Period**: Hours of overall peak demand which curtailment is most likely. Actual curtailment events can occur outside of seasonal exposure period.
- **Forecasted Demand**: Estimated hourly demand a customer would normally exhibit in absence of curtailment.
- **Firm Demand**: Portion of demand not subject to interruption (curtailment).
- **Maximum Curtailable Demand**: Maximum amount of load transferred from the utility source to the generator during Curtailment Periods and monthly tests that is eligible for incentives.

Navigant applied the equations in this section to the interval consumption data resulting in the relevant energy or capacity credits. Navigant then compared the calculated credits to the EPO settlement data and verified that the results were essentially identical for each calculation.[3]

Event Energy Credits (Applies to Mandatory and Voluntary Participants)

$$CE = \sum_{h} [MAX\left(F_h - M\right) - MAX\left(0, A_h - M\right)]$$

Where:

CE	=	Curtailed energy,
F_h	=	Forecasted demand in half-hour h within the curtailment period,
M	=	Firm demand,
A	=	Actual demand in half-hour h

And where $F_h > A_h$, and zero otherwise.[4]

Monthly Capacity Credits (Apply Only to Mandatory Participants)

$$ECD = A_i - M$$

Where:

A_i	=	Average demand for month i during the exposure period,
M	=	Firm demand,
ECD	=	Effective Curtailment Demand

[3] Some small insignificant differences in individual calculations were found due to rounding effects.
[4] NB Navigant verified only the energy curtailed amounts that contributed to participant energy credit calculation. Verification of energy use during the curtailment period that was subject to penalty payments was not verified.

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Event Energy Credits (Applies Only to Generator Participants)

$$GE = \sum_{h} (G_h)$$

Where:

GE = Generated energy eligible for credit,
G_h = Energy generated in half hour h

Generated energy above the maximum curtailable demand for any half hour is not eligible.

Monthly Capacity Credits (Applies Only to Generator Participants)

$$AMGC = \sum_{e \in m} (GE_e) / \sum_{e \in m} (H_e)$$

Where:

AMGC = Average monthly generated capacity,
Ge_e = Generated energy eligible for credit in event e,
H_e = Number of half-hour intervals in event e
$e \in m$ = Events occurring during month m

Events are defined as all generator curtailment events and tests in a given month

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3. EVALUATION FINDINGS AND RESULTS

This section describes the findings and results of Navigant's evaluation. It is divided into two sections:

- **Duke Energy Baseline SAS Code Audit.** This section describes Navigant's findings and recommendations based on our audit of the Duke Energy SAS code.
- **PowerShare Impacts and Findings from Navigant's Replication of EPO Calculations.** This section describes Navigant's findings based on our analysis of the program tracking database[5] and the replication of the EPO calculations that deliver the energy and demand impacts used by Duke Energy to determine settlement payments.

3.1 Duke Energy Baseline SAS Code Audit

Navigant has identified several opportunities to improve the functionality of the SAS code along with making the code more readable for other support staff. The following list of findings and suggestions are intended to improve functionality and consistency:

Methodology and Baseline Calculations

- Navigant has found that Duke Energy is correctly conducting settlement baseline calculations in the daily baseline calculation code in accordance with the intended approach.
- During the review of calculations for seasonal capabilities (separate from daily baseline calculations), Navigant found that the forecast includes the holidays of July 4th and Labor Day, and that those holidays are treated as regular weekdays.[6] Although the impact of treating two holidays as weekdays rather than weekends would be very minimal, Navigant suggests that Duke Energy consider treating those holidays as weekends in the code.
- Weekday and weekend datasets for calculating DR capabilities are created using the "today()" function. This would cause an error in weekend calculations if the code is run on a weekend since there is a dependency of "today" being a weekday. Navigant understands that Duke Energy calculates the weekend capabilities on Fridays so there are likely no errors, however we recommend that Duke Energy consider updating the capability codes to account for day type in case the estimates are ever calculated on a weekend.

SAS Code Functionality

- The 'main' SAS script for each jurisdiction should be simplified to improve readability and consistency.
    - Recommendation: Move all analysis into sub-routines and update the 'main' scripts to only do the following:
        - Define global macro variables
        - Import external data
        - Call sub-routine SAS scripts

[5] The "program tracking database" refers to the documentation provided by Duke Energy outlining the reported capacity and energy values used by Duke for settlement payment.
[6] The seasonal capabilities are estimated for summer (June-September) and winter (January and February).

- Comments and descriptions should be added to the beginning of each file and section of code to provide simplified documentation of what the code accomplishes.
    - Recommendation: Add at least a one-sentence description at the beginning of each SAS script file and at the beginning of each section of code.
- After each SAS script is run, temporary datasets and macro variables that are not used in subsequent scripts should be deleted to avoid any misuse of data from preceding analysis.
    - Recommendation: Include the "PROC DATASETS" procedure at the end of each script to delete datasets and macro variables that are no longer needed.
- Delete any code that is not being used in the analysis to improve readability and prevent errors.
    - Recommendation: Delete all unnecessary code that has been commented out of each script.

3.2 PowerShare Impacts and Findings from Navigant's Replication of EPO Calculations

This section describes Navigant's findings based on our analysis of the program tracking database and the replication of the EPO calculations that deliver the energy and demand impacts used by Duke Energy to determine settlement payments.

Navigant replicated the EPO calculations for all of the participants in the period from June through September of 2016. A comparison of Navigant's replicated calculations with the output of the EPO revealed no deviations beyond what could be expected as a result of rounding error, meaning that Duke Energy's estimates are accurate. A summary of the validation results, by option and credit type may be found in Table 3, below.

Table 3: Verification of EPO Calculations

Program Option	Credit Type	Customers	Unique Accounts	# of EPO Results Replicated[a]	Average % Absolute Error[b]
Mandatory Curtailment	Energy	93	168	663	0.00%
Mandatory Curtailment	Capacity	93	168	663	0.01%
Generator Curtailment	Energy	9	12	48	0.00%
Generator Curtailment	Capacity	9	12	48	0.01%

a. *The number of calculations reproduced by Navigant for this analysis. For energy there is one credit calculated per participating account per event. For capacity there is one credit calculated per participating account per month. The period of analysis for this evaluation included four months and four curtailment events.*

b. *The absolute error represents the difference between Navigant's replicated settlement results and the EPO estimates used by Duke Energy. The near-zero error demonstrates that Navigant was able to replicate settlement calculations using the algorithms provided by Duke Energy.*

Source: EPO Settlement Data and Navigant analysis

This value is calculated according the EPO algorithms described above using Duke Energy's participant baselines and participant interval data. The vast majority of this was delivered by customers enrolled in the Mandatory Curtailment option. The energy reduction achieved for the July 13th event is smaller than the other events because the July 13th event lasted 2.5 hours, while the July 14th event lasted five hours and the events on July 25th and 26th each lasted six hours. The total energy impacts per event for the summer of 2016 by PowerShare option are summarized in Table 4, below.

Table 4: Summary of 2016 Event Impacts (Total Program MWh per Event)

Program Name	July 13th	July 14th	July 25th	July 26th	Total
Mandatory Curtailment	673	1,405	1,729	1,736	5,543
Generator Curtailment	18	37	44	45	144

Source: EPO Settlement Data and Navigant analysis

Total program impacts are driven by curtailment for individual meters, with a relatively small percentage having significant impacts. Seven of the 180 meters participating in 2016 accounted for approximately one third of total curtailment. Figure 1 shows each meter's average hourly event energy reduction across the summer. These are sorted in descending order, to highlight the contrast between the largest and smallest contributors in the program.

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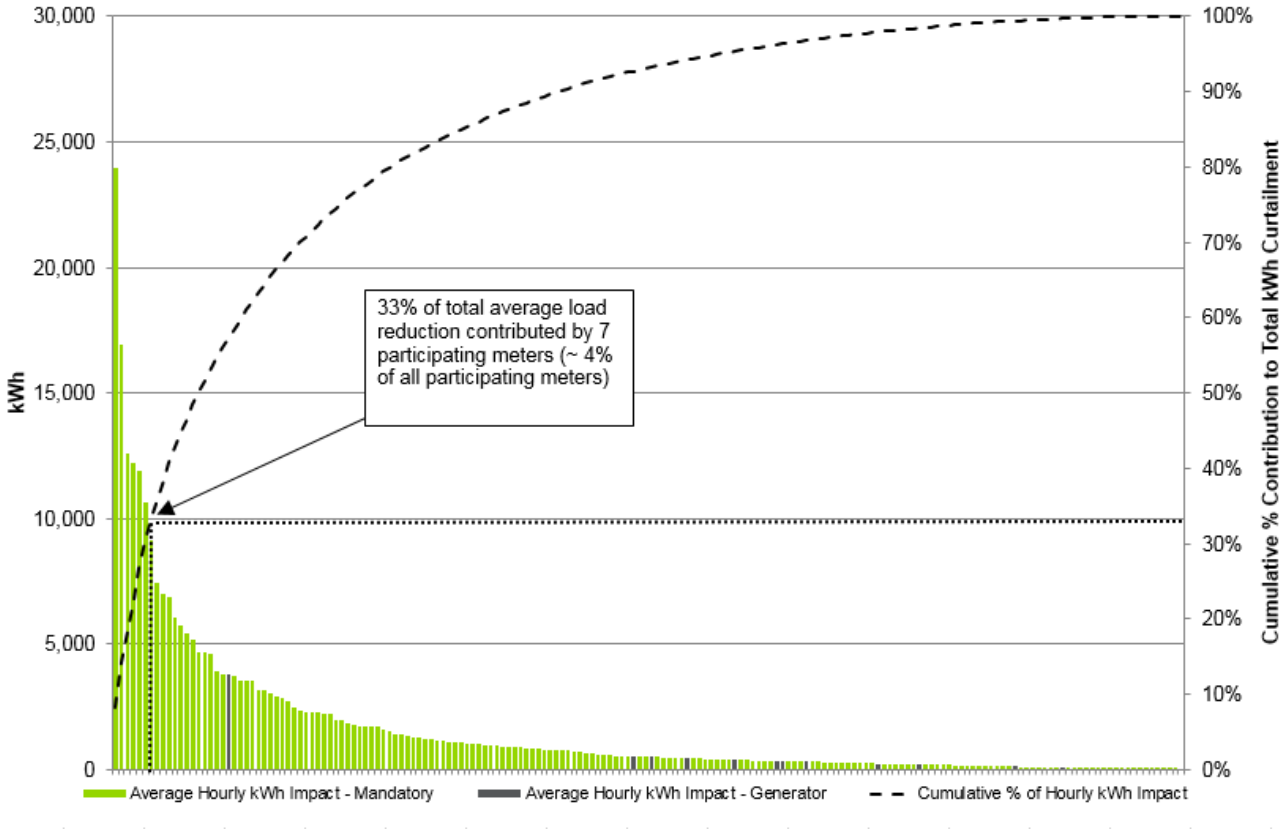
Figure 1: Average Event Curtailment by Participant



Source: EPO Settlement Data and Navigant analysis

The PowerShare Program paid out capacity credits to participants for an average monthly capacity of nearly 328 MW during the summer of 2016. This value is calculated according the EPO algorithms described above using Duke Energy's participant baselines and participant interval data. As is the case for delivered energy, the vast majority of this was delivered by customers enrolled in the Mandatory Curtailment option. The total DR capacity per month for the summer of 2016 by PowerShare option is summarized in Table 5, below.

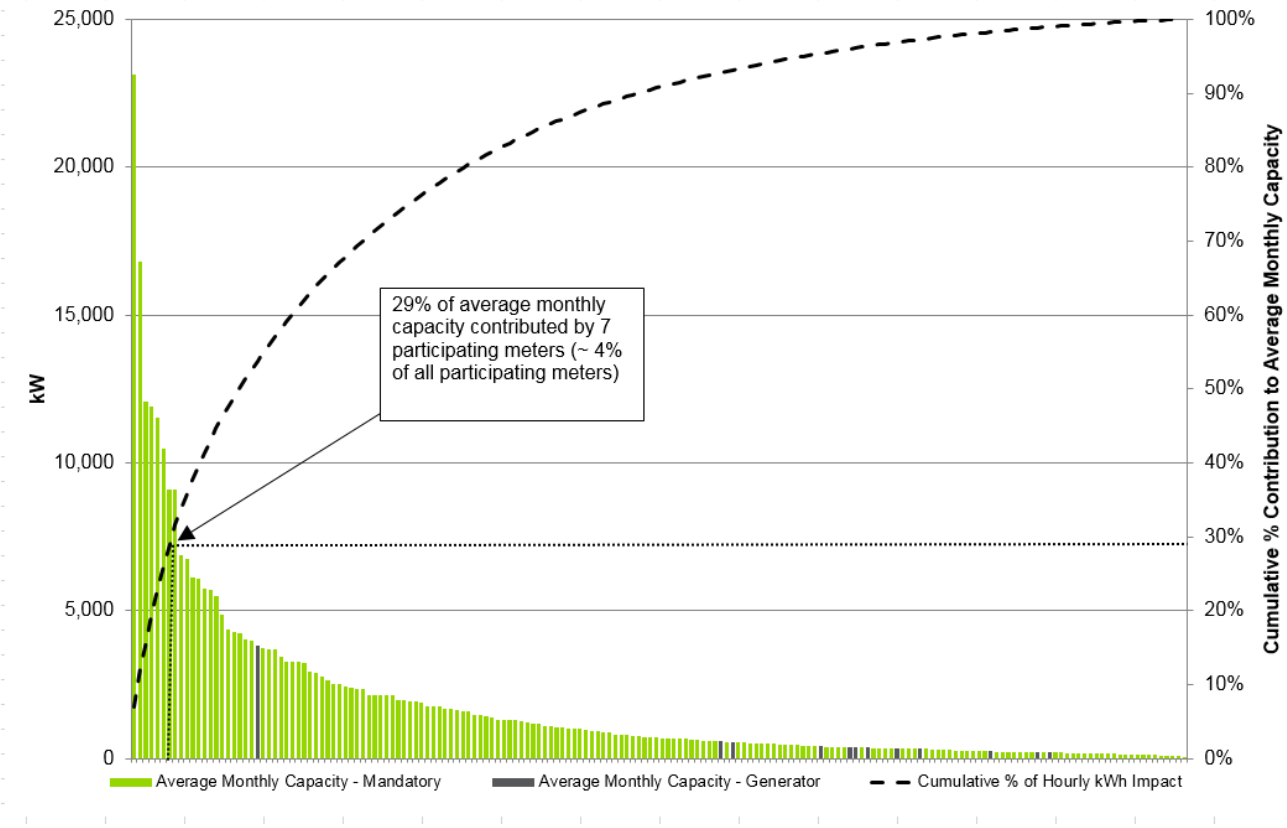
Table 5: Total Monthly Capacity for 2016 (MW)

Program Name	June	July	August	September	Average
Mandatory Curtailment	329	302	337	312	320
Generator Curtailment	8	7	9	9	8

Source: EPO Settlement Data and Navigant analysis

Similar to average event curtailment, average monthly capacity is driven by a small percentage of meters. The ranking of participants by their average monthly capacity is nearly identical to that of their average event reduction. Figure 2 shows that the top seven meters in terms of average monthly capacity account for 29% of total average monthly capacity. Six of the top seven meters in average monthly capacity are the same as the top seven meters in average event curtailment.

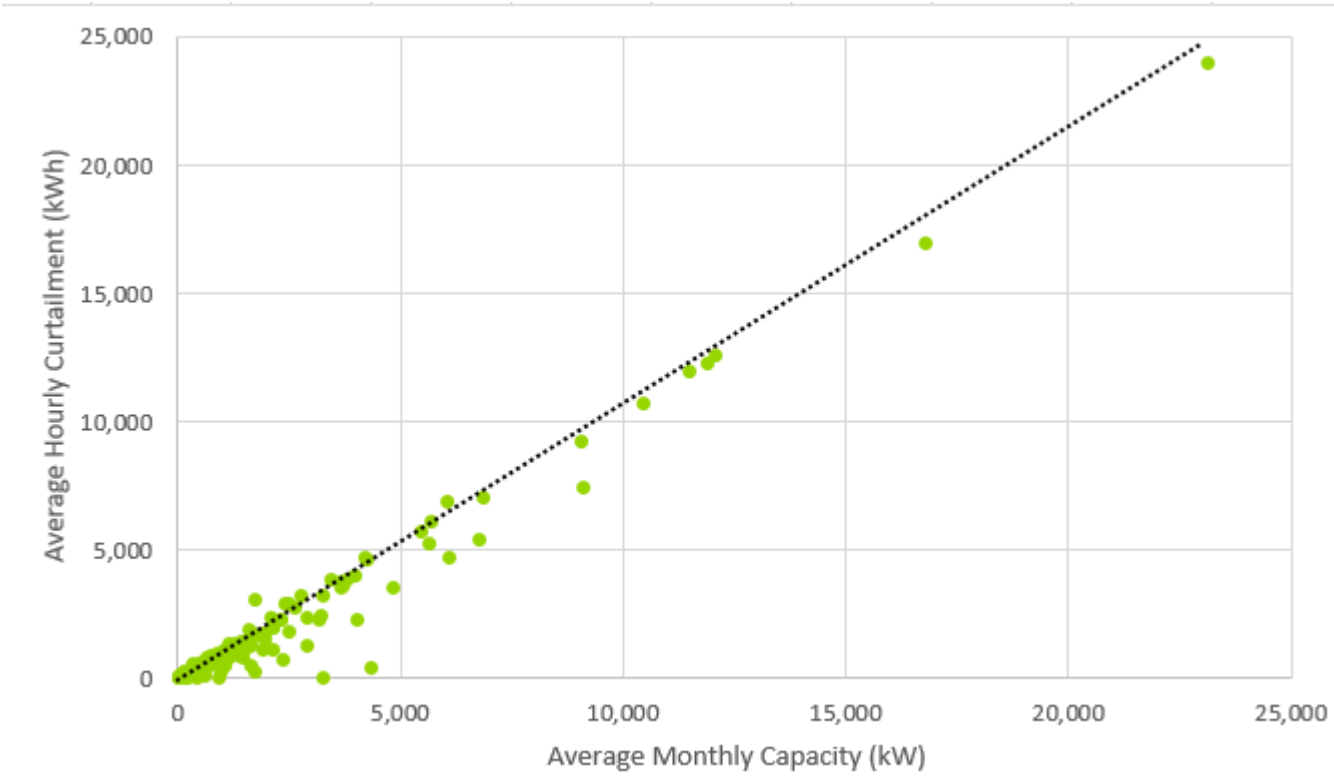
Figure 2: Average Monthly Capacity by Participant



Source: EPO Settlement Data and Navigant analysis

As suggested by the similarity of Figure 1 and Figure 2, most participants' average monthly capacity is nearly equal to their average hourly event curtailment. Figure 3 plots each participant's average monthly capacity compared to average hourly curtailment. The dotted line shows a 1:1 proportion of capacity to curtailment, and illustrates that most participants fall close to this proportion.

Figure 3: Capacity vs. Curtailment by Participant



Source: EPO Settlement Data and Navigant analysis

Program participation[7] was consistent throughout the summer with an average of approximately 160 customers participating in the Mandatory Curtailment option and 12 customers participating in the Generator Curtailment option. Table 6, below, provides a summary of the number of customers, by option, that participated in each event.

Table 6: Summary of Participation by Event for 2016 (Number of Participants)

Program Name	July 13th	July 14th	July 25th	July 26th	Average
Mandatory Curtailment	156	161	157	155	157
Generator Curtailment	12	12	12	12	12

Source: EPO Settlement Data and Navigant analysis

[7] For the purposes of this evaluation report, a meter is defined as having "participated" in an event when only when it delivers some energy reduction during the curtailment period.

4. CONCLUSIONS AND RECOMMENDATIONS

This section presents Navigant's key evaluation findings for the two principal evaluation objectives:

- **Duke Energy Baseline SAS Code Audit.** This sub-section presents the key findings of Navigant's audit of the Duke Energy SAS code used to estimate baseline and capability calculations.
- **Verification and Validation of Settlement Energy and Demand Calculations.** This sub-section presents the key findings of Navigant's efforts to replicate the calculation of the participant-level kWh and kW impacts used to determine settlement payments.

4.1 Duke Energy SAS Code Audit

Navigant's detailed review of Duke Energy's SAS code determined that the settlement baseline and monthly and seasonal capabilities are being calculated correctly per Duke Energy's definitions. Navigant provided a series of recommendations to Duke Energy that are meant to enhance the functionality of the code, and reduce potential for errors. Navigant recommends the following:

Methodology and Baseline Calculation Recommendations

- Update the DR capability code to take into account the day type for each day in the capability period.

SAS Code Functional Recommendations

- Move all analysis into sub-routines and update the 'main' scripts to simplify the flow of analysis
- Add at least a one sentence description at the beginning of each SAS script file and at the beginning of each section of code.
- Include the "PROC DATASETS" procedure at the end of each script to delete datasets and macro variables that are no longer needed.
- Delete all unnecessary code that has been commented out of each script.

4.2 Verification and Validation of Settlement Energy and Demand Calculations

Navigant found no major discrepancies when replicating Duke Energy's settlement calculations per the algorithms defined in Section 2.2. This finding confirms that Duke Energy's procedure for calculating impacts is functioning in accordance with the program definitions.

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APPENDIX A: DUKE BASELINE SAS PROCESS FLOW

The following outline provides a functional description of what the SAS code is doing in the Duke Energy Carolinas region. These notes are intended as documentation that can be referenced without a deep understanding of the nuances of SAS code.

Duke Energy Carolinas Code:

- Set date ranges for analysis
- Import line losses
- Import load data
- Import participation data
- Consolidate IS and PS datasets
- Flag weekend days and holidays in load data
- Flag event days in load data
- Data quality checks
    - Remove non-participants from data
    - Assess missing data by account
    - Identify accounts with insufficient data for forecast
    - Analyze accounts with some missing data (partial days missing vs. whole days)
    - Identify intervals with 0 load
    - Generate PDF report of data quality metrics
- Forecast capability
    - Weekday forecast
        - Select data for pro forma forecast (excludes weekends, event days, and holidays)
            - Prior 480 intervals (10 days) in Southeast (30-minute intervals)
        - Calculate average load by hour and account
        - Generate a list of the next 35 days from today's date for forecast dates
        - Merge KW values with the forecast date list
    - Weekend forecast
        - Select weekend days for forecast
            - Prior 192 intervals (4 days) in Southeast (30-minute intervals)
        - Calculate the average KW by hour and account
        - Generate a list of the next 35 days from today's date for forecast dates
        - Join average KW values to forecast dates when the day is Saturday or Sunday
    - Select the weekdays from the weekday forecast series and join to the weekend forecast
    - Produce 'slinger' (*.LSE) file using the forecast
    - Create hourly forecast dataset to estimate and report capability
    - Join account IDs to hourly forecast data for weekdays
    - Calculate capability based on compliance plan
        - Remove accounts with insufficient data
    - Output summarized capability for parent accounts
    - Summarize capability by program, state, and hour
    - Adjust capability for line losses
    - Count the number of participants by program and state
    - Repeat preceding steps, but using weekend forecast
    - Calculate generator capability with line loss adjustments to the Firm Fixed KW value
    - Summarize generators by state with participant counts and KW
    - Generate PDF reports with participant counts, KW capability, and data deficiency summaries for weekdays and weekends

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Evaluation of the Smart $aver® Custom Incentive Program in North and South Carolina

February 13, 2017

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Charlotte, North Carolina 28202

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Executive Summary

Duke Energy Carolinas (DEC) engaged Cadmus, along with NORESCO and BuildingMetrics (the evaluation team), to perform an impact evaluation of the Smart $aver® Custom Incentive Program (Custom Program). The team evaluated 374 program participant applications that were paid an incentive from January 2014 through December 2015.

The evaluation team performed the impact analysis by conducting site measurement and verification (M&V) for a sample of 29 program participant applications. We calculated average electric energy savings and demand reduction realization rates for sampled applications. We used the realization rates to extrapolate the M&V results to the entire population of participants.

The team conducted verification site visits in three phases. TecMarket Works (along with NORESCO and BuildingMetrics) completed phase 1 site visits and prepared M&V reports for eight program participant applications in the winter of 2014. In March 2015, the contract was transferred to Cadmus. Cadmus completed phase 2 site visits at 11 projects during the winter of 2016, and phase 3 site visits at 10 projects during the summer of 2016. This report describes the results of the evaluation based on combined verification efforts.

Impact Evaluation Results

Table 1 shows the program's expected energy savings (those claimed prior to applying the realization rate from the previous Evaluation, Measurement, and Verification study), evaluated gross and net energy savings by project type.

Table 1. Total Program Expected, Evaluated Gross, and Net Energy Savings by Project Type

Project Type	Population Size**	Expected kWh Impact	Realization Rate*	Gross Evaluated kWh Impact	Net-to-Gross Ratio	Net Evaluated kWh Impact
HVAC	41	59,740,357	59%	35,377,874	88%	31,132,529
Lighting	300	75,226,538	100%	74,888,145	93%	69,645,975
Process	36	35,500,097	77%	27,237,074	73%	19,883,064
Total* **	**377**	**170,466,992**	**81%**	**137,503,094**	**88%**	**120,661,569**

* Expected impact multiplied by the realization rate will not equal gross evaluated savings due to rounding.
** The total number of applications evaluated is 374. However, three applications included multiple project types.
*** The row values may not add up to the totals due to rounding.

Table 2 and Table 3 show the expected, evaluated gross, net non-coincident peak (NCP, average annual demand reduction) and summer coincident peak (CP, the average summer peak demand reduction in July, Monday through Friday, 4:00 p.m. to 5:00 p.m.) demand reductions for the program.

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Table 2. Total Program Expected, Evaluated Gross, and Net NCP Demand Reduction by Project Type

Project Type	Population Size*	Expected NCP kW Impact	Realization Rate**	Gross Evaluated NCP kW Impact	Net-to-Gross Ratio	Net Evaluated NCP kW Impact
HVAC	40	11,327	57%	6,452	88%	5,678
Lighting	300	9,167	87%	8,020	93%	7,459
Process	36	5,052	94%	4,748	73%	3,466
Total* **	**376**	**25,546**	**75%**	**19,220**	**86%**	**16,603**

* 376 of the 377 projects in the population had expected non-coincident peak demand reduction.

** Expected impact multiplied by the realization rate will not equal gross evaluated savings due to rounding.

*** The row values may not add up to the totals due to rounding.

Table 3. Total Program Expected, Evaluated Gross, and Net CP Demand Reduction by Project Type

Project Type	Population Size*	Expected CP kW Impact	Realization Rate**	Gross Evaluated CP kW Impact	Net-to-Gross Ratio	Net Evaluated CP kW Impact
HVAC	39	5,537	85%	4,713	88%	4,148
Lighting	265	11,897	103%	12,303	93%	11,442
Process	36	4,738	96%	4,533	73%	3,309
Total* **	**340**	**22,172**	**97%**	**21,550**	**88%**	**18,899**

* 340 of the 377 projects in the population had expected coincident peak demand reduction.

** Expected impact multiplied by the realization rate will not equal gross evaluated savings due to rounding.

*** The row values may not add up to the totals due to rounding.

Evaluation Parameters

Table 4 lists the parameters reviewed in this evaluation.

Table 4. Evaluated Parameters with Value, Units, and Achieved Precision and Confidence

Evaluated Parameter	Gross Realization Rates	Confidence/Precision
Energy Saving (kWh)	81%	90%/±9%
Non-Coincident Peak Demand Reduction (kW)	75%	90%/±21%
Coincident Peak Demand Reduction (kW)	97%	90%/±16%

Table 5 lists the sample periods and dates during which the team conducted evaluation activities. We selected the verification samples based on expected project contribution to program energy savings to meet the targeted relative precision of ±15% at a 90% confidence level.

Table 5. Sample Period Start and End and Dates Evaluation Activities Were Conducted

Evaluation Phase	Component	Sample Period*	Dates Conducted	Total
1	Site Visits (TecMarket Works)	January 2014 – June 2014	September 2014	8
2	Site Visits (Cadmus)	January 2014 – June 2015	January 2016	11
3	Site Visits (Cadmus)	January 2014 – December 2015	July 2016	10

* The sample period is based on the date the incentive was paid to the customer, as recorded in DEC's database.

Impact Evaluation Findings

The evaluation team identified the following key findings through this evaluation.

- The overall energy realization rate across all projects was 81%.
- Lighting projects achieved the highest energy savings as compared to program estimates (realization rate of 100%), whereas HVAC projects achieved the lowest energy savings as compared to program estimates (realization rate of 59%). Industrial process projects had a 77% energy saving realization rate.
- Lighting projects contributed 54% of the total evaluated program energy savings. In general, the discrepancies between expected and verified savings resulted from lower verified hours of use.
- HVAC projects contributed 26% of the total evaluated program savings. In general, control strategies that were suboptimal or not fully implemented contributed to low realization rates. Additionally, the evaluated loads were less than those projected in the program application saving calculations.
- Process projects generated 20% of the evaluated program savings. Though most process projects performed as expected, one large project had a 53% energy realization rate. The evaluation team's review revealed that the installed air compressors were not as efficient as expected in the application saving calculations.
- Twelve percent of the evaluated program savings are associated with freeriders. Spillover was not included in the scope of the evaluation as it was expected to be minimal. Therefore, the program net-to-gross ratio is 88%.

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Introduction and Purpose of Study

Description of Program

Through the Custom Program, DEC provides incentives for its nonresidential customers who purchase high-efficiency equipment. The program design is intended to complement the Smart $aver Prescriptive Incentive Program (Prescriptive Program), through which DEC offers incentives on preselected measures. Customers who want to purchase measures that are not eligible for the Prescriptive Program may apply for a rebate through the Custom Program. Custom Program participants must calculate their proposed measures' energy savings and include their estimate on the Custom Program application. DEC provides incentives to approved applicants based on a review of these calculations.

Table 6 lists the number of participants in the evaluation period, which includes program participant applications that were paid an incentive between January 2014 and December 2015. A total of 374 applications were paid during the evaluation period. Three applications included measures in both the lighting and HVAC categories. Since the evaluated energy savings and demand reduction are broken out by technology, these three applications are counted twice in the total shown here.

Table 6. Custom Program Impact Evaluation Participant Application Count

Project Type	Number of Participant Applications in Evaluation Period
HVAC	41
Lighting	300
Process	36
Total	**377**

Figure 1 shows the breakdown of expected energy savings by project type in the program tracking database for the evaluation period. As a category, lighting projects were reported to have the greatest savings, followed by HVAC projects.