Revised Public

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# DUKE ENERGY CAROLINAS

# INTEGRATED RESOURCE PLAN

## ATTACHMENT I

## NC RENEWABLE ENERGY & ENERGY EFFICIENCY PORTFOLIO STANDARD (NC REPS) COMPLIANCE PLAN - REDACTED

2020

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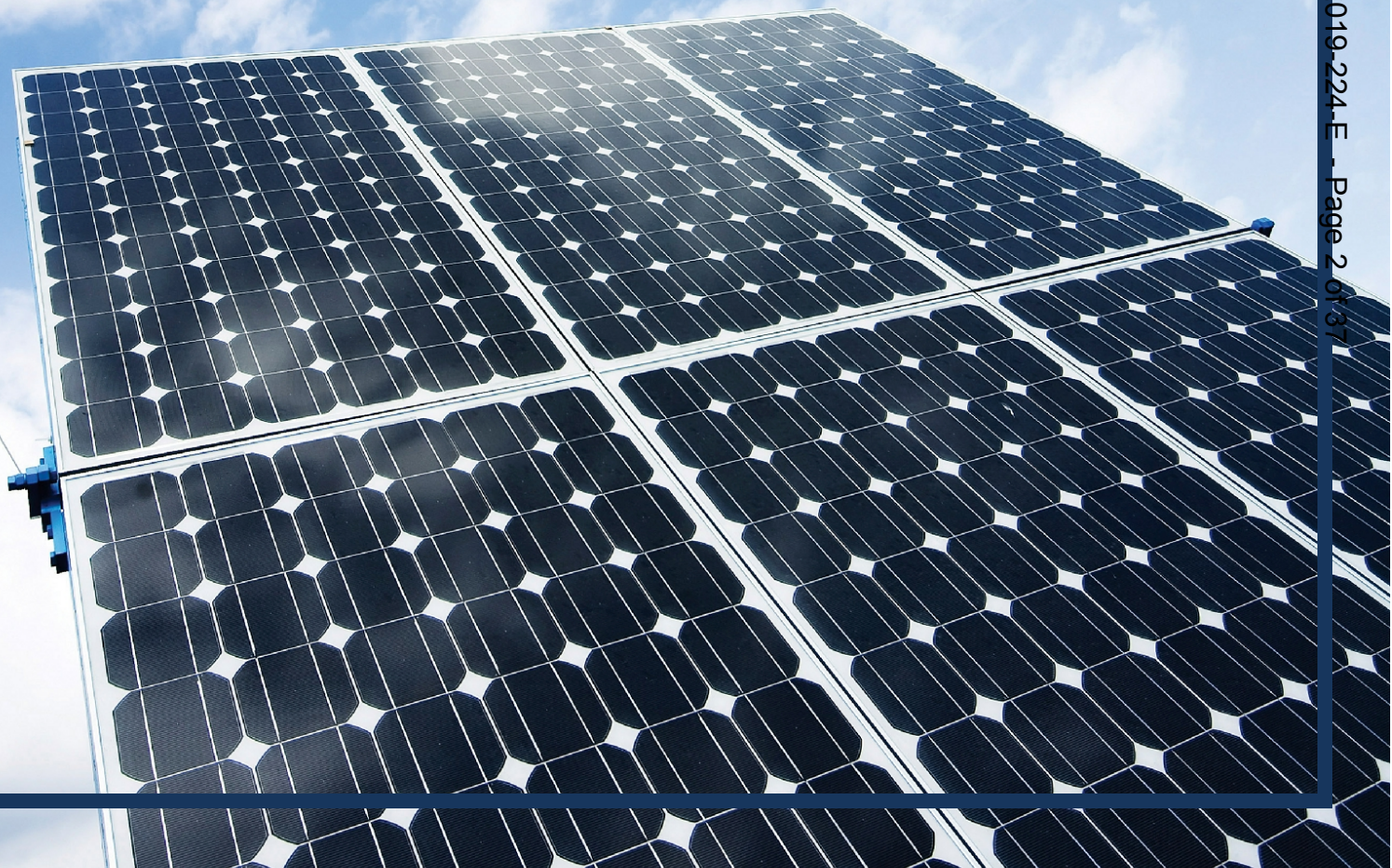
# I

# NC RENEWABLE ENERGY & ENERGY EFFICIENCY PORTFOLIO STANDARD (NC REPS) COMPLIANCE PLAN



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# I. INTRODUCTION

Duke Energy Carolinas, LLC ("DEC" or "the Company") submits its annual Renewable Energy and Energy Efficiency Portfolio Standard ("NC REPS" or "REPS") Compliance Plan ("Compliance Plan") in accordance with NC Gen. Stat. § 62-133.8 and North Carolina Utilities Commission ("the Commission") Rule R8-67(b). This Compliance Plan, set forth in detail in Section II and Section III, provides the required information and outlines the Company's projected plans to comply with NC REPS for the period 2020 to 2022 ("the Planning Period"). Section IV addresses the cost implications of the Company's REPS Compliance Plan.

In 2007, the North Carolina General Assembly enacted Session Law 2007-397 (Senate Bill 3), codified in relevant part as NC Gen. Stat. § 62-133.8, in order to:

- Diversify the resources used to reliably meet the energy needs of consumers in the State;
- Provide greater energy security through the use of indigenous energy resources available within the State;
- Encourage private investment in renewable energy and energy efficiency; and
- Provide improved air quality and other benefits to energy consumers and citizens of the State.

As part of the broad policy initiatives listed above, Senate Bill 3 established the NC REPS, which requires the investor-owned utilities, electric membership corporations or co-operatives, and municipalities to procure or produce renewable energy, or achieve energy efficiency savings, in amounts equivalent to specified percentages of their respective retail megawatt-hour ("MWh") sales from the prior calendar year.

Duke Energy Carolinas seeks to advance these State policies and comply with its REPS obligations through a diverse portfolio of cost-effective renewable energy and energy efficiency resources. Specifically, the key components of Duke Energy Carolinas' 2020 Compliance Plan include: (1) purchases of renewable energy certificates ("RECs"); (2) purchases of renewable biogas to generate RECs; (3) constructing and operating Company-owned renewable facilities; (4) energy efficiency programs that will generate savings that can be counted towards the Company's REPS obligation; and (5) research studies to enhance the Company's ability to comply with its future REPS obligations. The Company believes that these actions yield a diverse portfolio of qualifying resources and allow a flexible mechanism for compliance with the requirements of NC Gen. Stat. § 62-133.8.

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In addition, the Company has undertaken, and will continue to undertake, specific regulatory and operational initiatives to support REPS compliance, including: (1) submission of regulatory applications to pursue reasonable and appropriate renewable energy and energy efficiency initiatives in support of the Company's REPS compliance needs; (2) solicitation, review, and analysis of proposals from renewable energy suppliers offering RECs and diligent pursuit of the most attractive opportunities, as appropriate; and (3) development and implementation of administrative processes to manage the Company's REPS compliance operations, such as procuring and managing renewable resource contracts, accounting for RECs, safely interconnecting renewable energy suppliers, reporting renewable generation to the North Carolina Renewable Energy Tracking System ("NC-RETS"), and forecasting renewable resource availability and cost in the future.

The Company believes these actions collectively constitute a thorough and prudent plan for compliance with NC REPS and demonstrate the Company's commitment to pursue its renewable energy and energy efficiency strategies for the benefit of its customers.

## II. REPS COMPLIANCE OBLIGATION

Duke Energy Carolinas calculates its NC REPS Compliance Obligations[1] for 2020, 2021, and 2022 based on interpretation of the statute (NC Gen. Stat. § 62-133.8), the Commission's rules implementing Senate Bill 3 (Rule R8-67), and subsequent Commission orders, as applied to the Company's actual or forecasted retail sales in the Planning Period, as well as the actual and forecasted retail sales of those wholesale customers for whom the Company is supplying REPS compliance services. The Company's wholesale customers for whom it supplies REPS compliance services are Rutherford Electric Membership Corporation, Blue Ridge Electric Membership Corporation, Town of Dallas, Town of Forest City, and the

[1] For the purposes of this Compliance Plan, Compliance Obligation is more specifically defined as the sum of Duke Energy Carolinas' native load obligations for both the Company's retail sales and for wholesale native load priority customers' retail sales for whom the Company is supplying REPS compliance. All references to the respective Set-Aside requirements, the General Requirements, and REPS Compliance Obligation of the Company include the aggregate obligations of both Duke Energy Carolinas and the Wholesale Customers. Also, for purposes of this Compliance Plan, all references to the compliance activities and plans of the Company shall encompass such activities and plans being undertaken by Duke Energy Carolinas on behalf of the Wholesale Customers.

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Town of Highlands (collectively referred to as "Wholesale" or "Wholesale Customers")[2]. Table 1 below shows the Company's retail and Wholesale customers' REPS Compliance Obligation.

## TABLE 1
## DUKE ENERGY CAROLINAS' NC REPS COMPLIANCE OBLIGATION

| Compliance Year | Previous Year DEC Retail Sales (MWhs) (1) | Previous Year Wholesale Sales (MWhs) (1) | Total Retail sales for REPS Compliance (MWhs) | Solar Set-Aside (RECS) | Swine Set-Aside (RECS) | Poultry Set-Aside (RECS) | REPS Requirement (%) (2) | Total REPS Compliance Obligation (RECS) |
|---|---|---|---|---|---|---|---|---|
| 2020 | 58,642,521 | 2,621,460 | 61,263,981 | 122,532 | 42,888 | 313,499 | 10.0% | 6,126,401 |
| 2021 | 57,989,748 | 2,627,824 | 60,617,572 | 121,238 | 42,436 | 403,068 | 12.5% | 7,511,504 |
| 2022 | 58,066,207 | 2,634,243 | 60,700,450 | 121,403 | 84,984 | 403,068 | 12.5% | 7,521,703 |

(1) Annual compliance REC requirements are determined based on prior-year MWh sales. Retail sales figures shown for compliance years 2021 and 2022, are estimates of 2020 and 2021 retail sales, respectively.

(2) 2021 and 2022 REPS requirement is 12.5% of prior-year Retail MWh sales and 10.0% of prior-year Wholesale MWh sales.

As shown in Table 1, the Company's requirements in the Planning Period include the solar energy resource requirement ("Solar Set-Aside"), swine waste resource requirement ("Swine Waste Set-Aside"), and poultry waste resource requirement ("Poultry Waste Set-Aside"). In addition, the Company must also ensure that, in total, the RECs that it produces or procures, combined with energy efficiency savings, are an amount equivalent to 10% of its prior-year retail sales in compliance year 2020, and 12.5% of its prior-year retail sales in compliance years 2021 and 2022, taking into account the 2021 and 2022 requirements for wholesale customers remain at 10% of prior-year sales. The Company refers to this as its Total Obligation. For clarification, the Company refers to its Total Obligation, net of the Solar, Swine Waste, and Poultry Waste Set-Aside requirements, as its General Requirement.

## III. REPS COMPLIANCE PLAN

In accordance with Commission Rule R8-67b(1)(i), the Company describes its planned actions to comply with the Solar, Swine Waste, and Poultry Waste Set-Asides, as well as the General Requirement below. The discussion first addresses the Company's efforts to meet the Set-Aside requirements and then outlines the Company's efforts to meet its General Requirement in the Planning Period.

[2] For purposes of this Compliance Plan, Retail Sales is defined as the sum of Duke Energy Carolinas retail sales and the retail sales of the Wholesale Customers for whom the Company is supplying REPS compliance.

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## A. SOLAR ENERGY RESOURCES

Pursuant to NC Gen. Stat. § 62-133.8(d), the Company must produce or procure solar RECs equal to a minimum of 0.20% of the prior year's total electric energy in MWh sold to retail customers in North Carolina in 2020, 2021 and 2022.

Based on the Company's actual retail sales in 2019, the Solar Set-Aside is 122,532 RECs in 2020. Based on forecasted retail sales, the Solar Set-Aside is projected to be approximately 121,238 RECs in 2021 and 121,403 RECs in 2022. The Company has fully satisfied and exceeded the minimum Solar Set-Aside requirements in the Planning Period through a combination of Power Purchase Agreements and Company-owned solar facilities, including those listed below.

- Monroe Solar Facility – 55MW, located in Union County, placed in service on March 29, 2017; and
- Mocksville Solar Facility – 15MW, located in Davie County, placed in service on December 16, 2016; and
- Woodleaf Solar Facility – 6 MW, located in Rowan County, placed in service on December 21, 2018.

Additional details with respect to the REC purchase agreements are set forth in Exhibit A.

## B. SWINE WASTE-TO-ENERGY RESOURCES

Pursuant to NC Gen. Stat. § 62-133.8(e), as amended by the North Carolina Utilities Commission ("NCUC") *Order Modifying the Swine and Poultry Waste Set-Aside Requirement and Providing Other Relief* (December 16, 2019), and its *Errata Order* (February 13, 2020), in Docket No. E-100, Sub 113, for compliance years 2020 and 2021, at least 0.07%, and in 2022, at least 0.14%, of prior-year total retail electric energy sold in aggregate by utilities in North Carolina must be supplied by energy derived from swine waste. The Company's Swine Waste Set-Aside is estimated to be 42,888 RECs in 2020, 42,436 RECs in 2021, and 84,984 RECs in 2022.

Swine waste-to-energy compliance challenges have been numerous and varied. Three paths to the creation of swine waste-to-energy RECs have been identified, although each faces unique

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challenges.

## 1. ON-FARM GENERATION

Projects consisting of digestion and generation on a single farm or tight cluster of farms often face gas production and feedstock agreement challenges, as well as interconnection difficulties. The Company understands that many farms in NC are contract growers and have only limited term agreements with the integrators. Accordingly, many contract growers are not in a position to provide a firm supply of waste sufficient to support project financing. On July 27, 2017 Governor Cooper signed into law the "Competitive Energy Solutions for North Carolina" bill or House Bill 589 ("HB 589") (SL 2017-92), which included establishing an expedited interconnection review process for swine and poultry waste facilities that are two megawatts or less in size. This provision should help overcome some of the interconnection difficulties projects have experienced in the past.

## 2. CENTRALIZED DIGESTION

This type of system would benefit farmers that cannot individually construct and operate an anaerobic digester manure handling system on their own due to the capital expense or just don't have the number of animals required to operate a digester successfully or cost effectively. Farms located close to each other could share the cost of the centrally located digester system. The centralized digester operated by an individual or private company would carry out the operation and maintenance of the digester and its mechanical systems. It would have the same advantages as on-farm digesters of odor reduction, pathogen and weed seed destruction, biogas production and a stable effluent ready to fertilize fields and crops. A downside with centralized digestion exists if the liquid swine waste must be transported to the central site. One project has overcome this risk by co-locating the facility adjacent to a swine processing plant. The Company recognizes that NIMBY ("Not In My Back Yard") issues may scuttle some developers' plans for overcoming fuel supply and interconnection problems faced by more rural, on-farm projects.

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## 3. DIRECTED BIOGAS

Directed biogas[3] reduces costs by piping isolated methane to a central area where it is cleaned up and injected into a natural gas pipeline and moved to large, efficient combined cycle plants in the place of smaller, less-efficient reciprocating engines typical of other projects. Technological advances in this field have helped drive pricing down to comparable levels of on-site generation for swine projects. The Company has worked diligently with Piedmont Natural Gas Company, Inc. ("Piedmont") and other market participants to help develop specifications for injection and contracts that developers can utilize. Continued challenges in this area include pipeline interconnection costs, gas clean-up requirements prior to injection and the general lack of physical proximity between clusters of farms and pipeline infrastructure.

The Company has entered into one contract to purchase swine waste-derived directed biogas from a project in the Midwest and one contract to purchase swine waste-derived directed biogas from a project in North Carolina. The project in the Midwest is online and producing RECs, and the North Carolina project is expected to come online in 2021. The Company continues to explore opportunities for additional directed biogas in North Carolina through discussions with developers as well as participation in a collaborative group working to deploy renewable natural gas in Eastern North Carolina.

On June 19, 2018, the NCUC issued an *Order Approving Appendix F and Establishing a Pilot Program* in Docket No. G-9, Sub 698. This Order introduces some uncertainty surrounding the future of swine and poultry waste-derived directed biogas projects, as it establishes a three-year pilot program where Piedmont will provide information to the NCUC regarding the impact of Alternative Gas[4] on its system operations and its customers. Piedmont and other Alternative Gas suppliers may apply to the Commission to participate in the pilot program; however, applicants must demonstrate to the Commission that such additions will be useful in gathering the information and data sought by the Commission. At the end of the three-year period, the Commission will consider additional modifications to Appendix F, which sets

[3] "Directed Biogas" is defined as pipeline quality methane, injected into the pipeline system, and nominated to Duke Energy Carolinas generating facilities; this methane is biogenically derived from Swine Waste, Poultry Waste, and general Biomass sources.

[4] "Alternative Gas" is defined in Appendix F as gas capable of combustion in customer appliances or facilities which is similar in heat content and chemical characteristics to natural gas produced from traditional underground well sources and which is intended to act as a substitute or replacement for Natural Gas (as that term is defined in Piedmont's North Carolina Service Regulations). Alternative Gas shall include but not be limited to biogas, biomethane, and landfill gas, as well as any other type of natural gas equivalent produced or manufactured from sources other than traditional underground well sources.

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forth the terms and conditions under which Piedmont will accept Alternative Gas into its system, based on the experience gained during the pilot period. The additional filing requirement and the Commission's approval process add to the time it takes for additional projects to come on-line in the short term. The Companies believe that compliance efforts will eventually be met, however, and that the pilot program will ensure that Alternative Gas does not negatively impact the greater Piedmont system.

In an effort to meet compliance with the Swine Waste Set Aside, the Company (1) continues direct negotiations for additional supplies of both in-state and out-of-state resources; (2) works diligently to understand the technological, permitting, and operational risks associated with various methods of producing qualifying swine RECs and to aid developers in overcoming those risks; when those risks cannot be overcome, the Company works with developers via contract amendments to adjust for outcomes that the developers believe are achievable based on new experience; (3) explores modifications to current biomass and set-asides contracts by working with developers to add swine waste to their fuel mix; (4) continues pursuit of swine-derived directed biogas from North Carolina facilities and directing such biogas to combined cycle plants for combustion and generation; (5) utilizes the broker market for out-of-state swine RECs available in the market; (6) engages the North Carolina Pork Council ("NCPC") in a project evaluation collaboration effort that will allow the Company and the NCPC to discuss project viability, as appropriate with respect to the Company's obligations to keep certain sensitive commercial information confidential; and (7) supports research studies through North Carolina State University associated with on-farm swine waste drying technology and through Research Triangle Institute associated with biogas utilization in North Carolina.

Duke Energy Carolinas is in a position to comply with its Swine Waste Set-Aside requirements in 2020, but the Company's ability to comply in 2021 and 2022 is dependent on the performance of swine waste-to-energy developers under current contracts, particularly achievement of projected delivery requirements and commercial operation milestones. New swine projects are scheduled to come online over the next few years. The ability of these facilities to achieve projected delivery requirements and commercial operation milestones will determine the levels of compliance that DEP is able to meet in 2021 and 2022. The Company understands that swine waste-to-energy projects have encountered difficulties in achieving the full REC output of their contracts due to issues including local opposition to siting of the facilities, the inability to secure firm and reliable sources of swine waste feedstock from waste producers in North Carolina, difficulties securing project financing, interconnection challenges, force majeure due to natural disasters and technological challenges encountered when ramping up production. In addition, the outbreak of the COVID-19 pandemic has adversely impacted swine and poultry farms and processing

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plants in North Carolina through staff shortages, personal protective equipment supply issues, and delivery challenges. Although industry representatives and state and federal authorities are working to ensure continuity of operations, uncertainty remains about the magnitude of the pandemic's impact in North Carolina and its corresponding effect on poultry and swine waste to energy production.

The Company remains actively engaged in seeking additional resources and continues to make every reasonable effort to comply with the Swine Waste Set-Aside requirements. Additional details with respect to the Company's compliance efforts and REC purchase agreements are set forth in Exhibit A and the Company's semiannual progress reports, filed confidentially in Docket No. E-100, Sub 113A.

## C. POULTRY WASTE-TO-ENERGY RESOURCES

Pursuant to NC Gen. Stat. § 62-133.8(f), as amended by NCUC *Order Modifying the Swine and Poultry Waste Set-Aside Requirements and Providing Other Relief* (December 16, 2019), and its *Errata Order* (February 13, 2020), in Docket No. E-100, Sub 113, for compliance year 2020, at least 700,000 MWhs, and for 2021 and 2022, at least 900,000 MWhs, or an equivalent amount of energy, shall be produced or procured each year from poultry waste, as defined per the Statute and additional clarifying Orders. As the Company's retail sales share of the State's total retail megawatt-hour sales is approximately 45%, the Company's Poultry Waste Set-Aside is estimated to be 313,499 RECs in 2020, 403,068 RECs in 2021, and 403,068 in 2022.

In an effort to meet compliance with the Poultry Waste Set-Aside, the Company (1) continues direct negotiations for additional supplies of both in-state and out-of-state resources with multiple counterparties; (2) works diligently to understand the technological, permitting, and operational risks associated with various methods of producing qualifying poultry RECs and to aid developers in overcoming those risks; when those risks cannot be overcome, the Company works with developers via contract amendments to adjust for more realistic outcomes; (3) explores leveraging current biomass contracts by working with developers to add poultry waste to their fuel mix; (4) explores adding thermal capabilities to current poultry sites to bolster REC production; (5) explores poultry-derived directed biogas at facilities located in North Carolina and directing such biogas to combined cycle plants for combustion and electric generation; (6) utilizes the broker market for out-of-state poultry RECs available in the market; and (7) supports a research study through Research Triangle Institute associated with biogas utilization in North Carolina.

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Duke Energy Carolinas is in a position to comply with its Poultry Waste Set-Aside requirement in 2020, but the Company's ability to procure sufficient volumes of RECs to meet its pro-rata share of the increased Poultry Waste Set-Aside requirements in 2021 and 2022 is dependent on the performance of poultry waste-to-energy developers under current contracts, particularly achievement of projected delivery requirements and commercial operation milestones. One new poultry waste-to-energy project came online in 2019 and is working to ramp up production and three others are expected to come online in 2021. DEC's ability to comply in 2021 and 2022 is dependent on facilities producing at their contracted levels, and historical experience indicates that facilities usually experience some start-up issues and take time to reach full expected production levels. Ramping up to meet the increased compliance targets for 2021 - 2022 has been problematic because suppliers have either delayed projects or lowered the volume of RECs to be produced. The Company is, nevertheless, encouraged by the growing use of thermal poultry RECs and the proposals that it has recently received from developers.

The Company remains actively engaged in seeking additional resources and continues to make every reasonable effort to comply with the Poultry Waste Set-Aside requirements. Additional details with respect to the Company's compliance efforts and REC purchase agreements are set forth in Exhibit A and the Company's semiannual progress reports, filed confidentially in Docket No. E-100, Sub 113A.

## D. GENERAL REQUIREMENT RESOURCES

Pursuant to NC Gen. Stat. § 62-133.8, DEC is required to comply with its Total Obligation by submitting for retirement a total volume of RECs equivalent to 10% of its prior-year retail and wholesale sales in compliance year 2020, and 12.5% in 2021 and 2022, taking into account the requirement for wholesale customers remains at 10% of prior-year sales. Based on the Company's actual retail sales in 2019, the Total Requirement is 6,126,401 RECs in 2020. Based on forecasted retail sales, the Total Requirement is projected to be approximately 7,511,504 RECs in 2021, and 7,521,703 RECs in 2022. This requirement net of the Solar, Swine Waste, and Poultry Waste Set-Aside requirements, referred to as the General Requirement, is estimated to be 5,647,482 RECs in 2020, 6,944,762 RECs in 2021, and 6,912,248 RECs in 2022. The various resource options available to the Company to meet the General Requirement are discussed below, as well as the Company's plan to meet the General Requirement with these resources. The Company has contracted for, or has a plan to procure, sufficient resources to meet its General Requirement in the Planning Period. The Company submits that the actions and plans described herein represent a reasonable and prudent plan for meeting the General Requirement.

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## 1. USE OF SOLAR RESOURCES FOR GENERAL REQUIREMENT

Duke Energy Carolinas plans to meet a portion of the General Requirement with RECs from solar facilities. Solar energy has emerged as a predominant renewable energy resource in the Southeast, and the Company views the downward trend in solar equipment and installation costs over the past several years as a positive development. As such, the Company expects solar resources to contribute to our compliance efforts beyond the Solar Set-Aside minimum threshold for NC REPS during the Planning Period.

### i. NET METERING FACILITIES

Under the current Net Metering for Renewable Energy Facilities Rider offered by DEC (Rider NM), a customer receiving electric service under a schedule other than a time-of-use schedule with demand rates shall provide any RECs to DEC at no cost. Per the NCUC's June 2018 *Order Approving Rider and Granting Waiver Request*, filed in Docket No. E-7, Sub 1113, since net metering generators are not individually metered, DEC is permitted to estimate the RECs generated by these facilities using the PVWatts Solar Calculator developed by the National Renewable Energy Laboratory. Thus, DEC will follow the calculations approved by the NCUC to estimate the number of RECs generated from net metering facilities and will use these RECs for REPS compliance.

### ii. NORTH CAROLINA SOLAR REBATE PROGRAM

North Carolina HB 589 introduced a solar rebate program, which offers incentives to residential and non-residential customers for the installation of small customer owned or leased solar energy facilities participating in the Company's net metering tariff. The incentive is limited to 10 kilowatts alternating current ("kW AC") for residential solar installations and 100 kW AC for non-residential solar installations. HB 589 limited the program incentive to 10,000 kW of installed capacity annually starting January 1, 2018 and continuing until December 31, 2022. Since all customers participating in the Solar Rebate Program must be participating in DEC's net metering tariff, DEC retains the rights to the RECs from these facilities, as described in the net metering section above. In addition, under HB 589, DEC shall be authorized to recover all reasonable and prudent costs of incentives provided to customers and program administrative costs through the REPS Rider. Projected costs associated with the Solar Rebate Program are included in Table 5.

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## 2. ENERGY EFFICIENCY

During the Planning Period, the Company plans to meet up to 25% of the Total Obligation with Energy Efficiency ("EE") savings in 2020, and up to 40% of the Total Obligation with EE savings in 2021 and 2022, which is the maximum allowable amount under NC Gen. Stat. § 62-133.7(b)(2)c. The Company continues to develop and offer its customers new and innovative EE programs that will deliver savings and count towards its future NC REPS requirements. Pursuant to Commission Rule R8-67b(1)(iii), the Company has attached a list of those EE measures that it plans to use toward REPS compliance, including projected impacts and a description of the measure, as Exhibit B.

## 3. BIOMASS RESOURCES

Duke Energy Carolinas plans to meet a portion of the General Requirement through a variety of biomass resources, including landfill gas to energy, combined heat and power, and direct combustion of biomass fuels. The Company is purchasing RECs from multiple biomass facilities in the Carolinas, including landfill gas to energy facilities and biomass-fueled combined heat and power facilities, all of which qualify as renewable energy facilities. Please see Exhibit A for more information on each of these contracts.

Duke Energy Carolinas notes, however, that reliance on direct-combustion biomass remains limited in long-term planning horizons, in part due to continued uncertainties around the developable potential of such resources in the Carolinas and the projected availability of more cost-effective forms of renewable resources.

## 4. HYDROELECTRIC POWER

Duke Energy Carolinas plans to use hydroelectric power from four sources to meet a portion of the General Requirement in the Planning Period: (1) Duke-owned hydroelectric stations that are approved as new renewable energy facilities; (2) Duke-owned hydroelectric stations that are approved as renewable energy facilities; (3) Wholesale Customers' Southeastern Power Administration ("SEPA") allocations; and (4) hydroelectric generation suppliers whose facilities have received Qualifying Facility ("QF" or "QF Hydro") status.

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(1) In 2012, the Company received Commission approval for a new, incremental capacity addition at one of its hydro facilities, Bridgewater. The Company applies RECs generated by this facility toward the General Requirements of Duke Energy Carolinas' retail customers.

(2) The Company has received Commission approval for ten of its hydroelectric stations as renewable energy facilities. The Company continues to use, as appropriate, the RECs generated by these facilities to meet the General Requirements of Duke Energy Carolinas' Wholesale Customers, pursuant to NC Gen. Stat. § 62-33.8(c)(2)d.

(3) Wholesale Customers may also bank and utilize hydroelectric resources arising from their full allocations of SEPA. When supplying compliance for the Wholesale Customers, the Company will ensure that hydroelectric resources do not comprise more than 30% of each Wholesale Customers' respective compliance portfolio, pursuant to NC Gen. Stat. § 62-133.8(c)(2)c.

(4) In addition, the Company is purchasing RECs from multiple QF Hydro facilities in the Carolinas and will use RECs from these facilities toward the General Requirements of Duke Energy Carolinas' retail and wholesale customers. Please see Exhibit A for more information on these contracts.

## 5. WIND

Duke Energy Carolinas considers wind a potential viable option to support increased diversity of the renewables portfolio and plans to meet a portion of the General Requirement with RECs from wind facilities. While the Company may rely upon wind resources for future REPS compliance, the extent and timing will depend on deliverability, policy changes and market prices. Additional opportunities may exist to transmit wind energy from out of state regions where wind is more prevalent into the Carolinas.

## 6. COMPETITIVE PROCUREMENT OF RENEWABLE ENERGY (CPRE)

North Carolina HB 589 introduced a competitive procurement process for adding 2,660 MW (subject to adjustment) of additional renewable energy and capacity in the Carolinas, with proposals issued over a 45-month period beginning on February 21, 2018, when the NCUC approved the CPRE Program. Renewable energy facilities eligible to participate in the CPRE solicitation(s) include those facilities

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that use renewable energy resources identified in NC Gen. Stat. § 62-133.8(a)(8), the REPS statute. DEC plans to use the RECs acquired through the CPRE RFP solicitations as needed for its future REPS compliance requirements and has therefore included the planned MW allocation and timeline in its REPS compliance planning process. Please see the CPRE Program Plan, which is included as Attachment II to this IRP, for additional information.

### E. SUMMARY OF RENEWABLE RESOURCES

The Company has evaluated, procured, and/or developed a variety of types of renewable energy and energy efficiency resources to meet its NC REPS requirements within the compliance Planning Period. As noted above, several risks and uncertainties exist across the various types of resources and the associated parameters of the NC REPS requirements. The Company continues to carefully monitor opportunities and unexpected developments across all facets of its compliance requirements. Duke Energy Carolinas submits that it has crafted a prudent, reasonable plan with a diversified balance of renewable resources that will allow the Company to comply with its NC REPS obligation over the Planning Period.

## IV. COST IMPLICATIONS OF REPS COMPLIANCE PLAN

### A. CURRENT AND PROJECTED AVOIDED COST RATES

The Current Avoided Energy and Capacity costs included in the table below represent key data elements used to determine the PP (NC) tariff rates filed for DEC in Docket No. E-100, Sub 158.

The “Energy” columns reflect the cost of fuel and variable O&M per kilowatt-hour (“kWh”) embedded in the filed tariff energy rates. The “Capacity” column is based on the installed cost and capacity rating of a combustion turbine unit as reflected in the filed capacity rates.

The Projected Avoided Energy Costs included below reflect updated estimates of the same data elements provided with the current costs. The capacity cost shown is a placeholder based on the current avoided cost filing.

The avoided costs contained herein are subject to change, including (but not limited to) fuel price projections, variable O&M estimates, turbine costs and equipment capability.

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## TABLE 2

## CURRENT AND PROJECTED AVOIDED COST RATES TABLE

[BEGIN CONFIDENTIAL]

| CURRENT AVOIDED ENERGY AND CAPACITY COST (1,2,4) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DEC | Summer Premium Peak ($/MWh) | Summer PM On Peak ($/MWh) | Summer Off Peak ($/MWh) | Winter Premium Peak ($/MWh) | Winter AM On Peak ($/MWh) | Winter PM On Peak ($/MWh) | Winter Off Peak ($/MWh) | Shoulder On Peak ($/MWh) | Shoulder Off Peak ($/MWh) | Capacity Cost – Installed CT Cost ($/kW) |
| 2020 | 29.40 | 32.98 | 27.74 | 40.31 | 35.07 | 35.10 | 24.38 | 33.24 | 23.48 | [redacted] |
| 2021 | 34.30 | 39.03 | 22.89 | 41.74 | 38.12 | 37.22 | 26.69 | 30.15 | 20.63 | [redacted] |
| 2022 | 34.51 | 33.01 | 22.13 | 60.84 | 42.25 | 41.40 | 27.48 | 30.07 | 21.86 | [redacted] |

| PROJECTED AVOIDED ENERGY AND CAPACITY COST (1,3,4) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Summer Premium Peak ($/MWh) | Summer PM On Peak ($/MWh) | Summer Off Peak ($/MWh) | Winter Premium Peak ($/MWh) | Winter AM On Peak ($/MWh) | Winter PM On Peak ($/MWh) | Winter Off Peak ($/MWh) | Shoulder On Peak ($/MWh) | Shoulder Off Peak ($/MWh) | Capacity Cost – Installed CT Cost ($/kW) |
| 2020 | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| 2021 | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| 2022 | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

NOTES:

(1) On-peak and off-peak energy rates based on hours and information derived using methodology filed in Docket No. E-100, Sub 158.

(2) Capacity Cost column provides the installed CT cost with AFUDC / nominal capacity filed in Docket No. E-100, Sub 158.

(3) The capacity cost shown is a placeholder based on filed avoided capacity cost.

(4) Does not incorporate additional considerations used in rate calculation and is subject to change.

[END CONFIDENTIAL]



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## B. PROJECTED TOTAL NORTH CAROLINA RETAIL AND WHOLESALE SALES AND YEAR-END NUMBER OF CUSTOMER ACCOUNTS BY CLASS

### TABLE 3

### RETAIL SALES FOR RETAIL AND WHOLESALE CUSTOMERS

| | 2019 ACTUAL | 2020 FORECAST | 2021 FORECAST | 2022 FORECAST |
|---|---|---|---|---|
| Retail MWh Sales | 58,642,521 | 57,989,748 | 58,066,207 | 58,402,667 |
| Wholesale MWh Sales | 2,621,460 | 2,627,824 | 2,634,243 | 2,640,696 |
| Total MWh Sales | 61,263,981 | 60,617,572 | 60,700,450 | 61,043,363 |

The MWh sales reported above are those applicable to REPS compliance years 2020-2023, and represent actual MWh sales for 2019, and projected MWh sales for 2020-2022.

### TABLE 4

### RETAIL AND WHOLESALE YEAR-END NUMBER OF CUSTOMER ACCOUNTS

| | 2019 ACTUAL | 2020 FORECAST | 2021 FORECAST | 2022 FORECAST |
|---|---|---|---|---|
| Residential Accts | 1,893,909 | 1,916,875 | 1,943,162 | 1,975,270 |
| General Accts | 266,779 | 268,577 | 270,047 | 271,415 |
| Industrial Accts | 4,951 | 4,918 | 4,883 | 4,845 |

The number of accounts reported above are those applicable to the cost caps for compliance years 2020-2023, and represent the actual number of accounts for year-end 2019, and the projected number of accounts for year-end 2020-2022.

## C. PROJECTED ANNUAL COST CAP COMPARISON OF TOTAL AND INCREMENTAL COSTS, REPS RIDER AND FUEL COST IMPACT

Projected compliance costs for the Planning Period are presented in the cost tables below by calendar year. The cost cap data is based on the number of accounts as reported above.

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TABLE 5

## PROJECTED ANNUAL COST CAPS AND FUEL RELATED COST IMPACT

| | 2020 | 2021 | 2022 |
|---|---|---|---|
| REPS Compliance – Avoided Cost (recovered through the Fuel Rider | $75,055,380 | $95,579,216 | $116,265,230 |
| REPS Compliance – Incremental Cost | $37,332,028 | $41,932,859 | $49,323,976 |
| Total Incremental REPS Compliance Cost, including Regulatory Fee | $37,380,623 | $41,987,443 | $49,388,181 |
| Projected Annual Cost Caps (REPS Rider) | $96,103,393 | $96,960,516 | $97,855,606 |
| Solar Rebate Program Cost | $1,361,972 | $1,957,088 | $2,529,468 |
| Total Incremental REPS Compliance Cost & Solar Rebate Program Cost | $38,694,000 | $43,889,947 | $51,853,444 |
| Total projected REPS compliance costs | $113,749,380 | $139,469,162 | $168,118,674 |

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# EXHIBIT A

## DUKE ENERGY CAROLINAS, LLC'S 2020 REPS COMPLIANCE PLAN
## DUKE ENERGY CAROLINAS' RENEWABLE RESOURCE PROCUREMENT FROM 3RD PARTIES
## (SIGNED CONTRACTS AS OF JUNE 30, 2020)

[BEGIN CONFIDENTIAL]

| RESOURCE SUPPLIER | CONTRACT DURATION | REC ONLY? | ESTIMATED RECS | | |
|---|---|---|---|---|---|
| SOLAR RESOURCES | | | 2020 | 2021 | 2022 |
| [redacted] | | | | | |

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| RESOURCE SUPPLIER | CONTRACT DURATION | REC ONLY? | ESTIMATED RECS | | |
|---|---|---|---|---|---|
| SOLAR RESOURCES | | | 2020 | 2021 | 2022 |
| [redacted] | | | | | |

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| RESOURCE SUPPLIER | CONTRACT DURATION | REC ONLY? | ESTIMATED RECS | | |
|---|---|---|---|---|---|
| SOLAR RESOURCES | | | 2020 | 2021 | 2022 |
| [redacted] | | | | | |

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| RESOURCE SUPPLIER | CONTRACT DURATION | REC ONLY? | ESTIMATED RECS | | |
|---|---|---|---|---|---|
| SOLAR RESOURCES | | | 2020 | 2021 | 2022 |
| [redacted] | | | | | |

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| RESOURCE SUPPLIER | CONTRACT DURATION | REC ONLY? | ESTIMATED RECS | | |
|---|---|---|---|---|---|
| BIOMASS RESOURCES | | | 2020 | 2021 | 2022 |
| [redacted] | | | | | |

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| RESOURCE SUPPLIER | CONTRACT DURATION | REC ONLY? | ESTIMATED RECS | | |
|---|---|---|---|---|---|
| POULTRY WASTE-TO-ENERGY RESOURCES | | | 2020 | 2021 | 2022 |
| [redacted] | | | | | |

| RESOURCE SUPPLIER | CONTRACT DURATION | REC ONLY? | ESTIMATED RECS | | |
|---|---|---|---|---|---|
| SWINE WASTE-TO-ENERGY RESOURCES | | | 2020 | 2021 | 2022 |
| [redacted] | | | | | |

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| RESOURCE SUPPLIER | CONTRACT DURATION | REC ONLY? | ESTIMATED RECS | | |
|---|---|---|---|---|---|
| HYDROELECTRIC ENERGY RESOURCES | | | 2020 | 2021 | 2022 |
| [redacted] | | | | | |

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| RESOURCE SUPPLIER | CONTRACT DURATION | REC ONLY? | ESTIMATED RECS | | |
|---|---|---|---|---|---|
| WIND ENERGY RESOURCES | | | 2020 | 2021 | 2022 |
| [redacted] | | | | | |

[END CONFIDENTIAL]

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## EXHIBIT B

## DUKE ENERGY CAROLINAS, LLC'S 2020 REPS COMPLIANCE PLAN
## DUKE ENERGY CAROLINAS, LLC'S EE PROGRAMS AND PROJECTED REPS IMPACTS

| FORECAST OF ANNUAL ENERGY EFFICIENCY IMPACTS FOR THE REPS COMPLIANCE PLANNING PERIOD 2020-2022 (KWh) | | | |
|---|---|---|---|
| RESIDENTIAL PROGRAMS | 2020 | 2021 | 2022 |
| Energy Efficient Appliances and Devices | 75,697,843 | 63,911,853 | 69,273,824 |
| Energy Efficiency Education Program | 5,467,452 | 5,405,242 | 5,405,242 |
| Income Qualified Energy Efficiency and Weatherization Assistance | 4,201,905 | 4,201,905 | 3,425,294 |
| Multi-Family Energy Efficiency | 17,228,092 | 16,252,601 | 14,003,779 |
| My Home Energy Report | 249,463,076 | 250,086,671 | 250,711,693 |
| Residential Energy Assessments | 7,891,259 | 7,700,972 | 7,410,156 |
| Residential Smart $aver Energy Efficiency | 5,516,097 | 5,744,066 | 5,635,039 |
| Sub Total | 365,465,724 | 353,303,311 | 355,865,028 |
| | | | |
| Non-Residential Programs | 2020 | 2021 | 2022 |
| EnergyWise for Business | 1,869,336 | 1,747,872 | 1,633,465 |
| Non-Residential Smart $aver Custom | 37,595,667 | 46,619,849 | 50,587,527 |
| Non-Residential Smart $aver Custom Assessments | 6,358,864 | 6,358,864 | 6,943,587 |
| Non-Residential Smart Saver Performance Incentive | 9,912,856 | 13,079,149 | 17,717,408 |
| Non-Residential Smart $aver Prescriptive | 154,527,987 | 149,605,330 | 145,387,635 |
| Small Business Energy Saver | 43,681,706 | 35,171,275 | 30,099,337 |
| Sub Total | 253,946,417 | 252,582,338 | 252,368,960 |
| | | | |
| Total | 619,412,141 | 605,885,649 | 608,233,987 |

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# DEC ENERGY EFFICIENCY PROGRAMS

DEC uses the following Energy Efficiency ("EE") programs in its IRP to efficiently and cost-effectively alter customer demands and reduce the long-run supply costs for energy and peak demand.

## RESIDENTIAL CUSTOMER PROGRAMS

- Energy Efficient Appliances and Devices
- Energy Efficiency Education
- Income-Qualified Energy Efficiency and Weatherization Assistance
- Multi-Family Energy Efficiency
- My Home Energy Report
- Residential Energy Assessments
- Smart $aver® Energy Efficiency

## NON-RESIDENTIAL CUSTOMER PROGRAMS

- Non-Residential Smart $aver® Custom
- Non-Residential Smart $aver® Custom Assessment
- Non-Residential Smart $aver® Prescriptive
- Non-Residential Smart $aver® Performance Incentive
- Small Business Energy Saver
- EnergyWise for Business

## RESIDENTIAL EE PROGRAMS

**Energy Efficient Appliances and Devices Program** provides incentives to residential customers for installing energy efficient appliances and devices to drive reductions in energy usage. The program includes the following measures:

- Energy Efficient Lighting: DEC customers can take advantage of several program options and delivery mechanisms to improve lighting efficiency, including:

    a. The Free LED program offers free 9-watt A19 Light Emitting Diodes ("LED") lamps to install in high-use fixtures. The LEDs are offered through multiple channels to eligible

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

b. The Duke Energy Savings 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 offers a variety LEDs including: Reflector, Globe, Candelabra, 3-Way, Dimmable and A-Line type bulbs.

c. The Retail Lighting 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.

- Energy Efficient Water Heating and Usage: This program component encourages the adoption of low flow showerheads and faucet aerators, water heater insulation, pipe wrap, and thermostatic valve shower start devices.

- Other Energy Efficiency Products and Services: Other energy efficient measures recently added to the program are WiFi enabled smart thermostats and smart strips.

Energy Efficiency Education Program is an energy efficiency program available to students in grades K-12 enrolled in public and private schools who reside in households served by Duke Energy Carolinas. 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 current curriculum is a live theatrical production focused on concepts such as energy, renewable fuels and energy efficiency performed by two professional actors.

Following the performance, students are encouraged to complete a home energy survey with their family to receive an Energy Efficiency Starter Kit. The kit contains specific energy efficiency measures to reduce home energy consumption and is available at no cost to student households at participating schools. Teachers receive supportive educational material for classroom and student take home assignments. The workbooks, assignments and activities meet state curriculum requirements.

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**Income-Qualified Energy Efficiency and Weatherization Assistance Program** consists of three distinct components designed to provide EE to different segments of its low-income customers:

- **Neighborhood Energy Saver (NES)** is available only to individually-metered residences served by Duke Energy Carolinas in neighborhoods selected by the Company, which are considered low-income based on third party and census data, which includes income level and household size. Neighborhoods targeted for participation in this program will typically have approximately 50% or more of the households with income below 200% of the poverty level established by the U.S. Government. This approach allows the Company to reach a larger audience of low income customers than traditional government agency flow-through methods. The program provides customers with the direct installation of measures into the home to increase the EE and comfort level of the home. Additionally, customers receive EE education to encourage behavioral changes for managing energy usage and costs.

- **Weatherization and Equipment Replacement Program ("WERP")** recognizes the existence of customers whose EE needs surpass the standard low cost measure offerings provided through NES. WERP is available to income-qualified customers in the Duke Energy Carolinas service territory for existing, individually metered, single-family, condominiums, and mobile homes. Funds are available for weatherization measures and/or heating system replacement with a 15 or greater SEER heat pump. A full energy audit of the residence is used to determine the measures eligible for funding. Customers are placed into a tier based on energy usage, where Tier 1 provides up to $600 for energy efficiency services; while Tier 2 provides up to $4,000 for energy efficiency services, including insulation, thus allowing high energy users to receive more extensive weatherization measures.

- **The Refrigerator Replacement Program ("RRP")** includes, but is not limited to, replacement of inefficient operable refrigerators in low income households. The program will be available to homeowners, renters, and landlords with income qualified tenants that own a qualified appliance. Income eligibility for RRP will mirror the income eligibility standards for the North Carolina Weatherization Assistance Program.

WERP and RRP are delivered in coordination with State agencies that administer the State's weatherization programs.

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**Multi-Family Energy Efficiency Program** provides energy efficient lighting and water measures to reduce energy usage in eligible multi-family properties. The Program allows Duke Energy Carolinas to utilize an alternative delivery channel which targets multi-family apartment complexes. The measures are installed in permanent fixtures by the program administrator or the property management staff. 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.

**My Home Energy Report Program** provides residential customers with a comparative usage report that engages and motivates customers by comparing energy use to similar residences in the same geographical area based upon the age, size and heating source of the home. The report also empowers customers to become more efficient by providing them with specific energy saving recommendations to improve the efficiency of their homes. The actionable energy savings tips, as well as measure-specific coupons, rebates or other Company program offers that may be included in a customer's report are based on that specific customer's energy profile.

The program includes an interactive online portal that allows customers to further engage and learn more about their energy use and opportunities to reduce usage. Electronic versions of the My Home Energy Report ("MyHER") are sent to customers enrolled on the portal. In addition, all MyHER customers with an email address on file with the Company receive an electronic version of their report monthly.

**Residential Energy Assessments Program** provides eligible customers with a free in-home energy assessment, performed by a Building Performance Institute ("BPI") certified energy specialist and 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.

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.

**Smart $aver® Energy Efficiency Program** offers measures that allow eligible Duke Energy Carolinas customers to take action and reduce energy consumption in their home. The Program offering

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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.

The prescriptive and a-la-carte design of the program allows customers to implement individual, high priority measures in their homes without having to commit to multiple measures and higher price tags. A referral channel provides free, trusted referrals to customers seeking reliable, qualified contractors for their energy saving home improvement needs.

## NON-RESIDENTIAL EE PROGRAMS

**Non-Residential Smart $aver® Custom 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.

**Non-Residential Smart $aver® Custom Assessment Program** offers financial assistance to qualifying commercial, industrial, and institutional customers to help fund an energy assessment, retro-commissioning study, or design assistance in order to identify energy efficiency conservation measures for an existing or new building(s) or system. The goal 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 detailed study and subsequent list of suggested energy efficiency measures will reduce energy costs with the intent of also helping customers utilize the Non-Residential Smart $aver® Custom and/or Prescriptive Programs. The program can also provide new construction design assistance to help enable efficiency for new construction, major renovations and additions beyond the applicable state energy code.

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**Non-Residential Smart $aver® Prescriptive Program** provides incentives to Duke Energy Carolinas 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. 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. Prescriptive incentives are offered for a large variety of technologies, which are summarized below by technology, but for the purpose of reporting historical performance, all of the impacts are combined into a single Non-Residential Smart $aver® Prescriptive Program total.

- **Non-Residential Smart $aver® Energy Efficient Food Service Products** provides prescriptive incentive payments to non-residential customers to encourage and partially offset the cost of the installation of new high efficiency food service equipment in new and existing non-residential establishments and repairs to maintain or enhance efficiency levels in currently installed equipment. Measures include, but are not limited to, commercial refrigerators and freezers, steam cookers, pre-rinse sprayers, vending machine controllers, and anti-sweat heater controls.

- **Non-Residential Smart $aver® Energy Efficient HVAC Products** provides prescriptive incentive payments to non-residential customers to encourage and partially offset the cost of the installation of new high efficient HVAC equipment in new and existing non-residential establishments and efficiency-directed repairs to maintain or enhance efficiency levels in currently installed equipment. Measures include, but are not limited to, chillers, unitary and rooftop air conditioners, programmable thermostats, and guest room energy management systems.

- **Non-Residential Smart $aver® Energy Efficient Information Technologies ("IT") Products** provides prescriptive incentive payments to non-residential customers to encourage and partially offset the cost of the installation of high efficiency new IT equipment in new and existing non-residential establishments and efficiency-directed repairs to maintain or enhance efficiency levels in currently-installed equipment. Measures include, but are not limited to, Energy Star-rated desktop computers and servers, PC power management from network, server virtualization, variable frequency drives ("VFD") for computer room air conditioners and VFD for chilled water pumps.

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- **Non-Residential Smart $aver® Energy Efficient Lighting Products** provides prescriptive incentive payments to non-residential customers to encourage and partially offset the cost of the installation of new high efficiency lighting equipment in new and existing non-residential establishments and the efficiency-directed repairs to maintain or enhance efficiency levels in currently installed equipment. Measures include, but are not limited to, interior and exterior LED lamps and fixtures, reduced wattage and high performance T8 systems, T8 and T5 high bay fixtures, and occupancy sensors.

- **Non-Residential Smart $aver® Energy Efficient Process Equipment Products** provides prescriptive incentive payments to non-residential customers to encourage and partially offset the cost of the installation of new high efficiency equipment in new and existing non-residential establishments and efficiency-directed repairs to maintain or enhance high efficiency levels in currently installed equipment. Measures include, but are not limited to, VFD air compressors, barrel wraps, and pellet dryer insulation.

- **Non-Residential Smart $aver® Energy Efficient Pumps and Drives Products** provides prescriptive incentive payments to non-residential customers to encourage and partially offset the cost of the installation of new high efficiency equipment in new and existing non-residential establishments and efficiency-directed repairs to maintain or enhance efficiency levels in currently installed equipment. Measures include, but are not limited to, pumps and VFD on HVAC pumps and fans.

**Small Business Energy Saver Program** is designed to reduce energy usage by improving energy efficiency through the direct installation of eligible energy efficiency measures. 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 that could be installed in their facility along with the projected energy savings, costs of all materials and installation, and the amount of the up-front incentive the Company. The customer makes the final determination of which measures will be installed after receiving the results of the energy assessment. The implementation vendor schedules the installation of the energy efficiency measure at a convenient time for the customer, and electrical subcontractors perform the installation. Program participants must have an average annual demand of 180 kW or less per active account and not opted-out of the Company's EE/DSM Rider. Participants may be owner-occupied or tenant facilities with owner permission.

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**Non-Residential Smart $aver® Performance Incentive** encourages the installation of new high efficiency equipment in new and existing non-residential establishments as well as efficiency-related repair activities designed to maintain or enhance efficiency levels in currently installed equipment. The intent of the Program is to broaden participation in non-residential efficiency programs by providing incentives for projects that clearly reduce electrical consumption and/or demand, but may have previously been deemed too unpredictable to calculate an acceptably accurate savings amount. The types of projects covered by the Program include projects with some combination of unknown building conditions or system constraints, or uncertain operating, occupancy, or production schedules. This Program provides a platform to understand new technologies better.

The key difference between this program and the custom component of the Non-Residential Smart $aver Energy® Efficient Products and Assessment program is that Performance Incentive participants get paid based on actual measure performance, and involves the following two-step process.

- *Incentive #1:* For the portion of savings that are expected to be achieved with a high degree of confidence, an initial incentive is paid once the installation is complete.
- *Incentive #2:* After actual performance is measured and verified, the performance-based part of the incentive is paid. The amount of the payout is tied directly to the savings achieved by the measures.

**EnergyWise for Business i**s both an energy efficiency and demand response program for non-residential customers. Program participants can choose between a Wi-Fi thermostat or load control switch that will be professionally installed for free on each air conditioning or heat pump unit. The Wi-Fi thermostat option provides both EE and DR savings opportunities, while the load control switch option only offers DR savings capability. Only the EE component of the program is assumed to provide energy savings.

- EE COMPONENT

Participants choosing the thermostat will be given access to a portal that will allow them to set schedules, adjust the temperature set points, and receive energy conservation tips and communications from DEC. In addition to the portal access, participants will also receive conservation period notifications, so they can make adjustments to their schedules or notify their employees of the upcoming conservation periods.

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- ## DR COMPONENT

The DR portion of the program allows DEC to reduce the operation of participants' air conditioning units to mitigate system capacity constraints and improve reliability of the power grid. In addition to equipment choice, participants can also select the cycling level they prefer (i.e., a 30%, 50% or 75% reduction of the normal on/off cycle of the unit). During a conservation period, DEC will send a signal to the thermostat or switch to reduce the on time of the unit by the cycling percentage selected by the participant. Participating customers will receive a $50 annual bill credit for each unit at the 30% cycling level, $85 for 50% cycling, or $135 for 75% cycling. Participants that have a heat pump unit with electric resistance emergency/backup heat and choose the thermostat can also participate in a winter option that allows control of the emergency/back up heat at 100% cycling for an additional $25 annual bill credit. Participants will also be allowed to override two conservation periods per year.

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