



Lawrence B. Somers  
Deputy General Counsel

Mailing Address:  
NCRH 20 / P.O. Box 1551  
Raleigh, NC 27602

o: 919.546.6722  
f: 919.546.2694

bo.somers@duke-energy.com

January 19, 2017

**VIA ELECTRONIC FILING**

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

**Re: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC's 2016  
REPS Compliance Plan Revisions  
Docket No. E-100, Sub 147**

Dear Ms. Jarvis:

On September 1, 2016, Duke Energy Carolinas, LLC ("DEC") and Duke Energy Progress, LLC ("DEP") (collectively, the "Companies") filed their respective Renewable Energy and Energy Efficiency Portfolio Standard Compliance Plans ("REPS Plans"), which are part of the Integrated Resource Plans ("IRPs"). On September 30, 2016, the Companies filed revised IRPs which included but did not change the REPS Plans. During the discovery process in this docket, the Companies identified an error in the REPS Plans which led to double counting of research and development ("R&D") and other incremental costs. The DEC and DEP position report models include R&D and other incremental expenses for the forecast period. This amount was erroneously included in the total projected REPS compliance costs in Table 5 of the REPS Plan and also in the updated forecast for R&D and other incremental costs. In addition, a footnote has been added to Table 5 for clarity.

DEP and DEC also corrected contract durations that had been reported as "Other" or "Ongoing" in Exhibit A to their respective REPS Plans. Exhibit A contains names of counterparties with whom DEP has contracted for Renewable Energy Certificates ("RECs"), contract duration and estimated RECs; public disclosure of this information would harm DEP's and DEC's ability to negotiate and procure cost-effective purchases and discourage potential bidders from participating in requests for proposals. Accordingly, I am filing the revised Exhibit A for the DEP and DEC 2016 REPS Plans under seal and requesting that they be treated confidentially pursuant to N.C. Gen. Stat. § 132-1.2 and protected from public disclosure. I am also renewing the Companies' request for confidentiality of Table 2 of the 2016 REPS Plans, which contains the Companies' respective combustion turbine costs. If this commercially sensitive business and technical information were to be publicly disclosed, it would allow competitors,

OFFICIAL COPY

Jan 19 2017

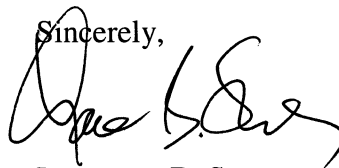
vendors and other market participants to gain an undue advantage, which may ultimately result in harm to customers.

Finally, by request of the Public Staff, the footnote to Table 1 in the DEP REPS Plan has been expanded to further clarify the amount of wholesale sales included in Table 1 for 2016.

Because some of the affected pages contain confidential information, I am filing a complete revision of the REPS Plan, both redacted and confidential versions, for the convenience of the Commission and parties to this docket. The Companies will provide a copy of the confidential information to parties to this proceeding who have executed an appropriate confidentiality agreement.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Lawrence B. Somers', written over the word 'Sincerely,'.

Lawrence B. Somers

Enclosure

cc: Parties of Record



# **The Duke Energy Carolinas**

## **NC Renewable Energy & Energy Efficiency Portfolio Standard (NC REPS) Compliance Plan**

**September 1, 2016**

**NC REPS Compliance Plan  
Table of Contents**

I.	Introduction	243
II.	REPS Compliance Obligation	244
III.	REPS Compliance Plan	245
	A. Solar Energy Resources	245
	B. Swine Waste-to-Energy Resources	246
	C. Poultry Waste-to-Energy Resources	248
	D. General Requirement Resources	249
	E. Summary of Renewable Resources	251
IV.	Cost Implications of REPS Compliance Plan	252
	A. Current and Projected Avoided Cost Rates	252
	B. Projected Total NC Retail and Wholesale Sales and Year-End Number of Customer Accounts by Class	253
	C. Projected Annual Cost Cap Comparison of Total and Incremental Costs, REPS Rider and Fuel Cost Impact	254
	EXHIBIT A	255
	EXHIBIT B	260

## **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 2016 to 2018 (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' 2016 Compliance Plan include: (1) purchases of renewable energy certificates (RECs); (2) constructing and operating Company-owned renewable facilities; (3) energy efficiency programs that will generate savings that can be counted towards the Company's REPS obligation; and (4) 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.

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<sup>1</sup> for 2016, 2017, and 2018 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, City of Concord, Town of Highlands, and the City of Kings Mountain (collectively referred to as Wholesale or Wholesale Customers)<sup>2</sup>. Table 1 below shows the Company's retail and Wholesale customers' REPS Compliance Obligation.

<sup>1</sup> 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.

<sup>2</sup> 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.

**Table 1: Duke Energy Carolinas' NC REPS Compliance Obligation**

Compliance Year	Previous Year DEC Retail Sales (MWhs)	Previous Year Wholesale Sales (MWhs)	Total Retail sales for REPS Compliance (MWhs)	Solar Set- Aside (RECs)	Swine Set- Aside (RECs)	Poultry Set- Aside (RECs)	REPS Requirement (%)	Total REPS Compliance Obligation (RECs)
2016	57,766,143	3,541,565	61,307,708	85,835	42,915	318,866	6%	3,678,466
2017	57,112,290	3,548,784	60,661,074	84,926	42,463	409,970	6%	3,639,664
2018	57,544,288	3,566,000	61,110,288	122,221	85,554	409,970	10%	6,111,029

Note: Obligation is determined by prior-year MWh sales. Thus, retail sales figures for compliance years 2017 and 2018 are estimates.

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, is an amount equivalent to 6% of its prior-year retail sales in compliance years 2016 and 2017 and 10% of its prior-year retail sales in compliance year 2018. 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.

#### **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 0.14% of the prior year's total electric energy in megawatt-hours (MWh) sold to retail customers in North Carolina in 2016 and 2017, and 0.20% of the prior year's total electric energy in megawatt-hours (MWh) sold to retail customers in North Carolina in 2018.

Based on the Company's actual retail sales in 2015, the Solar Set-Aside is 85,835 RECs in 2016. Based on forecasted retail sales, the Solar Set-Aside is projected to be approximately 84,926 RECs in 2017 and 122,221 RECs in 2018.

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 the following that are currently under construction by the Company:

- Monroe Solar Facility – 60MW, located in Union County;
- Mocksville Solar Facility – 15MW, located in Davie County.

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 NCUC *Order Modifying the Swine and Poultry Waste Set-Aside Requirement and Providing Other Relief*, Docket No. E-100, Sub 113 (December 2015), for compliance years 2016 and 2017, at least 0.07%, and in 2018, 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 42,915 RECs in 2016, 42,463 RECs in 2017, and 85,554 RECs in 2018.

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 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. The Company is exploring ways to overcome such risks.

### **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.



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.

### 3. Directed biogas

In theory, directed biogas<sup>3</sup> reduces costs by using large, efficient, centralized generation in the place of smaller, less-efficient reciprocating engines typical of other projects. However, practically, the Company has found such solutions in North Carolina to be economically challenged, in part due to additional gas clean-up requirements prior to injection and the general lack of physical proximity between clusters of farms and pipeline infrastructure.

The Company continues to explore directed biogas opportunities and has entered into two contracts to purchase swine waste-derived directed biogas from projects in the Midwest. The directed biogas will be transported on interstate pipelines and used for fuel in the Company's Buck or Dan River combined cycle plants.

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) continues support of the Loyd Ray Farms research and development project; (3) works diligently to understand the technological, permitting, and operational risks associated with various methods of producing qualifying swine RECs 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; (4) explores and is engaging in modification of current biomass and set-asides contracts by working with developers to add swine waste to their fuel mix; (5) continues pursuit of swine-derived directed biogas from North Carolina facilities and directing such biogas to DEC's combined cycle plants for combustion and generation of zero emission renewable electricity; (6) utilizes the Company's REC trader to search the broker market for out-of-state swine RECs available in the market; and (7) 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.

In spite of Duke Energy Carolinas' active and diligent efforts to secure resources to comply with its Swine Waste Set-Aside requirements, the Company will not be able to procure sufficient volumes of RECs to meet its pro-rata share of the Swine Waste Set-Aside requirements in 2016. The Company

<sup>3</sup> "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.

remains actively engaged in seeking additional resources and continues to make every reasonable effort to comply with the swine waste set-aside requirements.

The Company's ability to comply in 2017 and 2018 remains subject to multiple variables, particularly related to counterparty achievement of projected delivery requirements and commercial operation milestones. 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 Sub113A.

Due to its expected non-compliance in 2016, the Company has submitted a motion to the Commission for approval of a request to relieve the Company from compliance with the Swine Waste Set-Aside requirements until calendar year 2017 by delaying the compliance obligation for a one-year period.

### **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*, Docket No. E-100, Sub 113 (December 2015), for calendar year 2016, at least 700,000 MWhs, and for 2017 and 2018, 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 46%, the Company's Poultry Waste Set-Aside is estimated to be 318,866 RECs in 2016, 409,970 RECs in 2017, and 409,970 in 2018.

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 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 DEC's combined cycle plants for combustion and generation of zero emission renewable electricity; and (6) utilizes the Company's REC trader to search the broker market for out-of-state poultry RECs available in the market.

In spite of Duke Energy Carolinas' active and diligent efforts to secure resources to comply with its Poultry Waste Set-Aside requirements, poultry waste-to-energy compliance remains a challenge for the Company. The Company will not be able to procure sufficient volumes of RECs to meet its pro-rata share of the Poultry Waste Set-Aside requirements in 2016, and the Company's ability to comply in

2017 and 2018 remains uncertain and largely subject to counterparty performance. To date, only a handful of poultry projects are operating and online in North Carolina. Ramping up to meet the increased compliance targets for 2016 - 2018 has been problematic because other 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. In addition, the Company recently signed a contract to purchase poultry waste-derived directed biogas from a project in North Carolina. The directed biogas will be transported via intrastate pipelines and used for fuel in the Company's Dan River or Buck combined cycle plants. 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 Sub113A.

Due to its expected non-compliance in 2016, the Company has submitted a motion to the Commission for approval of a request to reduce the 2016 the Poultry Waste Set-Aside requirement to 170,000 MWh, maintaining the level of the 2014 and 2015 state-wide requirements and delaying the increase to 700,000 MWh until 2017.

## **D. GENERAL REQUIREMENT RESOURCES**

Pursuant to NC Gen. Stat. § 62-133.8, DEC is required to comply with its Total Obligation in 2016 and 2017 by submitting for retirement a total volume of RECs equivalent to 6% of prior-year retail sales in North Carolina; in 2018, the requirement jumps to 10% of prior-year retail sales in North Carolina. Based on the Company's actual retail sales in 2015, the Total Requirement is 3,678,466 RECs in 2016. Based on forecasted retail sales, the Total Requirement is projected to be approximately 3,639,664 RECs in 2017, and 6,111,029 RECs in 2018. This requirement, net of the Solar, Swine Waste, and Poultry Waste Set-Aside requirements, is estimated to be 3,230,850 RECs in 2016, 3,102,306 RECs in 2017, and 5,493,284 in 2018. 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.

### **1. Energy Efficiency**

During the Planning Period, the Company plans to meet up to 25% of the Total Obligation with Energy Efficiency (EE) savings, 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, as Exhibit B.

## **2. Hydroelectric Power**

Duke Energy Carolinas plans to use hydroelectric power from three sources to meet a portion of the General Requirement in the Planning Period: (1) Duke-owned hydroelectric stations that are approved as renewable energy facilities; (2) Wholesale Customers' Southeastern Power Administration (SEPA) allocations; and (3) hydroelectric generation suppliers whose facilities have received Qualifying Facility (QF or QF Hydro) status. The Company has received Commission approval for ten of its hydroelectric stations as renewable energy facilities. The Company continues to use, as appropriate, of the RECs generated by these facilities to meet the General Requirements of Duke Energy Carolinas' Wholesale Customers, pursuant to NC Gen. Stat. § 62-133.8(c)(2)c and 62-33.8(c)(2)d. 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. In 2012, the Company also received Commission approval for a new, incremental capacity addition at another of its hydro facilities, Bridgewater. The Company intends to apply RECs generated by this facility toward the General Requirements of Duke Energy Carolinas' retail customers. In addition, the Company is purchasing RECs from multiple QF Hydro facilities in the Carolinas and will use RECs from these facilities toward General Requirements of Duke Energy Carolinas' retail and wholesale customers. Please see Exhibit A for more information on these contracts.

## **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 other forms of renewable resources to offset the need for biomass.

## **4. Wind**

Duke Energy Carolinas plans to meet a portion of the General Requirement with RECs from wind

facilities. While the Company may rely upon wind resources for REPS compliance, the extent and timing will depend on deliverability, policy changes and market prices. The Company recognizes that some wind developers are presently pursuing projects in North Carolina. While successful projects must navigate a litany of obstacles, these obstacles are not insurmountable. Additional opportunities may exist to transmit wind energy resources into the Carolinas from other regions, which could supplement the amount of wind that could be developed within the Carolinas.

## **5. 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. Additionally, new solar facilities benefit from generous supportive Federal policies that will be in place beyond 2016. As such, the Company fully expects solar resources to contribute to our compliance efforts beyond the Solar Set-Aside minimum threshold for NC REPS during the Planning Period.

## **6. Review of Company's General Requirement Plan**

The Company has contracted for, or otherwise procured, sufficient resources to meet its General Requirement in the Planning Period. Based on the known information available at the time of this filing, the Company is confident that it will meet this General Requirement during the Planning Period and submits that the actions and plans described herein represent a reasonable and prudent plan for meeting the General Requirement.

Based on currently signed contracts and our projections of what will materialize from the DEC interconnection queue to support NC REPS compliance, as detailed in the Renewables Chapter, DEC will have a need for RECs to meet General Compliance beyond the Planning Period. DEC will issue RFPs for additional renewable resources in the Fall of 2016 for General RECS to meet REPS compliance. Consideration of projects will be based on cost-effective resources that also meet the legislative policy of NC Gen. Stat. §62-133.8

## **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 approved in the Commission’s *Order Establishing Avoided Cost Rates for DEC and DEP*, issued in Docket No. E-100, Sub 140 (March 10, 2016). The “Energy” columns reflect the cost of fuel and variable O&M per kwh embedded in the approved tariff energy rates. The “Capacity” column is based on the installed cost and capacity rating of a combustion turbine unit as reflected in the approved tariff capacity rates.

The Projected Avoided Energy and Capacity Costs included below reflect updated estimates of the same data elements provided with the current costs. The projected costs contained herein are subject to change, including (but not limited to) fuel price projections, variable O&M estimates, turbine costs and equipment capability.

**Table 2: Current and Projected Avoided Cost Rates Table**

[BEGIN CONFIDENTIAL]


\_\_\_\_\_

**[END CONFIDENTIAL]**

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

The tables below reflect the inclusion of the Wholesale Customers in the Compliance Plan.

**Table 3: Retail Sales for Retail and Wholesale Customers**

	2015 Actual	2016 Forecast	2017 Forecast	2018 Forecast
<b>Retail MWh Sales</b>	57,766,143	57,112,290	57,544,288	57,981,161
<b>Wholesale MWh Sales</b>	3,541,565	3,548,784	3,566,000	3,583,338
<b>Total MWh Sales</b>	61,307,708	60,661,074	61,110,288	61,564,499

Note: The MWh sales reported above are those applicable to REPS compliance years 2016 – 2019, and represent actual MWh sales for 2015, and projected MWh sales for 2016 – 2018.

**Table 4: Retail and Wholesale Year-end Number of Customer Accounts**

	2015 (Actual)	2016 (Projected)	2017 (Projected)	2018 (Projected)
<b>Residential Accts</b>	1,818,793	1,835,905	1,852,368	1,868,431
<b>General Accts</b>	252,621	252,530	252,438	252,345
<b>Industrial Accts</b>	5,102	5,112	5,122	5,131

Note: The number of accounts reported above are those applicable to the cost caps for compliance years 2016 – 2019, and represent the actual number of accounts for year-end 2015, and the projected number of accounts for year-end 2016 – 2018.

**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.

**Table 5: Projected Annual Cost Caps and Fuel Related Cost Impact**

	2016	2017	2018
<b>Total projected REPS compliance costs</b>	\$ 80,738,059	\$ 87,518,132	\$ 85,364,780
<b>Recovered through the Fuel Rider</b>	\$ 58,719,234	\$ 58,361,793	\$ 53,087,996
<b>Total incremental costs (REPS Rider)</b>	\$ 22,018,825	\$ 29,156,339	\$ 32,276,783
<b>Total including Regulatory Fee</b>	\$ 22,049,695	\$ 29,197,215	\$ 32,322,034
<b>Projected Annual Cost Caps (REPS Rider)</b>	\$104,834,112	\$ 105,412,270	\$105,968,212

Note that the numbers shown as ‘Recovered through the Fuel Rider’ are calculated using the NCUC-approved filed avoided cost numbers for each contract. These costs are based on past, NCUC-approved avoided cost rates and are not representative of the current marginal cost of energy to the Company. In addition, the total cost ‘Recovered through the Fuel Rider’ does not include avoided costs for deals where the REC was purchased in one jurisdiction and energy was delivered into another jurisdiction, or for deals that are not 100% renewable. ‘Total incremental costs (REPS Rider)’ is the premium above the NCUC-approved filed avoided cost.



**OFFICIAL COPY**

## Jan 19 2017

[illegible]









**EXHIBIT B**

**Duke Energy Carolinas, LLC's 2015 REPS Compliance Plan  
Duke Energy Carolinas, LLC's EE Programs and Projected REPS Impacts**

Forecast Annual Energy Efficiency Impacts for the REPS Compliance Planning Period 2016-2018 (MWhs)			
Residential Programs	2016	2017	2018
Appliance Recycling Program	9,266	-	-
Energy Education Program for Schools	4,089	4,089	4,801
Energy Efficient Appliances and Devices	73,230	55,474	35,541
HVAC EE Products & Services	-	-	-
Income Qualified EE Products & Services	4,232	3,923	3,916
Multi-Family EE Products & Services	8,100	9,683	10,611
My Home Energy Report	(15,184)	2,250	-
Residential Energy Assessments	5,506	5,780	6,070
<b>Sub Total</b>	<b>89,238</b>	<b>81,199</b>	<b>60,939</b>
Non Residential Programs	2016	2017	2018
Business Energy Report	4,639	(508)	(254)
Non-Res Custom Assessments	13,183	13,842	14,534
Non-Res Custom Incentive	89,012	93,907	96,725
Non-Res Energy Star Food Service Products	3,939	4,136	4,343
EnergyWise for Business	843	1,282	1,676
Non-Res HVAC	6,352	6,518	6,844
Non-Res Information Technology	3,161	3,319	3,485
Non-Res Lighting	62,095	65,200	68,461
Non-Res Process Equipment	560	588	617
Non-Res Pumps and Motors	4,711	4,946	5,193
Small Business Energy Saver	56,055	49,958	40,735
Smart Energy in Offices	(1,447)	16,327	(743)
<b>Sub Total</b>	<b>243,102</b>	<b>259,517</b>	<b>241,616</b>
<b>Total</b>	<b>332,340</b>	<b>340,716</b>	<b>302,555</b>



---

## **The Duke Energy Progress**

# **NC Renewable Energy & Energy Efficiency Portfolio Standard (NC REPS) Compliance Plan**

**September 1, 2016**

## NC REPS Compliance Plan Table of Contents

I.	Introduction	233
II.	REPS Compliance Obligation	234
III.	REPS Compliance Plan	235
	A. Solar Energy Resources	235
	B. Swine Waste-to-Energy Resources	236
	C. Poultry Waste-to-Energy Resources	238
	D. General Requirement Resources	239
	E. Summary of Renewable Resources	241
IV.	Cost Implications of REPS Compliance Plan	242
	A. Current and Projected Avoided Cost Rates	242
	B. Projected Total NC Retail and Wholesale Sales and Year-End Customer Accounts By Class	243
	C. Projected Annual Cost Cap Comparison of Total and Incremental Costs, REPS Rider and Fuel Cost Impact	244
	EXHIBIT A	245
	EXHIBIT B	253



## **I. INTRODUCTION**

Duke Energy Progress, LLC (DEP 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 2016 to 2018 (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 Progress 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 Progress' 2016 Compliance Plan include: (1) purchases of renewable energy certificates (RECs); (2) constructing and operating Company-owned renewable facilities; (3) energy efficiency programs that will generate savings that can be counted towards the Company's REPS obligation; and (4) 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.

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 Progress calculates its NC REPS Compliance Obligations<sup>1</sup> for 2016, 2017, and 2018 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 the Town of Sharpsburg, the Town of Stantonsburg, the Town of Lucama, the Town of Black Creek, and the Town of Winterville (collectively referred to as Wholesale or Wholesale Customers)<sup>2</sup>. Table 1 below shows the Company's retail and Wholesale customers' REPS Compliance Obligation.

<sup>1</sup> For the purposes of this Compliance Plan, Compliance Obligation is more specifically defined as the sum of Duke Energy Progress' 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 Progress 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 Progress on behalf of the Wholesale Customers.

<sup>2</sup> For purposes of this Compliance Plan, Retail Sales is defined as the sum of Duke Energy Progress' retail sales and the retail sales of the Wholesale Customers for whom the company is supplying REPS compliance.

**Table 1: Duke Energy Progress' NC REPS Compliance Obligation**

Compliance Year	Previous Year DEP Retail Sales (MWhs)	Previous Year Wholesale Sales (MWhs)	Total Retail sales for REPS Compliance (MWhs)	Solar Set- Aside (RECs)	Swine Set- Aside (RECs)	Poultry Set- Aside (RECs)	REPS Requirement (%)	Total REPS Compliance Obligation (RECs)
2016	37,455,301	117,344	37,572,645	52,605	26,303	197,939	6%	2,254,364
2017	37,291,020	118,075	37,409,094	52,373	26,186	254,493	6%	2,244,546
2018	37,518,731	118,606	37,637,337	75,275	52,692	254,493	10%	3,763,734

Note: Obligation is determined by prior-year MWh sales. Thus, retail sales figures for compliance years 2017 and 2018 are estimates. Note that the compliance year 2016 wholesale sales shown in the table above do not include Waynesville's 2015 sales, as DEP will no longer be providing REPS compliance services to Waynesville starting in 2016.

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, is an amount equivalent to 6% of its prior-year retail sales in compliance years 2016 and 2017 and 10% of its prior-year retail sales in compliance year 2018. 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.

#### **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 0.14% of the prior year's total electric energy in megawatt-hours (MWh) sold to retail customers in North Carolina in 2016 and 2017, and 0.20% of the prior year's total electric energy in megawatt-hours (MWh) sold to retail customers in North Carolina in 2018.

Based on the Company's actual retail sales in 2015, the Solar Set-Aside is 52,605 RECs in 2016. Based on forecasted retail sales, the Solar Set-Aside is projected to be approximately 52,373 RECs in 2017 and 75,275 RECs in 2018.

The Company has fully satisfied and vastly 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. The Company is now using solar energy to meet the General Requirement obligation.

- Camp Lejeune Solar Facility – 13MW, located in Onslow County, placed in service in November 2015;
- Warsaw Solar Facility – 65MW, located in Duplin County, placed in service in December 2015;
- Fayetteville Solar Facility – 23MW, located in Bladen County, placed in service in December 2015; and
- Elm City Solar Facility – 40MW, located in Wilson County, placed in service in March 2016.

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 NCUC *Order Modifying the Swine and Poultry Waste Set-Aside Requirement and Providing Other Relief*, Docket No. E-100, Sub 113 (December 2015), for compliance years 2016 and 2017, at least 0.07%, and in 2018, 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 26,303 RECs in 2016, 26,186 RECs in 2017, and 52,692 RECs in 2018.

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 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. The Company is exploring ways to overcome such risks.

## **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.

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.

## **3. Directed biogas**

In theory, directed biogas<sup>3</sup> reduces costs by using large, efficient, centralized generation in the place of smaller, less-efficient reciprocating engines typical of other projects. However, practically, the Company has found such solutions in North Carolina to be economically challenged, in part due to additional gas clean-up requirements prior to injection and the general lack of physical proximity between clusters of farms and pipeline infrastructure.

The Company continues to explore directed biogas opportunities and has entered into two contracts to purchase swine waste-derived directed biogas from projects in North Carolina. The directed biogas will be transported via intrastate pipelines and used for fuel in the Company's H.F. Lee or Sutton combined cycle plants.

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 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 and is engaging in modification of current biomass and set-asides contracts by working with developers to

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

add swine waste to their fuel mix; (4) continues pursuit of swine-derived directed biogas from North Carolina facilities to be directed to DEP's combined cycle plants for combustion and generation of zero emission renewable electricity; (5) utilizes the Company's REC trader to search the broker market for out-of-state swine RECs available in the market; and (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.

In spite of Duke Energy Progress' active and diligent efforts to secure resources to comply with its Swine Waste Set-Aside requirements, the Company will not be able to procure sufficient volumes of RECs to meet its pro-rata share of the Swine Waste Set-Aside requirements in 2016. 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.

The Company's ability to comply in 2017 and 2018 remains subject to multiple variables, particularly related to counterparty achievement of projected delivery requirements and commercial operation milestones. 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 Sub113A.

Due to its expected non-compliance in 2016, the Company has submitted a motion to the Commission for approval of a request to relieve the Company from compliance with the Swine Waste Set-Aside requirements until calendar year 2017 by delaying the compliance obligation for a one year period.

### **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*, Docket No. E-100, Sub 113 (December 2015), for calendar year 2016, at least 700,000 MWhs, and for 2017 and 2018, 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 28%, the Company's Poultry Waste Set-Aside is estimated to be 197,939 RECs in 2016, 254,493 RECs in 2017, and 254,493 in 2018.

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 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 DEP's combined cycle plants for combustion and generation of zero emission renewable electricity; and (6) utilizes the Company's REC trader to search the broker market for out-of-state poultry RECs available in the market.

In spite of Duke Energy Progress' active and diligent efforts to secure resources to comply with its Poultry Waste Set-Aside requirements, poultry waste-to-energy compliance remains a challenge for the Company. The Company will not be able to procure sufficient volumes of RECs to meet its pro-rata share of the Poultry Waste Set-Aside requirements in 2016, and the Company's ability to comply in 2017 and 2018 remains uncertain and largely subject to counterparty performance. To date, only a handful of poultry projects are operating and online in North Carolina. Ramping up to meet the increased compliance targets for 2016 - 2018 has been problematic because other 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. In addition, the Company recently signed a contract to purchase poultry waste-derived directed biogas from a project in North Carolina. The directed biogas will be transported via intrastate pipelines and used for fuel in the Company's H.F. Lee or Sutton combined cycle plants. 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 Sub113A.

Due to its expected non-compliance in 2016, the Company has submitted a motion to the Commission for approval of a request to reduce the 2016 poultry-waste requirement to 170,000 MWh, maintaining the level of the 2014 and 2015 state-wide requirements and delaying the increase to 700,000 MWh until 2017.

#### **D. GENERAL REQUIREMENT RESOURCES**

Pursuant to NC Gen. Stat. § 62-133.8, DEP is required to comply with its Total Obligation in 2016 and 2017, by submitting for retirement a total volume of RECs equivalent to 6% of prior-year retail sales in North Carolina; in 2018, the requirement jumps to 10% of prior-year retail sales in North Carolina. Based on the Company's actual retail sales in 2015, the Total Requirement is 2,254,364 RECs in 2016. Based on forecasted retail sales, the Total Requirement is projected to be approximately 2,244,546 RECs



in 2017, and 3,763,734 RECs in 2018. This requirement, net of the Solar, Swine Waste, and Poultry Waste Set-Aside requirements, is estimated to be 1,977,517 RECs in 2016, 1,911,494 RECs in 2017, and 3,381,274 RECs in 2018. 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.

### **1. Energy Efficiency**

During the Planning Period, the Company plans to meet up to 25% of the Total Obligation with Energy Efficiency (EE) savings, 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. The Company has attached a list of those EE measures that it plans to use toward REPS compliance, including projected impacts, as Exhibit B.

### **2. Hydroelectric Power**

Duke Energy Progress plans to use hydroelectric power from two sources to meet a portion of the General Requirement in the Planning Period: (1) Wholesale Customers' Southeastern Power Administration (SEPA) allocations; and (2) hydroelectric generation suppliers whose facilities have received Qualifying Facility (QF or QF Hydro) status. 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. In addition, RECs from QF Hydro facilities will be used towards the General Requirements of Duke Energy Progress' retail and wholesale customers. Please see Exhibit A for more information on these contracts.

### **3. Biomass Resources**

Duke Energy Progress 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 Progress 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 other forms of renewable resources to offset the need for biomass.

#### **4. Wind**

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 resources into the Carolinas from other regions, which could supplement the amount of wind that could be developed within the Carolinas.

#### **5. Use of Solar Resources for General Requirement**

Duke Energy Progress plans to meet a significant 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. Additionally, new solar facilities also benefit from generous supportive Federal policies that will be in place beyond 2016. The Company is using solar resources to contribute to our compliance efforts beyond the Solar Set-Aside minimum threshold for NC REPS, and will continue to do so during the Planning Period.

#### **6. Review of Company's General Requirement Plan**

The Company has contracted for, or otherwise procured, sufficient resources to meet its General Requirement in the Planning Period. Based on the known information available at the time of this filing, the Company is confident that it will meet this General Requirement during the Planning Period, and well beyond, and submits that the actions and plans described herein represent a reasonable and prudent plan for meeting the General Requirement.

### **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 Progress 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.



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

The tables below reflect the inclusion of the Wholesale Customers in the Compliance Plan.

**Table 3: Retail Sales for Retail and Wholesale Customers**

	2015 Actual	2016 Forecast	2017 Forecast	2018 Forecast
<b>Retail MWh Sales</b>	37,455,301	37,291,020	37,518,731	37,777,458
<b>Wholesale MWh Sales</b>	206,694	118,075	118,606	119,140
<b>Total MWh Sales</b>	37,661,995	37,409,094	37,637,337	37,896,597

Note: The MWh sales reported above are those applicable to REPS compliance years 2016 – 2019, and represent actual MWh sales for 2015, and projected MWh sales for 2016 – 2018.

**Table 4: Retail and Wholesale Year-end Number of Customer Accounts**

	2015 (Actual)	2016 (Projected)	2017 (Projected)	2018 (Projected)
<b>Residential Accts</b>	1,185,648	1,201,323	1,217,139	1,231,874
<b>General Accts</b>	193,497	195,602	197,724	200,062
<b>Industrial Accts</b>	2,031	2,028	2,025	2,031

Note: The number of accounts reported above are those applicable to the cost caps for compliance years 2016 – 2019, and represent the actual number of accounts for year-end 2015, and the projected number of accounts for year-end 2016 – 2018.

### 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.

**Table 5: Projected Annual Cost Caps and Fuel Related Cost Impact**

	2016	2017	2018
<b>Total projected REPS compliance costs</b>	\$181,653,451	\$219,633,005	\$ 210,817,222
<b>Recovered through the Fuel Rider</b>	\$150,132,764	\$172,103,253	\$ 163,127,444
<b>Total incremental costs (REPS Rider)</b>	\$ 31,520,688	\$ 47,529,752	\$ 47,689,778
<b>Total including Regulatory Fee</b>	\$ 31,564,879	\$ 47,596,387	\$ 47,756,637
<b>Projected Annual Cost Caps (REPS Rider)</b>	\$ 71,367,582	\$ 72,213,282	\$ 73,066,326

Note that the numbers shown as 'Recovered through the Fuel Rider' are calculated using the NCUC-approved filed avoided cost numbers for each contract. These costs are based on past, NCUC-approved avoided cost rates and are not representative of the current marginal cost of energy to the Company. In addition, the total cost 'Recovered through the Fuel Rider' does not include avoided costs for deals where the REC was purchased in one jurisdiction and energy was delivered into another jurisdiction, or for deals that are not 100% renewable. 'Total incremental costs (REPS Rider)' is the premium above the NCUC-approved filed avoided cost.

**OFFICIAL COPY**

## Jan 19 2017

Jan 19 2017

Jan 19 2017



[illegible]

[illegible]







[illegible]

[END CONFIDENTIAL]

**EXHIBIT B**

**Duke Energy Progress, LLC's 2015 REPS Compliance Plan**  
**Duke Energy Progress, LLC's EE Programs and Projected REPS Impacts**

Forecast Annual Energy Efficiency Impacts for the REPS Compliance Planning Period 2016-2018 (MWhs)			
<b>Residential Programs</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Appliance Recycling	-	-	-
HEIP	14,671	18,016	18,019
K-12	1,707	1,707	1,707
Multi Family	7,484	7,110	5,442
MyHER	7,364	(6,337)	0
Neighborhood Energy Saver	1,548	1,548	1,548
Residential Lighting	89,488	83,255	82,529
Residential New Construction	9,997	11,393	5,940
<b>Sub Total</b>	<b>132,259</b>	<b>116,692</b>	<b>115,185</b>
<b>Non Residential Programs</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
Business Energy Report	3,776	(272)	(251)
EEB	61,242	64,304	67,519
Non-Res Custom	14,548	15,038	15,546
Small Business Energy Saver	36,036	32,151	27,342
<b>Sub Total</b>	<b>115,602</b>	<b>111,221</b>	<b>110,156</b>
<b>Total</b>	<b>247,861</b>	<b>227,913</b>	<b>225,342</b>

## CERTIFICATE OF SERVICE

I certify that a copy of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC's REPS Compliance Plan Revisions, in Docket No. E-100, Sub 147, has been served by electronic mail, hand delivery or by depositing a copy in the United States mail, postage prepaid to the following parties:

David Drooz  
Lucy Edmondson  
Staff Attorney - Public Staff  
North Carolina Utilities Commission  
4326 Mail Service Center  
Raleigh, NC 27699-4326  
[david.drooz@psncuc.nc.gov](mailto:david.drooz@psncuc.nc.gov)  
[lucy.edmondson@psncuc.nc.gov](mailto:lucy.edmondson@psncuc.nc.gov)

Charlotte A. Mitchell  
Law Office of Charlotte Mitchell  
PO Box 26212  
Raleigh, NC 27611  
[cmitchell@lawofficecm.com](mailto:cmitchell@lawofficecm.com)

Horace Payne  
Dominion North Carolina Power  
PO Box 26532  
Richmond, VA 23261  
[horace.p.payne@dom.com](mailto:horace.p.payne@dom.com)

Bruce Burcat  
MAREC  
P.O. Box 385  
Camden, DE 19934  
[marec.org@gmail.com](mailto:marec.org@gmail.com)

Brett Breitschwerdt  
McGuire Woods, LLP  
434 Fayetteville Street, Suite 2600  
Raleigh, NC 27601  
[bbreitschwerdt@mcguirewoods.com](mailto:bbreitschwerdt@mcguirewoods.com)

Peter H. Ledford  
NC Sustainable Energy Association  
4800 Six Forks Road, Suite 300  
Raleigh, NC 27609  
[peter@energync.org](mailto:peter@energync.org)

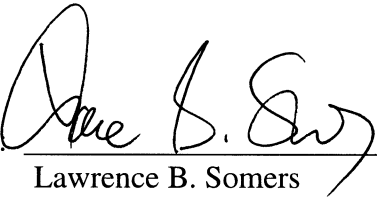
Daniel Whittle  
Environmental Defense Fund  
4000 Westchase Blvd., Ste. 510  
Raleigh, NC 27607-3965  
[dwhittle@edf.org](mailto:dwhittle@edf.org)

Lawrence L. Ostema  
Nelson Mullins Riley & Scarborough  
Bank of American Corp. Ctr., 42<sup>nd</sup> Fl.  
100 North Tryon Street  
Charlotte, NC 28202  
[larry.ostema@nelsonmullins.com](mailto:larry.ostema@nelsonmullins.com)

Ralph McDonald  
Adam Olls  
Bailey & Dixon, LLP  
Counsel for CIGFUR  
PO Box 1351  
Raleigh, NC 27602-1351  
[rmcdonald@bdixon.com](mailto:rmcdonald@bdixon.com)  
[aolls@bdixon.com](mailto:aolls@bdixon.com)

Christopher McKee  
US General Counsel  
Alevo  
2321 Concord Parkway S  
Concord, NC 28027  
[Christopher.mckee@alevo.com](mailto:Christopher.mckee@alevo.com)

This is the 19<sup>th</sup> day of January, 2017.

By:   
\_\_\_\_\_  
Lawrence B. Somers  
Deputy General Counsel  
Duke Energy Corporation  
P.O. Box 1551/NCRH 20  
Raleigh, North Carolina 27602  
Tel 919.546.6722  
[bo.somers@duke-energy.com](mailto:bo.somers@duke-energy.com)