



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

April 20, 2015

VIA ELECTRONIC FILING

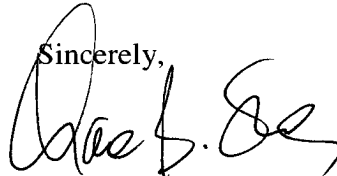
Gail L. Mount
Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4325

**RE: 2014 Biennial Integrated Resource Plans and Related 2014 REPS
Compliance Plans
Docket No. E-100, Sub 141**

Dear Ms. Mount:

I enclose Duke Energy Carolinas, LLC and Duke Energy Progress, Inc.'s Reply Comments for filing in connection with the referenced matter.

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

Sincerely,

Lawrence B. Somers

Enclosure

cc: Parties of Record
Robert W. Kaylor, Esquire

OFFICIAL COPY

Apr 20 2015

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. E-100, SUB 141

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of 2014 Integrated Resource Plans And Related 2014 REPS Compliance Plans	))))	DUKE ENERGY CAROLINAS AND DUKE ENERGY PROGRESS' REPLY COMMENTS
---	------------------	---

Pursuant to North Carolina Utilities Commission ("the Commission") Rule R8-60(j) and the Commission's April 8, 2015 *Order Granting Second Extension of Time to File Reply Comments*, Duke Energy Carolinas, LLC ("DEC") and Duke Energy Progress, Inc. ("DEP") (and collectively "the Companies"), hereby submit their Reply Comments to the comments filed by the following parties: the Public Staff, the North Carolina Waste Awareness and Reduction Network, Inc. ("NC WARN"), the North Carolina Sustainable Energy Association ("NCSEA"), the Southern Alliance for Clean Energy ("SACE") and the Sierra Club ("Sierra Club"), and Mid-Atlantic Renewable Energy Coalition ("MAREC"), in the above referenced docket.

INTRODUCTION

Commission Rule R8-60 requires all North Carolina electric suppliers to file comprehensive biennial Integrated Resource Plans ("IRPs") with the Commission on September 1 of each evenly-numbered year, with updates to the biennial IRPs on September 1 of each odd-numbered year. The Commission approved DEC and DEP's 2013 IRP Updates in its June 30, 2014 Order in Docket No. E-100, Sub 137. DEC and DEP filed their 2014 IRPs on September 2, 2014, along with the direct testimony of

Swati V. Daji addressing natural gas issues, as required by the Commission's May 7, 2013 *Order Proposing Rules, Requesting Comments, and Establishing Requirements for Electric Integrated Resource Plans to Be Filed in 2014* in Docket No. M-100, Sub 135. As with the Companies' 2013 IRP Updates, the Companies' 2014 IRPs benefitted from the combined experience of both utilities' subject matter experts by utilizing best practices from each utility in the development of their respective IRP inputs and use of analytical planning models.

In its March 2, 2015 Comments, the Public Staff supports the Companies' 2014 IRPs and REPS compliance plans as reasonable for planning purposes and compliant with Commission rules and requirements. Some specific findings by the Public Staff include:

- DEC and DEP used accepted econometric and end-use analytical models to forecast peak and energy needs and that the Companies' peak load and energy sales forecasts are reasonable for planning purposes (Public Staff Comments at pp. 12-18);
- DEC and DEP's reserve margins are adequate (*Id.* at p. 39);
- DEC and DEP forecasted DSM and EE program savings in compliance with Commission Rule R8-60 and previous Commission orders (*Id.* at p. 46);
- DEC and DEP made reasonable assessment of their needs for natural gas infrastructure, demonstrated understanding and knowledge of interstate pipeline projects and the natural gas supply market, and adequately set forth the benefits of the Atlantic Coast Pipeline (*Id.* at p. 75);

- DEC and DEP should be able to meet their REPS obligations, with the exception of the swine and poultry waste set-asides, during the planning period without nearing or exceeding their cost caps, and DEC and DEP's 2014 REPS Compliance Plans should be approved as filed. (*Id.* at p. 87).

The allegations asserted by certain other intervenors regarding DEC and DEP's 2014 IRPs are very similar to those considered and dismissed by the Commission in recent past IRP proceedings. In essence, those allegations are: DEC and DEP's IRPs should include greater reliance upon demand-side management and energy efficiency ("DSM and EE") programs and measures and renewable energy resources, with less reliance on reliable and cost-effective baseload nuclear, gas and coal resources. The Companies respectfully submit that their 2014 IRPs and REPS compliance plans meet all applicable statutory and Commission requirements and should be approved. The following comments reply to specific initial comments of various intervenors.¹

REPLY TO INTERVENOR COMMENTS

I. Reply to Public Staff Recommendations

As noted above, the Public Staff generally found DEC and DEP's 2014 IRPs to be reasonable for planning purposes and compliant with Commission rules and requirements. On pages 67-69 of its Comments, the Public Staff made the following recommendations, to which the Companies provide their responses below:

¹ DEC and DEP will not respond to all allegations raised in the parties' voluminous initial comments in these reply comments, as many of these allegations have been raised and rejected in previous IRP proceedings. The Companies' lack of reply to a specific comment by another party should not be construed as an acceptance of their argument.

- 1. In future IRPs, Utilities should include a discussion of the potential implications of the EPA “Clean Power Plan,” scenarios for possible compliance, and the costs of such compliance.**

Because the “Clean Power Plan” (“CPP”) Rule has not been finalized, and the rule is likely to undergo significant changes and clarifications considering the extent of comments filed with the EPA regarding the rule, it is difficult for the Companies to model what the exact impacts of the rule will have on the DEC and DEP IRPs. Answers to questions such as, “will the limits be rate or mass based?” and “which units will be included under the plan?” can have significant impacts on the IRP. For example, there is significant debate over the inclusion of carbon emissions from new natural gas combined cycle units. Given these uncertainties, the five scenarios presented in the DEC and DEP 2014 IRPs were evaluated with and without a carbon tax that coincided with the proposed onset of the CPP in 2020. A discussion of the impacts of the carbon tax on the initial resource needs, new nuclear selection, renewable generation, gas firing technology options, and energy efficiency was included in Appendix A of the IRP.

It must be noted that EPA’s proposed CCP Rule is not a rule specific to a utility, but rather a state level rule requiring some form of CO₂ limits at the state level rather than the unit-specific or utility-specific level. Section 111(d) outlines the process by which a State Implementation Plan (“SIP”) would be developed by each of the states. Ultimately, the SIP will dictate the rules and procedures the state will mandate for each of the effected organizations that emit CO₂. The Companies respectfully submit that it is simply premature to include a proposed CPP compliance plan along with associated costs at this point in time.

2. DEC should continue to review its forecasting models carefully, including planned changes to identify further improvements.

The Public Staff concluded that both DEC and DEP's load forecasts and methodologies were reasonable for planning purposes. The Public Staff nonetheless commented that its review of DEC's five-year peak load forecasting accuracy based upon the DEC forecasts for 2010-2014 filed in DEC's 2009 IRP indicates a forecast error of 5%. (Public Staff Comments at p. 16). The Public Staff recommended that DEC continue to review its forecasting models carefully, including planned changes to identify further improvements. As it has discussed in recent previous IRP reply comments, and in discussions with the Public Staff, DEC's forecasting error rate in the 2008-2009 timeframe mostly resulted from the severe economic downturn that occurred in 2009 and which no one reasonably foresaw. DEC suffered more than DEP and most utilities in the 2009 recession due to its large amount of industrial load, particularly from textiles. In contrast, the DEC peak forecast developed in 2010 projected a 2013 value that was only 131 MW different than the actual weather adjusted value for the year 2013. Thus, DEC acknowledges the anomaly in the load forecast caused by the severe economic downturn, but appreciates the Public Staff's conclusion that the load forecast included in the 2014 IRP is reasonable. The Companies note that their forecasting methodology is always evolving in an effort to further improve the process, as a result of post-merger best practices and otherwise.

3. Utilities should review their winter peak equations to better quantify their customers' response to abnormally low temperatures.

DEC certainly understands the importance of the long-term peak forecast's impact on future expansion plans. As such, DEC regularly reviews its peak forecasting

methodology to ensure adherence to the latest industry standards. Given the increasing importance of efficiency trends on energy usage, DEC now incorporates Statistically Adjusted End Use Models (“SAE”) in its peak forecasting process. SAE models attempt to incorporate the effects of naturally occurring energy efficiency trends into the forecast as well as the expected impacts of government mandates. This approach also has the advantage of generating a forecast for each month rather than simply a seasonal forecast. In the Spring 2015 Forecast, the SAE methodology appeared to produce a slightly lower summer peak forecast, but a slightly higher winter peak forecast, which matches recent trends.

4. The companies should ensure that DSM resources identified in the IRP represent the reasonably expected load reductions available at the time the resource is called upon as capacity.

The Companies include expected summer DSM resources and reasonable corresponding load reductions in the IRP for planning purposes. Furthermore, DEC and DEP calculate expected DSM load reductions on a daily basis, known as the Load Reduction Capability (“LRC”), and are based on a rolling twelve weeks’ worth of historical load data. These daily LRC calculations are utilized by the Companies’ system operators in planning and operating the DEC and DEP systems. DEC and DEP utilize DSM programs in conjunction with system planning, not only for economic reasons. Daily system dynamics, including but not limited to weather, customer operational adjustments and interests, day of the week, and time of day, impact the load curtailment actually achieved and therefore will always vary from the summer DSM capacity contained in the IRP for planning purposes. It is important to note that DEC and DEP have contracts in place with customers to curtail their load pursuant to Commission-

approved DSM programs, but beyond the monetary penalties that are provided for in the contracts, the Companies cannot control an individual customer's behavior in response to a request to curtail load.

5. The Companies should put a renewed emphasis on designing new DSM programs to meet winter peak demands, as well as summer peak demands.

The Companies continually review potential new DSM programs and seek input on such programs as part of the EE stakeholder Collaborative groups in place for both DEC and DEP.

6. The IOUs should consider the potential for relicensing of their existing nuclear units and reflect such potential relicensing in their IRPs.

The Companies plan to diligently review the business case for relicensing existing nuclear units, and if relicensing is in the best interest of our customers we will pursue second license renewal ("SLR") for our plants. At this point, no license extension for the operation of nuclear plants beyond 60 years has been issued.

The Nuclear Regulatory Commission ("NRC") has indicated that it plans to use the same process for SLR as it used during the initial license renewal; however, this only addresses the process to review the renewal application and not any additional requirements that the NRC may impose to extend the license from 60 years to 80 years. As for timing, the NRC does not plan to issue its guidance for requirements to extend the license from 60 years to 80 years until the 2017 to 2018 timeframe. The Companies do not anticipate the first SLR applications to be submitted until later this decade, with decisions on SLR not expected until approximately 2022 or 2023.

There is a significant amount of uncertainty regarding the ability to get a license extension as well as the uncertainty of the costs to satisfy NRC requirements should they extend the license. In addition to the uncertainty regarding SLR, there is also uncertainty regarding carbon regulations, environmental regulations, and fuel prices. DEC and DEP believe that the uncertainty combined with the new nuclear long development cycle (10 – 15 years to license and construct) makes it imperative that the Companies plan for these assets as if they will not be available, then adjust the plans as more information becomes available.

7. Each utility should carefully review their projections of solar capacity.

In their 2014 IRPs, DEC and DEP assumed full NC REPS compliance, as well as compliance with a placeholder for a potential South Carolina renewable energy portfolio standard. The Companies include all currently signed solar, biomass and hydro contracts and any additional amounts required for full compliance in the later years. Solar providers are rushing to take advantage of the Federal and State tax incentives before their current expiration dates, and as such continue to submit their projects to the interconnection queue. DEC and DEP recently filed their Small Generator Interconnection Consolidated Annual Reports in Docket No. E-100, Sub 113B, which indicate that the projects currently in the interconnection queues for DEC and DEP total over 4,000 MW (nameplate) in both service territories. The vast majority of these projects are solar. Even though there is such a large amount of solar in the queue, the likelihood of these projects coming to fruition is unknown. Typically, only a fraction of these projects actually begin operation. As projects come online, the Companies will continue to sign contracts to ensure full compliance with NC REPS as well as those

projects without associated RECs that will not be used for NC REPS compliance, but are qualifying facilities (“QFs”) under PURPA. The Companies also include the non-compliance renewable projects in the IRP as part of the purchase contracts.

The Companies will continue to monitor the interconnection queue and sign contracts as the facilities actually begin operation. For informational purposes, the table below gives a snapshot of the 2017 amount of solar in the IRP as compared to the interconnection queue. All of these values will be updated to reflect the most recent values at the time of the 2015 IRP.

	IRP Solar – Compliance (6/2014)	IRP – Solar Non-Compliance (6/2014)	Solar Compliance Currently Signed (as of 3/31/15)	Solar Non-Compliance Currently Signed (as of 3/31/15)	Solar interconnection (as of 2/28/15)
DEC - 2017	472	100	158	93	716
DEP - 2017	394	165	538	138	3165

8. DEP and DEC should maintain their proposed reserve margins as filed.

The Companies plan to review their reserve margins in 2015, in response to the recent winter peak loads experienced and the interconnection of increasing amounts of intermittent renewable resources to the DEC and DEP systems. Pending the results of that study, the Companies may seek to update their required minimum planning reserve margin target.

9. For future IRPs that foresee substantial nuclear retirements, the planning period, and in particular, the period covered by the Load, Capacity, and Reserve Tables should be extended to 20 years.

The Companies believe that the current 15-year planning horizon provides the most reasonable outlook for new generation requirements. Extending the required

reported planning horizon to twenty years would add an additional level of uncertainty to the IRP reports, as the further out generation is evaluated, the inherently more uncertain the basis for those additions becomes. Additionally, 10 to 15 years matches the time required for licensing and constructing the longest lead time generation the Companies evaluate. Extending the planning period beyond 15 years would add an unnecessary administrative burden to the planning process, particularly in light of the fact that successive plans will certainly change over that additional timeframe. As such, DEC and DEP respectfully submit that having extensive stakeholder debate over planned resources projected for years 16 through 20 would only serve to complicate the annual IRP process while adding little tangible value to the process.

10. The utilities should continue to develop methods of quantifying the benefits of fuel diversity.

As discussed in the Companies' 2013 IRP Update Reply Comments, the Companies believe that this recommendation is already captured as part of the existing IRP process commensurate with Commission Rule R8-60. The Companies' current IRP practices include modeling multiple sensitivities around fuel prices. Furthermore, the Companies show how different resource portfolios perform under these varying fuel prices. Both the quantitative impacts and the qualitative benefits of fuel diversity are fully presented in the IRPs. The Public Staff does not provide a specific recommendation as to what other quantitative metric or method they are recommending and as such it is difficult to ascertain the merits of such additional analysis. The Companies believe that the current approach both quantitatively and qualitatively addresses fuel diversity and is fully adequate.

11. The utilities should provide not only the PVRR for the possible resource expansion plans, but also an estimate of the annual rate impacts of such plans levelized over the life of the resource additions.

The Companies do not believe that providing an estimate of annual rate impacts of proposed resource plans in future IRPs is warranted. First, the Public Staff's recommendation is not part of the statutory requirement of the IRP filing to assist the Commission in fulfilling its responsibility pursuant to N.C. Gen. Stat. §62-110.1(c) to "develop, publicize, and keep current an analysis of the long-range needs" for electricity in the State. The Commission has repeatedly held that its approval of an IRP does not constitute approval of any of the individual generation resources contained therein, but that such individual generation resources are considered separately as part of the Certificate of Public Convenience and Necessity ("CPCN") process established by N.C. Gen. Stat. §62-110.1 and Commission Rule R8-61. *Order Approving Integrated Resource Plans and REPS Compliance Plans*, August 10, 2010 in Docket Nos. E-100, Sub 118 and E-100, Sub 124, at p. 20; *Order Approving Integrated Resource Plans and Requiring Additional Information in Future Reports*, August 30, 2006 in NCUC Docket No. E-100, Sub 103, at p. 36. The Companies respectfully submit that consideration of rate impacts would be beneficial only after a utility has actually decided to construct a given generation plant. It is in a specific CPCN docket, or in a subsequent cost recovery proceeding, therefore, and not in an IRP docket, where rate impacts are appropriately considered. Indeed, Commission Rule R8-61(b)(3)(viii), which became effective January 1, 2015, now requires the filing of "the anticipated impact the facility will have on customer rates" as part of a utility's CPCN application.

Second, each IRP filing represents a “snapshot in time” view of the Companies’ preferred resource plans over the 15-year planning horizon. The myriad inputs to the IRP planning process, including but not limited to cost assumptions, load forecasts, expected plant retirements, wholesale contracts, and evolving regulatory requirements necessarily change annually (if not multiple times within a year), as do the selected resource plans and the timing, size and nature of individual supply and demand side resources included within the resource plans. As a result, even if developed for the IRP filing, such annual rate impacts would be of limited value. Third, calculating such annual rate impacts would be an extremely burdensome and time-consuming effort for the Companies. The Companies’ IRP planning process is already a year-round endeavor, and adding the annual rate impact estimation as part of the IRP would only add complexity and burden to the process, for limited, if any, benefit.

II. Reply to NC WARN Comments: NC WARN’s “Model” and Zero Growth Scenario are Unrealistic.

In its 2014 comments,² NC WARN essentially restates the exact same arguments it made in the 2013 IRP Docket³ and which were rejected by the Commission. In its comments, NC WARN yet again advances unsupported hyperbole that the resource plans filed by DEC and DEP threaten to “bankrupt North Carolina’s economy,” apparently because the Companies rely upon a diverse mix of resources that include reliable and cost-effective baseload nuclear, gas and coal generation in addition to significant amounts of renewables, EE and DSM. (NC WARN Comments at p. 3). Without apparent regard

² NC WARN’s Comments and Request for Evidentiary Hearing, dated February 20, 2015; and Correction to NC WARN’s Comments, dated March 20, 2015. (“NC WARN Comments”).

³ In fact, the 2014 NC WARN Comments contained the exact same error as to the alleged renewable energy build up to 24% of sales that NC WARN’s model purportedly supports, later corrected to 7%, as in their 2013 Comments.

to cost, reliability or feasibility, NC WARN instead proposes that its allegedly superior alternate energy future can be achieved by “eliminating all coal plants and all new generation.” (NC WARN Comments at p. 1). Once again, the Commission should dismiss this group’s meritless contentions.

In its comments, NC WARN touts its own proposed resource plan as superior to those contained in DEC and DEP’s 2014 IRPs and states that its “*analysis* shows that a zero growth scenario allows for phase out of all coal plants, eliminates the need to construct new nuclear plants and reduces the need for some existing natural gas.” (NC WARN Comments at p. 7, emphasis added). In a familiar pattern, however, when information is sought about the support for NC WARN’s allegations, no substantive analysis is forthcoming. NC WARN did not prepare a true load forecast, but simply assumed “zero growth.” Such an assumption is entirely inconsistent with the actual data utilized to prepare the load forecasts for the Companies’ 2014 IRPs. DEC and DEP stand by the reasonableness of the load forecasts contained in their 2014 IRPs, which have been reviewed and supported by the Public Staff.

In response to a data request seeking the details of NC WARN’s proposed coal retirement and replacement plan, NC WARN responded, “As such NC WARN has not analyzed the proposed retirement dates and unit capacity of the coal plants, nor has it analyzed the specific replacement needs.”⁴ In response to a data request seeking a copy of NC WARN’s “plan” and “model,” and the specific inputs used in the production cost simulation models and screening models supporting the NC WARN comments, NC WARN responded,

⁴ NC WARN Response to Duke Energy’s First Data Request No. 3, March 18, 2015.

NC WARN's "plan" (used interchangeably with "model") is described in the comments, paragraphs 31-34, and the accompanying footnotes, and is based on the charts in Appendix A. NC WARN's plan is also supported by the more detailed examination of energy efficiency, distributed renewable sources and combine [sic] heat and power in the Comments, paragraphs 35-56, and accompanying footnotes. . . . *NC WARN has not prepared production cost simulation models and screening models of the NC WARN plan or model, nor developed any of the inputs listed in the request, except the cost of coal as described in the Comments, paragraph 26 and accompanying footnotes. . . . and recently looked at natural gas price forecasts as part of the preparation of the [NC WARN avoided cost testimony filed in E-100, Sub 140].*⁵

(emphasis added). According to NC WARN's data request responses, the pie charts contained in Appendix A to NC WARN's report were prepared by NC WARN's researcher/paralegal.⁶ In response to a data request seeking the detailed data assumptions utilized to determine the economic value of the analysis reflected in the NC WARN Comments, NC WARN responded, "NC WARN has not conducted PVRR calculations, nor made assumptions associated with those calculations."⁷ In its comments, NC WARN also alleges that, "If the Commission approves the Duke Energy plan, it approves a status quo threatening to bankrupt North Carolina's economy" (NC WARN Comments at p. 3). In response to a data request asking for all workpapers, studies or other documents that were relied upon in forming this statement, NC WARN responded that it did not have any such workpapers or studies, but that its statement is explained in its comments "that the difference between a 1.5% load growth as asserted in Duke Energy's IRP and a 0% load growth as projected in NC WARN's analysis. NC WAR [sic] estimates the 1.5% load growth scenario represents a minimum of \$25 billion in new plants that would be charged to ratepayers The results of these new plants in rate base . . . could

⁵ NC WARN Response to Duke Energy's First Data Request No. 10, March 18, 2015.

⁶ NC WARN Response to Duke Energy Data Request No. 9, March 18, 2015.

⁷ NC WARN Response to Duke Energy's First Data Request No. 21, March 18, 2015.

potentially double existing rates.”⁸ As such, NC WARN has no credible support for its absurd allegation that approval of the proposed resource plans contained in the 2014 DEC and DEP IRPs threaten to bankrupt North Carolina’s economy.

In support of the NC WARN “model,” which asserts that there will be 0% load growth over the 2015-2029 time period covered by the 2014 DEC and DEP IRPs, NC WARN alleges that DEC and DEP can retire all existing coal units and some existing natural gas units, and meet all energy and capacity needs exclusively through reliance upon a mix of new EE, renewable energy, continued reliance upon pumped storage, distributed generation, backed up by purchases from other utilities and merchant plants. (NC WARN Comments at pp. 7-8). Although NC WARN acknowledges the least cost mix standard articulated in N.C. Gen. Stat. §62-2, it relies upon no legitimate economic analysis to support its proposed resource plan because, as its data request responses reveal, it has none. In response to a data request seeking the detailed cost information supporting the renewable energy resources reflected in NC WARN’s comments, NC WARN replied, “NC WARN has not documented the capital costs, on-going capital streams, fixed and variable O&M costs, life of asset, assumptions of federal/state tax incentives, load profiles, and capacity factors as part of the present Comments beyond the statements and footnotes in the comments.”⁹ In response to a data request seeking the EE and demand response costs, program participation and participation studies used to support the NC WARN comments, NC WARN responded, “NC WARN has not prepared energy efficiency and demand response costs, program participation, and participation studies beyond NC WARN’s proposal for a Community Enhanced Income Qualified

⁸ NC WARN Response to Duke Energy’s First Data Request No. 1, March 18, 2015.

⁹ NC WARN Response to Duke Energy’s First Data Request No. 17, March 18, 2015.

Energy Efficiency and Weatherization Program [as contained in NC WARN's testimony in Docket No. E-7, Sub 1032]."¹⁰ In response to a data request seeking support for NC WARN's statement that its "approach can provide billions of dollars in annual savings for North Carolina electricity customers," (NC WARN Comments at p. 36), NC WARN responded that its statement was based on "the costs associated with the construction of new generation . . . [and] primarily for out-of-state sources of coal and natural gas . . ."¹¹ NC WARN has conducted no revenue requirements analysis for its proposed resource portfolio, which is based primarily on higher cost, intermittent renewable resources and EE, and therefore has no legitimate basis to assert that its proposal is cost effective for North Carolina customers of DEC and DEP.

NC WARN's "plan" was also apparently "developed" without regard to system reliability concerns. NC WARN's data request responses reveal that it conducted no loss of load study¹² and when asked to explain in detail how its proposed "plan" will provide adequate reliability for the DEC and DEP systems and their customers, NC WARN responded simply as follows:

As stated in the Comments, paragraph 6 and accompanying footnotes, the inclusion of a balanced mix of distributed generation and energy efficiency is more reliable than the current generation – transmission – distribution system, and especially if backed up by batteries. Electricity is placed where it is most needed both on the grid and at peak periods, and at the same time, distributed generation provides grid support services. As noted in the Comments, paragraphs 15-16, a wide variety of these sources do not require as high a reserve margin as does a system relying on a limited number of large coal and nuclear plants. In addition, NC WARN recently looked at the value of solar, including reliability, as part of the preparation of [testimony filed by NC WARN in Docket No. E-100, Sub 140].¹³

¹⁰ NC WARN Response to Duke Energy's First Data Request No. 18, March 18, 2015.

¹¹ NC WARN Response to Duke Energy's First Data Request No. 22, March 18, 2015.

¹² NC WARN Response to Duke Energy's First Data Request No. 12, March 18, 2015.

¹³ NC WARN Response to Duke Energy's First Data Request No. 11, March 18, 2015.

Accordingly, NC WARN's responses to the Companies' data requests indicate significant concern with the "analysis" presented therein and which serves as the basis for NC WARN's comments.

NC WARN also alleges that DEC and DEP's reserve margins are "consistently above average for the industry" and that DEC, DEP and "all of the utilities in the Southeast region have excess capacity." NC WARN Comments at p. 8. The past two winters – when frigid temperatures pushed utility systems throughout the country to their limits – proved just how wrong and misguided NC WARN's position really is. DEC and DEP were able to serve their retail customers (including NC WARN's members that are DEC or DEP customers) precisely because they own and operate a robust fleet of well-designed and well-operated generators, which have been built to meet the peak demand of the system. The absurdity of NC WARN's allegations that the Respondents carry excess reserve margins was revealed as recently as February 20, 2015 - - the very day NC WARN filed its Comments with the Commission -- the day DEC and DEP set all time customer peak electricity usage records. If DEC and DEP had not been able to access their full portfolio of resources at the current planning reserve margins, the outcome easily could have been rolling blackouts or much higher electricity prices.¹⁴ NC WARN's assertion that the Respondents could simply rely on excess capacity throughout the region also was proven to be incorrect during this period, as DEC's and DEP's neighboring utilities experienced the same frigid temperatures and peak conditions, and they had little or no capacity available to share with other utilities.

¹⁴ The Companies also note that essentially no solar capacity was available at the time of the new winter peaks.

The Companies submit that the NC WARN “plan” is not a realistic proposal if the State of North Carolina wants to ensure reliable and affordable electricity are available to the residential, commercial and industrial customers over the IRP planning horizon, as the Companies are obligated to do. Renewable resources, EE and DSM are important and increasingly significant components of DEC and DEP’s IRPs, but they simply cannot realistically be relied upon in the almost exclusive nature that NC WARN has alleged. In contrast to the NC WARN “plan,” the Companies’ IRPs present robust and balanced portfolios of diverse supply and demand side resources that will cost-effectively and reliably serve customers’ short and long-term needs across a range of many possible future scenarios. Accordingly, the comments of NC WARN should be disregarded and their request for an evidentiary hearing should be denied.

III. Reply to NCSEA Comments

In its IRP comments, NCSEA does not appear to have any criticism of the DEC and DEP IRPs, but instead asks the Commission to amend Rule R8-60(e) to include utility-scale energy storage as an alternative supply-side energy resource and amend Rule R8-60(i)(10) to list small-scale energy storage as a smart grid technology.¹⁵ While the benefits of advanced energy storage are obvious, the costs and practical applications of energy storage on a macro-level are less known. As the costs of this technology decline and impacts of energy storage on the grid come into clearer focus in the coming years, it may be a beneficial addition to the Companies’ IRPs, but until then, it would not be prudent to include these systems. The Companies continue to monitor advanced energy

¹⁵ NCSEA spends approximately half of its Initial Comments filed March 2, 2015, summarizing the DEC and DEP IRPs. The Companies note that NCSEA’s Figures 2 and 3 at pp. 15-16 of its Comments omit the Companies’ generation facilities located in South Carolina, which also serve the Companies’ North Carolina customers.

storage technologies and evaluate potential uses in the Carolinas. However, at this time these technologies are neither economical, nor viable on a macro level for use in the IRP. The Companies will include Li-ion battery storage technology in the economic supply-side screening process as part of the 2015 IRP.

IV. Reply to MAREC Comments

As in its 2012 and 2013 IRP comments, MAREC, a non-profit formed to advance renewable energy development primarily in the PJM Interconnection markets, again makes the general allegation in its comments that DEC and DEP did not include sufficient wind energy in their IRPs. DEC's 2014 IRP base case includes 860 MW of renewable resources by 2019 and 2,155 MW by 2029, which includes 150 MW of wind. DEP's 2014 IRP base case includes 907 MW of renewable resources by 2019 and 1,187 MW by 2029, which includes 100 MW of wind. MAREC does not appear to appreciate, however, that both Companies' 2014 IRP Updates also included a High EE and High Renewables portfolio, which evaluated an assumed requirement to serve approximately 10% of each Company's combined retail load with new renewable resources by 2029 - - which represents over twice the amount of renewable energy as compared to the base case. The DEC High EE/Renewables portfolio included 427 MW of nameplate wind and the DEP High EE/Renewables included 289 MW of nameplate wind. The purpose of the scenario is to show how the Companies' resource plans would be affected in the event that additional cost-effective renewable and energy efficiency resources are identified or mandated. A key takeaway is that, in such an event, some traditional resources can be eliminated or deferred but significant levels of traditional resources such as new nuclear and natural-gas combined cycle are still needed.

The main locations for wind energy generation in the Carolinas are the North Carolina mountains and on-shore coastal regions. With ridge laws prohibiting wind turbine construction in the North Carolina mountains and siting issues along the coast, there are real physical limitations to the amount of wind power that could be built in the Carolinas currently. DEC and DEP, collectively, only have one wind project in the interconnection queue: a very small project of only approximately 2.5 kW. While the National Renewable Energy Laboratory study cited by MAREC may have determined a large potential for North Carolina wind projects, the prohibitive laws and siting issues continue to hinder to wind facility construction in the North Carolina mountains or coast.

DEC and DEP adequately considered wind and all other potential renewable energy resources in preparing their 2014 IRPs. Duke Energy Corporation, the parent company of DEC and DEP, is one of the largest wind energy developers in the United States and recognizes the valuable potential that new wind energy resource development can provide. In their IRPs, however, DEC and DEP analyzed wind and other generation technologies and selected the resource plans that best met the Companies' needs to provide the reliable, least-cost resource mix as required by North Carolina's integrated resource planning and REPS laws. It is for these reasons that the Companies maintain a reasonable total of 250 MW of wind resources in their plans.

V. Reply to SACE and Sierra Club Comments

In their comments, SACE and Sierra Club generally critique the Companies' inclusion of EE and renewable resources as insufficient, and without offering their own proposed mix of least cost and reliable resources, assert that the resource plans contained in the Companies' 2014 IRPs "contain limited improvements upon the Companies'

previous IRPs, yet still retain ‘flaws.’” Initial Comments of SACE and the Sierra Club, dated March 2, 2015, at p. 1 (“SACE Comments”). As set forth in detail below, DEC and DEP stand by their IRP methodologies and analyses of both supply and demand side resources and the selected plans contained in the 2014 IRPs.

A. The Companies Appropriately Evaluated and Included EE and Renewables in their 2014 IRPs.

SACE and Sierra Club note that DEC “led the Southeast in energy savings from efficiency,” in both 2011 and 2012, and that DEC ranked 2nd in the Southeast in 2013 and DEP ranked 3rd in the Southeast in 2013 in efficiency savings as a percentage of retail sales.¹⁶ Yet, despite these accolades, as in previous IRP comments, SACE and Sierra Club allege that DEC and DEP are not planning to capture all cost-effective EE and maximize renewable energy opportunities. DEC and DEP have, however, included significant levels of EE and renewable resources in their 2014 IRPs, as detailed in Appendix D to the DEC and DEP 2014 IRPs.

As in prior comments related to the DEC and DEP IRPs, SACE and Sierra Club continue to misunderstand and misrepresent how the Company’s EE forecast is included in the overall IRP process. On page 6 of the SACE Comments, SACE and Sierra Club state that “DEC’s projection of EE impacts peaks in 2025 . . .” and that “DEP’s projection of EE impacts peaks around 2021 . . .;” however, these statements are incorrect. The Companies’ EE forecasts do not peak as claimed, but continue to grow on a cumulative basis until reaching the full achievable market potential as estimated in the Forefront Economics market potential studies previously provided in this and other IRP dockets.

¹⁶ SACE Comments, p.28.

Contrary to SACE and Sierra Club's arguments, it would be imprudent for the Companies to include projected impacts from EE beyond the levels estimated in the market potential studies. Furthermore, SACE and Sierra Club leave the false impression that the Companies have excluded consideration of EE from its planning process for half of the PVRR study period.¹⁷ This is not correct because the cumulative projected impacts that capture the estimated market potential have been incorporated into the IRP analysis. The EE savings impacts have not been "terminat[ed]" . . . "halfway through the planning horizon"¹⁸ as alleged by SACE and Sierra Club; rather, all EE impacts that are reasonably expected to be achievable have been captured in the overall IRP process.

SACE and Sierra Club also ignore the fact that both DEC and DEP evaluated two portfolios with High EE targets in their 2014 IRPs. These aspirational EE portfolios averaged \$5 billion higher cost than the base portfolio on a PVRR basis. Thus, while the Companies appropriately accounted for EE up to the market potential studies in the base case for the 2014 IRPs, increasing beyond the market potential EE levels would have resulted in a significantly higher-cost resource plan.

The Companies have included in their 2014 IRPs the level of EE they believe is reasonably achievable and economic. In response to a data request seeking the feasibility assumptions of the increased EE levels asserted in their comments, SACE and Sierra Club admitted that they did not conduct a market potential study or make assumptions regarding participation (penetration) rates, or technology to achieve penetration rates, for purposes of preparing their comments, but that their comments were "informed" by their

¹⁷ See SACE Comments at p. 6.

¹⁸ *Id.*

review of market potential studies performed for DEC and other southeastern electric utilities.¹⁹ SACE and Sierra Club do not appear to realize that potential does not equal cost-effective or achievable. In their comments criticizing DEC's EE cost assumptions, SACE and Sierra Club again rely upon the LBNL study by Barbose. (SACE Comments at p. 10). While this study does make an attempt to adjust cost projections for size of first year impacts, it does not adjust for cumulative market penetration (i.e., the more that has been achieved on a cumulative basis, the higher must be the costs per kWh achieved). Furthermore, the study essentially relies on past spending and impacts to make its projection, which DEC and DEP assert is a very unreliable methodology.

As they did in their 2013 IRP comments, SACE and Sierra Club complain that the EE costs assumed by the Companies in their 2014 IRPs are too high. On pages 8-11 of their comments, SACE and Sierra Club restate four alleged flaws with DEC's EE cost assumptions and methods. As to SACE and Sierra Club's allegation that DEC's long-term EE cost projection included costs incurred by program participants instead of limiting the costs to those paid by DEC, this allegations is simply false. As to the use of the 60% market saturation, this is based upon the market potential study prepared for DEC and is consistent with reasonable adoption curves for typical measures. As to the criticism that there is no provision for introduction of new EE technology or for reduction in costs of future EE technology, SACE and Sierra Club's comments ignore that generation technology is treated exactly the same way in the IRP (no assumptions are made that generation technology costs will decrease over time). As to their assertion that economies of scale serve to reduce EE program costs as more customers participate, this

¹⁹ SACE and Sierra Club Response to DEC and DEP First Data Request No. 7, March 27, 2015.

ignores the reality of EE program implementation: as less expensive EE measures are depleted (the “low hanging fruit”), more expensive measures must be offered.

SACE and Sierra Club also criticize the Companies’ alleged insufficient reliance upon renewables in their 2014 IRPs. DEC’s 2014 IRP base case includes nameplate ratings of 860 MW of renewable resources by 2019 and 2,155 MW by 2029. DEP’s 2013 IRP Update base case includes 907 MW of renewable resources by 2019 and 1,187 MW by 2029. The Companies’ High EE and High Renewables portfolios evaluated inclusion of more than twice the amount of renewables as in the base cases. The Companies believe renewable resources, particularly solar, are important resources and this is adequately reflected in the 2014 IRPs.

In part, SACE and the Sierra Club criticize the Companies for not discussing their solar resource capacity value methodology or why the estimates change over time. SACE Comments at p. 34-35. The Companies have utilized a methodology to determine the peak contribution of solar resources that has been utilized in the current and past IRPs. This methodology simply overlays the solar load profile with the peak hours to determine how much of a solar facility’s output can be counted on during the peak hours. The peak hours are those defined in Option B of the avoided cost filing. The load shape in the peak hours determines the amount of capacity that can counted on during each peak hour in both summer and winter periods. These values are summed to determine the overall contribution to peak percentages. A similar methodology is utilized for wind resources. As for these values changing over the years, the Companies continue to review processes and best practices for all methodologies in the IRP. The solar capacity

values in the 2014 IRP actually increased as compared to previous years due to the process improvement, thus giving the solar facilities higher value in peak hours.

B. DEC and DEP Adequately Considered Environmental Compliance Costs in the 2014 IRPs.

In their comments, SACE and Sierra Club also allege that DEC and DEP may not have considered current and future environmental regulations, including specifically EPA's Clean Power Plan. (SACE Comments at p. 16). Appendix G to both the DEC and DEP 2014 IRPs contains extensive discussion of potential future environmental requirements that will impact the Companies' operations in the coming years, including those related to the Cross-State Air Pollution Rule (CSAPR) and the Clean Air Interstate Rule, the Mercury and Air Toxics Standard (MATS), National Ambient Air Quality Standards, SO₂ Standards, Particulate Matter Standard, Greenhouse Gas Regulation, Cooling Water Intake Structures (Clean Water Act §316(b)), Steam Electric Effluent Guidelines, and Coal Combustion Residuals. The Companies' IRP models build in all known capital and O&M costs for environmental compliance.

The IRP represents a snapshot in time of the DEC and DEP systems. At the time the IRP was developed, the best available information was utilized to develop a robust, reliable, economical resource plan for the Companies' customers. Resource planning is a dynamic process. As additional information is gathered and new regulations are finalized, the assumptions in the process change and the plan is updated accordingly. SACE and Sierra Club focus on the impacts of the Clean Power Plan and their own opinion of which coal plants should be considered for accelerated retirement. At the time of the development of the 2014 IRPs, not enough information was available about the

Clean Power Plan and the compliance targets for the Companies to include compliance costs in the analysis. As noted previously, the Clean Power Plan Rule has not been finalized, and the rule is likely to undergo significant changes and clarifications considering the extent of comments filed with the EPA regarding the rule. In addition, the plants in question do have planning retirement dates included in the IRP, based reasonably on the current book value of the plants. As the Clean Power Plan, or any other regulation or legislation becomes more certain, the Companies will perform detailed analysis to determine the impacts to the DEC and DEP systems and to each individual generation plant. The Companies evaluate the retirement dates for all generation units based upon changing circumstances, and update retirement dates accordingly.

In response to several data requests, SACE and Sierra Club noted that they “do not purport to offer ‘proposed resource additions and mix of resources’ in their comments.”²⁰ If these parties don’t have a proposed alternate resource mix and associated costs to analyze and compare, then it belies the validity of the purported cost-effectiveness of their proposals and frustrates any meaningful consideration of their comments. In conclusion, the Companies assert that their IRPs and REPS Compliance Plans meet all applicable requirements and any SACE and Sierra Club arguments to the contrary should be dismissed.

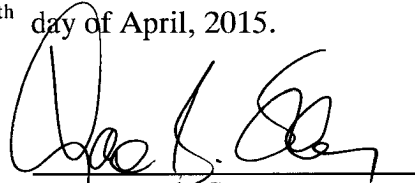
CONCLUSION

In conclusion, the Companies submit that their 2014 Integrated Resource Plans and Renewable Energy and Energy Efficiency Portfolio Standards Compliance Plans

²⁰ SACE and Sierra Club Response to DEC and DEP First Data Request Nos. 2, 6, 9, 10, March 27, 2015.

meet the requirements of all applicable statutes, Commission Rules, and Commission orders and should be approved. Furthermore, DEC and DEP assert that no party has raised credible reasons as to why an evidentiary hearing is necessary, and the requests for same should be denied.

Respectfully submitted, this the 20th day of April, 2015.



Lawrence B. Somers
Deputy General Counsel
Duke Energy Corporation
P. O. Box 1551, NCRH 20
Raleigh, North Carolina 27602
Telephone: 919-546-6722
bo.somers@duke-energy.com

Robert W. Kaylor
Law Office of Robert W. Kaylor, P.A.
353 E. Six Forks Road, Suite 260
Raleigh, North Carolina 27609
Telephone: 919-828-5250
bkaylor@rwwkaylorlaw.com

*Counsel for Duke Energy Carolinas and
Duke Energy Progress*

CERTIFICATE OF SERVICE

I certify that a copy of Duke Energy Carolinas and Duke Energy Progress' Reply Comments, in Docket No. E-100, Sub 141, has been served by electronic mail, hand delivery or by depositing a copy in the United States mail, postage prepaid to the following parties of record:

Margaret A. Force
Assistant Attorney General
PO Box 629
Raleigh, NC 27602-0629
pforce@ncdoj.gov

Antoinette R. Wike
Chief Counsel - Public Staff
North Carolina Utilities Commission
4326 Mail Service Center
Raleigh, NC 27699-4326
antoinette.wike@psncuc.nc.gov

Horace Payne
Dominion North Carolina Power
PO Box 26532
Richmond, VA 23261
horace.p.payne@dom.com

Tim Holder
Energy United EMC
567 Mocksville Highway
Statesville, NC 28625
tim.holder@energyunited.com

Steve Blanchard
Public Works Commission of Fayetteville
PO Box 1089
Fayetteville, NC 28302-1089
steve.blanchard@faypwc.com

David Barnes
Jesse C. Tilton, III
NCEMPA
1427 Meadow Wood Blvd.
Raleigh, NC 27609
dbarnes@electricities.org
jesse.tilton@electricities.com

Richard Feathers
NC Electric Membership Corporation
PO Box 27306
Raleigh, NC 27611-7306
rick.feathers@ncemcs.com

Charles Guerry
Halifax EMC
PO Box 667
Enfield, NC 27823-0667
cguerry@halifaxemc.com

James P. West
West Law Offices, P.C.
Two Hannover Square
434 Fayetteville St., Suite 2325
Raleigh, NC 27601
jwest@westlawpc.com

Michael Youth
NC Sustainable Energy Association
4800 Six Forks Road, Suite 300
Raleigh, NC 27609
michael@energync.org

Mark Calvert
Tennessee Valley Authority
400 West Summitt Hill Dr. – WT 6A-K
Knoxville, TN 37902-1401
mscalvert@tva.gov

Daniel Whittle
Environmental Defense
4000 Westchase Boulevard, Suite 510
Raleigh, NC 27607-2965
dwhittle@ed.org

Robert Page
Crisp, Page & Currin, L.L.P.
4010 Barrett Drive, Suite 205
Raleigh, NC 27609-6622
rpage@cpclaw.com

Sharon Miller
Carolina Utility Customer Assoc., Inc.
Trawick Professional Center
1708 Trawick Road, Suite 210
Raleigh, NC 27604
smiller@cucainc.org

Gudrun Thompson
Southern Environmental Law Center
601 West Rosemary Street, Suite 220
Chapel Hill, NC 27516-2356
gthompson@selcnc.org

Charlotte Mitchell
Law Office of Charlotte Mitchell
PO Box 26212
Raleigh, NC 27611
cmitchell@lawofficecm.com

This is the 20th day of April, 2015.

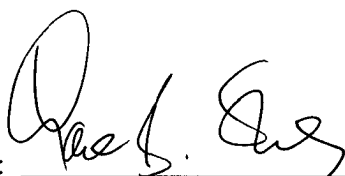
Peter H. Ledford
NC Sustainable Energy Association
4800 Six Forks Road, Suite 300
Raleigh, NC 27609
peter@energync.org

John J. Finnigan, Jr.
Environmental Defense Fund
128 Winding Brook Lane
Terrace Park, OH 45174
jfinnigan@edf.org

Brett Breitschwerdt
McGuire Woods, LLP
434 Fayetteville Street, Suite 2600
Raleigh, NC 27601
bbreitschwerdt@mcguirewoods.com

John Runkle
2121 Damascus Church Road
Chapel Hill, NC 27516
junkle@pricecreek.com

Ralph McDonald
Adam Olls
Bailey & Dixon, L.L.P.
Post Office Box 1351
Raleigh, NC 27602-1351
rmcdonald@bdixon.com
aolls@bdixon.com

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