

STATE OF NORTH CAROLINA  
UTILITIES COMMISSION  
RALEIGH

DOCKET NO. E-100, SUB 147

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of	)	
2016 Integrated Resource Plans and	)	INITIAL COMMENTS
Related 2016 REPS Compliance Plans	)	OF NC WARN

PURSUANT TO the Commission's procedural orders in this docket, now comes the North Carolina Waste Awareness and Reduction Network, Inc. ("NC WARN"), through the undersigned attorney, with its initial comments on the Integrated Resources Plans ("IRPs") filed by Duke Energy Carolinas ("DEC") and Duke Energy Progress ("DEP") (together "Duke Energy").

These comments specifically do not address the late-filed Testimony on Natural Gas Issues filed by Duke Energy on February 16, 2017. NC WARN intends to comment on that filing in reply comments.

COMMENTS

1. Pursuant to G.S. 62-110.1, the North Carolina electric utilities are required to file a 15-year plan for meeting electricity demand. Relevant to the IRPs, case law points out that the purpose of the IRP statute, G.S. 62 110.1, is to prevent costly overbuilding. *State ex. rel Utils. Comm'n v. High Rock Lake Ass'n*, 37 NC App. 138, 245 S.E.2d 787, cert. denied, 295 N.C. 646, 248 S.E.2d 257 (1978). That case states in part

the primary mandate of G.S. 62-110.1 to the Commission, which is to regulate the expansion policy of electric utility plants in North Carolina to provide for the public need for electricity without wasteful duplication or overexpansion of generating facilities.

The upfront costs for the construction of a generating facility is only part of the overall cost to ratepayers; there are also fuel costs, O&M, waste disposal, and decommissioning. If a generating facility or any other infrastructure investments made by the utility later become redundant after substantial changes in regulatory or market conditions, the stranded costs become another burden on ratepayers.

2. To prevent unnecessary overbuilding, G.S. 62-2(a) lays out the policy considerations for the Commission:

(3a) To assure that resources necessary to meet future growth through the provision of adequate, reliable utility service include use of the entire spectrum of demand-side options, including but not limited to conservation, load management and efficiency programs, as additional sources of energy supply and/or energy demand reductions. To that end, to require energy planning and fixing of rates in a manner to result in the ***least cost mix of generation and demand-reduction measures which is achievable***, including consideration of appropriate rewards to utilities for efficiency and conservation which decrease utility bills;

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(5) To encourage and promote harmony between public utilities, their users and the environment

(emphasis added). In reviewing the IRPs, the Commission is required to ensure both the "least cost mix" of generation and energy saving measures, with environmental consequences of those actions taken into consideration.

3. The three most glaring deficiencies in the Duke Energy IRPs filed in this docket are:

- A. The proposed massive investment by both utilities in new natural gas infrastructure, which will further exacerbate the climate crisis;
- B. the continuing overestimation of population growth and its effect on electricity demand, which leads directly to the proposed overbuilding of new costly generating facilities; and
- C. the failure to present any cogent path for achieving the stated goal of 6% sales from renewable energy facilities by 2031.

4. It remains apparent in its IRPs that Duke Energy continues to exaggerate its growth of electricity sales, and as a result continues to operate polluting coal plants, and increasingly rely on risky and environmentally damaging natural gas plants regardless of the need for those plants or the financial burden it places on ratepayers. It is certainly not apparent in the IRPs how Duke Energy can meet its stated solar goals, especially as it is aggressively opposing solar energy and other renewable sources proceedings before this Commission and elsewhere.

5. Duke Energy continues to take the short-term view, one that is economically irrational in the long-term. Duke Energy's business model in its monopoly service area is to prevent competition, build new power plants that are not needed, and force customers to pay for them through increased rates. In its latest plans, Duke Energy continues to ignore rapid and profound changes in the electricity marketplace, and excludes the external costs of its economic choices, such as detrimental contamination of air and water, and contributing to the worsening climate crisis.

6. NC WARN therefore urges that the Commission review the IRPs from a fresh perspective and based on the following scoping criteria:

- A. No new fossil fuel plants or related infrastructure, including natural gas pipelines, because of their contribution to the worsening climate crisis.
- B. No new nuclear plants, because of their prohibitive costs and long lead time for construction, the unresolved problem of storing high-level radioactive waste, and the lack of specialized, technological support available during construction.
- C. Close scrutiny of utilities' reserve margins and growth projections to ensure that they will not perpetuate a trend of costly overbuilding of new power plants that will harm customers with high rates and stranded costs.
- D. Regional sharing of generating capacity to prevent unnecessary overbuilding and high rates and stranded costs for customers,
- E. Prioritize clean, affordable, renewable energy solutions:
  - 1. Energy savings through energy efficiency and demand response measures.
  - 2. Renewable energy including solar, wind, battery storage, and Duke Energy's existing, large pumped storage facilities.
  - 3. Distributed RE with policies that do not restrict customer access to the grid.
- F. Close existing fossil fuel plants as quickly as possible as more energy efficiency and renewable resources are implemented:

1. Prioritize closure of existing natural gas plants if methane emissions from venting and leaking from natural gas infrastructure (well head to burn point) are above 1.0% of natural gas production.<sup>1</sup>

2. Prioritize closure of existing coal plants if methane emissions from natural gas infrastructure are below 1.0% of production.

G. Have a transparent and honest process for IRP development and review that is accessible to the public.

7. For each of the last several IRP proceedings, NC WARN has submitted an updated *Responsible Energy Future* comparing Duke Energy's forecasts with what NC WARN characterizes as a "clean energy path."<sup>2</sup> Although the Commission appears to be locked into Duke Energy's forecasting methodology, NC WARN maintains its criticisms of Duke Energy's assumptions and results. The economic considerations alone from following Duke Energy's plans with its costly overbuilding and stranded costs will be harmful to ratepayers.

8. In its current IRPs, Duke Energy remains heavily reliant on construction of new natural gas infrastructure, including power plants and new natural gas pipelines, such as the Atlantic Coast Pipeline. Duke Energy's increasing dependence on natural gas is troublesome because of the likely future cost increase from fuel supply and production limitations<sup>3</sup> and the impacts of methane

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<sup>1</sup> Discussed below.

<sup>2</sup> *A Responsible Energy Future for North Carolina*, updated November 2015. [www.ncwarn.org/responsible-energy-future/](http://www.ncwarn.org/responsible-energy-future/)

<sup>3</sup> J. David Hughes, *2016 Shale Gas Reality Check*, Fall 2016. <http://www.postcarbon.org/2016-shale-gas-reality-check/>

from natural gas infrastructure on the climate crisis.<sup>4</sup> Rather than addressing these issues squarely, the IRPs forecast the need for more and more natural gas plants. DEC plans to add 2481 MW of new natural gas capacity by 2031 (1904 MW of combined cycle capacity, 468 MW combustion turbine, and 109 MW combine heat and power (“CHP”)).<sup>5</sup> DEC IRP, p. 46. DEP plans to add 5409 MW of new natural gas capacity by 2031 (1781 MW of combined cycle capacity, 3562 MW combustion turbine, and 66 MW CHP. DEP IRP, p. 46. In the joint planning scenario, the consolidated Duke Energy would add 5718 MW of new natural gas by 2031 (2442 MW of combined cycle capacity and 3276 MW combustion turbine). DEC IRP, p. 51; DEP IRP, p. 51.

9. Methane in the atmosphere is 100 times more effective at trapping heat than carbon dioxide over a 10-year period. Methane leaks in significant quantities throughout natural gas infrastructure – from well head to burn point. As a result, burning natural gas for electricity is even worse for the climate than burning coal. The climate impacts of using natural gas for electricity are roughly equivalent to burning coal when the methane emissions (venting and leakage) are reduced from the current 6 – 12% down to 1% of production. Of course, there are many other factors in prioritizing plant closures, such as the age and condition of the

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<sup>4</sup> Dr. Robert W. Howarth, “Methane emissions: The greenhouse gas footprint of natural gas,” September 2016. [http://www.eeb.cornell.edu/howarth/summaries\\_CH4\\_2016.php](http://www.eeb.cornell.edu/howarth/summaries_CH4_2016.php)

<sup>5</sup> CHP has been included as proposed new natural gas capacity. DEC’s first proposed CHP plant at Duke University would be new, unneeded natural gas plant capacity on the campus, not an efficiency measure applied to facilities that previously burned natural gas. It is reasonable to assume that the other CHP capacity additions planned in the IRPs will follow this model. For more research on the Duke University CHP proposal see NC WARN’s report, *Analysis of and Alternatives to the Proposed Duke University Natural Gas-Fired CHP Plant*. [http://www.ncwarn.org/wp-content/uploads/NCWARN\\_Report\\_DukeUniv\\_Gas\\_Project.pdf](http://www.ncwarn.org/wp-content/uploads/NCWARN_Report_DukeUniv_Gas_Project.pdf)

plant, the cost of fuel, and overall impacts on the grid. But, all of these being equal, natural gas has a greater impact than coal on the climate.

10. The cost of generating electricity from renewable energy, especially solar, continues to decline, according to the latest Lazard Levelized Cost of Energy Analysis (LCOE 10.0).<sup>6</sup> The central findings of the study are:

- 1) certain Alternative Energy technologies are cost-competitive with conventional generation under some scenarios, although the rate of cost declines is somewhat muted in this iteration vs. over the last five years;
- 2) the necessity of investing in diverse generation resources for integrated electric systems for the foreseeable future; and
- 3) the importance of rational and transparent policies that support a modern and increasingly clean energy economy.

These findings are crucial to an understanding of how the Duke Energy IRPs fail to come to grips with a changing future in which utility-scale solar and wind, even unsubsidized, are more cost effective than combined cycle natural gas and all other conventional technologies. Conventional technologies and *status quo* policies, even over the 15-year IRP planning horizon, do not arrive at a least cost mix of generation and efficiency measures.

11. As an example, the IRPs still include completion of the proposed Lee Station nuclear units in 2026 and 2028. DEC IRP, p. 45. The costs of new nuclear plants are now in excess of \$12 billion per unit and financing remains unobtainable; this and the unresolved problems with waste disposal make the nuclear option a nonstarter. At this point Duke Energy has spent \$529 million for the Lee Station with nothing used or useful to show this Commission or

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<sup>6</sup> Lazard, *Levelized Cost of Energy Analysis 10.0*, December 15, 2016.  
[www.lazard.com/perspective/levelized-cost-of-energy-analysis-100/](http://www.lazard.com/perspective/levelized-cost-of-energy-analysis-100/)

ratepayers. See Docket E-7, Sub 819. Moreover, DEC does not have a path forward on the Lee Station nuclear units. Although DEC received its license to construct and operate the Lee Station on December 19, 2016, the plans are for the reactors to use the Westinghouse-Toshiba AP1000 design.<sup>7</sup> Toshiba-Westinghouse announced earlier this year it was no longer going to provide support for those reactor designs because of the ongoing economic failures at nuclear plants presently under construction.<sup>8</sup> Additionally, the fabricators of major structural components for the proposed reactors, such as the Shaw Group and Chicago Bridge & Iron Company, no longer are capable of delivering the components; again because of financial failures from nuclear cost overruns.<sup>9</sup>

12. Duke Energy's growth projections are about as high as they have been in the past several IRPs. Annual energy consumption growth rate projections per customer class (net of utility efficiency programs) for DEC are 1.3% for commercial, 0.9% for industrial, and 1.2% for residential, a combined total is 1% across all customer classes. DEC IRP, p. 16. The projected winter peak demand growth rate is 1.3%. DEC IRP, p. 17. Annual energy consumption growth rate projections per customer class (net of utility efficiency programs) for DEP are 1.3% for commercial, 0.8% for industrial, and 1.1% for residential, a combined total is 0.9% across all customer classes. DEP IRP, p. 16. The projected winter peak demand growth rate is 1.3%. DEP IRP, p. 17. These

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<sup>7</sup> [www.nrc.gov/reactors/new-reactors/col/lee.html](http://www.nrc.gov/reactors/new-reactors/col/lee.html)

<sup>8</sup> <https://finance.yahoo.com/news/toshiba-prepares-unveil-nuclear-hole-230001103.html>

<sup>9</sup> <http://fuelfix.com/blog/2015/10/28/cbi-sells-its-nuclear-construction-business-to-toshiba-subsidiary/>



growth estimates are unreasonably high and are the major drivers for the overbuilding of power plants. Duke Energy admits per customer usage of electricity has been flat to negative, but baldly claims that increases in number of customers will cause the entirety of the growth in demand. DEC IRP, p. 16. The Commission must closely scrutinize the validity of the analyses used by the utilities to justify these growth projections.

13. In the most recent IRPs, Duke Energy has claimed to be a winter peaking utility and has geared its plans to that effect. Duke Energy has raised its target winter peak reserve margin to 17%, an increase from the previous summer peak reserve target of 15%. DEC IRP, p. 31; DEP IRP, p. 31. DEC's forecasted reserve margins from 2016 to 2031 range from 17 to 22 percent for the winter peak and 18 to 24 percent for the summer peak. DEC IRP p. 40. DEP's forecasted reserve margins from 2016 to 2031 range from 17 to 27 percent for the winter peak and 17 to 26 percent for the summer peak. DEP IRP p. 41. The excessive reserve margins, and in particular the winter reserves, are based in large part on a polar vortex in 2014. As NC WARN witness Powers concluded at the certificate hearings for the NTE merchant plant in Docket EMP 92, Sub 0, "it is important to underscore that here is no reason to build any baseload capacity to meet once-in-a-generation polar vortex conditions that cause higher than expected winter peak loads." Testimony of William E. Powers on Behalf of NC WARN, p. 8.<sup>10</sup> Using rare, one-time weather events to justify baseload plant construction leads to overbuilding of power plants and unnecessarily high rates.

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<sup>10</sup> See further discussion of the excess reserve margin based on the polar vortex in Mr. Powers testimony. Docket EMP-92, Sub 0.

14. In the most recent NERC report on reliability factors and resource adequacy of utility regions around the country, it describes the anticipated reserve margin and recommends 15% as the reference margin. NERC defines the anticipated reserve margin as “the primary metric that is used to evaluate the adequacy of projected resources to serve forecasted load.”<sup>11</sup> For the Southeastern area, both the anticipated and prospective reserve margins are much higher than the 15% and range, between 20 and 32% over the next 15 years. It is also relevant that the adjacent PJM region has an anticipated reserve margin of 29% and a prospective reserve of 45% over the same time period.

15. Duke Energy continues to refuse to participate in regional sharing of generation resources as urged by FERC, or to factor in the ability of existing and proposed merchant plants to provide power when needed. Instead, it simply continues to build its own new plants. Both DEP and DEC still do not incorporate purchases from neighboring utilities into their plans at any respectable level. Duke Energy states in its IRPs that it does not intend to extend power purchase agreements that expire over the next several years. DEC’s IRP states purchase contracts will provide only 261 MW of summer peak capacity and 107 MW of winter peak capacity in 2031, down from 348 MW summer and 251 MW winter in 2017. DEC IRP, p. 40. DEP’s IRP states purchase contracts will provide only 1241 MW of summer peak capacity and 829 MW of winter peak capacity in 2031,

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<sup>11</sup> North American Electric Reliability Corporation, 2016 Long-Term Reliability Assessment, December 2016. [www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/2016%20Long-Term%20Reliability%20Assessment.pdf](http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/2016%20Long-Term%20Reliability%20Assessment.pdf)

down from 2416 MW summer and 2323 MW winter in 2017. DEP IRP, p.

41. There are no justifiable reasons why Duke Energy and the other Southeastern utilities should continue building power plants while choosing not to share power as needed.

16. The impacts of overbuilding are not just a North Carolina utility-related problem. Without close regulation by this Commission and other state public service commissions, utilities simply construct too many power plants. The resulting construction costs are added to the rate base, ratepayers' bills climb, and even when the plants are no longer needed, the ratepayers get stuck with the stranded costs. As an example, a recent comprehensive article on California's power glut by Ivan Penn and Ryan Menezes for the LA Times shows how ratepayers got stuck paying for unneeded power plants.<sup>12</sup> The utilities' positively reinforced feedback of the need for more profits and dividends leads to costly overbuilding.

17. Duke Energy's IRPs do not show that the utility is implementing or planning to implement clean energy and efficiency measures at the levels that are achievable. Energy efficiency is only 3% of the energy mix projected for the combined company in 2031, up from just 1% in 2017. DEC IRP, p. 48; DEP IRP, p. 48. DEC's demand side management programs only represent 1057 MW of summer peak capacity and 490 MW of winter peak capacity in 2017. This will increase only slightly to 1290 MW summer and 669 MW winter by 2031. DEC IRP, p. 40. DEP's demand side management programs only represent 869 MW

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<sup>12</sup> [www.latimes.com/projects/la-fi-electricity-capacity/](http://www.latimes.com/projects/la-fi-electricity-capacity/)

of summer peak capacity and 445 MW of winter peak capacity in 2017. This will increase only slightly to 1047 MW summer and 538 MW winter by 2031. DEP IRP, p. 41. Much more can be done; the American Council for an Energy-Efficient Economy (ACEEE) ranks North Carolina 30<sup>th</sup> in the state rankings with a 14.5 out of 50 score on such issues as state government policies, buildings, combined heat and power facilities, utilities, transportation, and appliance standards.<sup>13</sup>

18. As noted above, one of the greatest deficiencies in the IRPs is Duke Energy's inability to show a credible path for achieving its plan for renewable energy. In 2015, DEC and DEP each produced less than 1% of the energy they sold from renewable energy. DEC IRP, p. 80; DEP IRP, p. 80. At the same time, the IRPs claim that the combined company will produce 6% of energy from renewable sources in 2031. DEC IRP, p. 48; DEP IRP, p. 48. Duke Energy fails to outline a clear plan of how it will get there.

19. The utilities project additions of renewable energy capacity over the planning horizon totaling 5548 MW (2202 MW for DEC and 3346 for DEP). DEC IRP, p. 27; DEP IRP, p. 27. However, it is unclear how Duke Energy plans to achieve these targets given that its regulated utilities only own 216 MW of solar facilities in North Carolina<sup>14</sup> and have recently requested that strict caps be implemented on future PURPA qualifying facilities.<sup>15</sup> Even if the renewable

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<sup>13</sup> <http://database.aceee.org/state/north-carolina>

<sup>14</sup> [https://www.duke-energy.com/\\_/media/pdfs/our-company/nc-solar-projects-map.pdf](https://www.duke-energy.com/_/media/pdfs/our-company/nc-solar-projects-map.pdf)

<sup>15</sup> Docket E-100, Sub 148. See also [www.bizjournals.com/charlotte/news/2016/11/21/industry-eyes-duke-energy-s-new-plan-for-n-c-solar.html](http://www.bizjournals.com/charlotte/news/2016/11/21/industry-eyes-duke-energy-s-new-plan-for-n-c-solar.html)

energy capacity targets laid out in the IRPs are achieved, it is not clear that it will be enough to represent 6% of the combined utilities' energy production in 2031. NC WARN's calculations suggest over 7200 MW of nameplate renewable energy capacity would be necessary to meet 6% the joint company's 2031 demand projection.<sup>16</sup> The Commission should require the utilities to further detail how they are planning to meet 6% of 2031 energy from renewable energy.

20. The IRPs do not contain any substantive discussion of policies that influence non-utility solar adoption, such as interconnection issues, net metering, avoided costs, and tax credits. The forecasts become based on the *status quo* rather than on tangible, economic steps the utilities can easily take to encourage renewable energy. On the contrary, Duke Energy has requested regulatory changes to avoided cost policies that would have a negative impact on the solar industry.<sup>17</sup> The rationale for this in the IRP is "[t]he Company is already observing that significant volumes of solar capacity result in excess energy challenges during the middle of the day during mild conditions when overall system demand is low. As a result the Company sees an increasing need for operational control of the solar facilities connected to the grid." DEC IRP, p. 23. With the quantity of solar energy in the IRP forecasts and lack of commitment to achieving any additional renewable energy, it is likely the only challenges Duke Energy faces with widespread solar energy is the loss of economic control.

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<sup>16</sup> The sum of the two companies' load forecasts in 2031 is 191389 GWh, DEC IRP, p. 100; DEP IRP p. 95. 6% of the total load forecast is 11483340 MWh. Applying an 18% capacity factor (because almost all of the renewable energy projected in 2031 is solar), results in 7282 MW.

<sup>17</sup> Docket E-100, Sub 148. See also [www.bizjournals.com/charlotte/news/2016/11/21/industry-eyes-duke-energy-s-new-plan-for-n-c-solar.html](http://www.bizjournals.com/charlotte/news/2016/11/21/industry-eyes-duke-energy-s-new-plan-for-n-c-solar.html)

21. Regrettably very little of Duke Energy's fossil fuel capacity is being retired during the IRP planning period. None of DEC's natural gas units are being retired between now and 2031, nor are any included in a list of planned future retirements. DEC IRP, p. 89. DEC plans to retire its little-utilized coal-fired Allen units 1 through 3 (total of 604 MW) in 2024, and Allen Units 4 and 5 (557 MW) in 2028. DEC IRP, p. 89. This is neither a major commitment nor a big step forward in reducing climate impacts because the capacity factors in 2015 for Allen units 1 through 5 were only 12.87%, 13.48%, 16.29%, 19.72%, and 18.61% respectively.<sup>18</sup> It would seem that the plants should be retired much sooner.

22. DEP is retiring some of its existing coal and natural gas capacity during the planning horizon. DEP plans to retire Sutton Units 1, 2a and 2b (76 MW of natural gas and oil capacity) in 2017; Darlington units 1 through 10 (645 MW of natural gas and oil capacity) in 2020; Blewett units 1 through 4 (68 MW of oil capacity) in 2027; and Weatherspoon units 1 through 4 (164 MW of natural gas and oil capacity) in 2027. DEP also plans to retire Asheville units 1 and 2 (384 MW coal capacity total) in 2019, but plans to add natural gas units at the site. DEP IRP, p. 86. DEP projects to close Roxboro units 1 and 2 (1053 MW of coal capacity) in 2032, Mayo unit 1 (746 MW of coal capacity), and Roxboro units 3 and 4 (1409 MW of coal capacity) in 2035, but these closures fall outside of the planning horizon. DEP IRP, p. 86.

23. NC WARN continues to believe the IRP process lacks transparency and honest information made available to the ratepayers and members of the

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<sup>18</sup> Docket E-7, Sub 1075, DEC Monthly Fuel Report, February 12, 2017.  
<http://starw1.ncuc.net/NCUC/ViewFile.aspx?id=962738d0-6e1c-4ff5-85ec-35857da8ecc0>

general public. The Commission has consistently ruled against holding evidentiary hearings to allow for expert witness testimony and cross examination in these proceedings. The IRP process should be a time when the Commission and all interested parties review the utilities' plans carefully and holistically. If this does not happen, the cycle of more and more costly overbuilding will continue unabated, with renewable energy given short shrift.

### CONCLUSION

25. In conclusion, if the Commission approves Duke Energy's latest 15-year plan, it approves a *status quo* threatening to bankrupt North Carolina's economy through costly overbuilding and stranded costs. At the same time, the utility will continue polluting our air and water, and contributing profoundly to the climate crisis. The scoping considerations recommended by NC WARN are reasonable standards of review for the IRPs, an approach fulfilling the Commission's duties to achieve the least cost mix of generation and efficiency, and at the same time, reduce environmental impacts.

THEREFORE, NC WARN prays that the Commission apply its scoping considerations and comments in its review of the IRPs.

Respectfully submitted, this the 17<sup>th</sup> day of February 2017.

*/s/ John D. Runkle*

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#### CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of the foregoing INITIAL COMMENTS OF NC WARN (E-100, Sub 147) upon each of the parties of record in this proceeding or their attorneys of record by deposit in the U.S. Mail, postage prepaid, or by email transmission.

This is the 17<sup>th</sup> day of February 2017.

*/s/ John D. Runkle*