Jack E. Jirak
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April 29, 2022

VIA ELECTRONIC FILING

Ms. A. Shonta Dunston, Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

RE: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC's Additional Responses to Requests for Information
Docket Nos. M-100, Sub 163 and E-100, Sub 173

Dear Ms. Dunston:

Duke Energy Carolinas, LLC and Duke Energy Progress, LLC (collectively, the "Companies") hereby submit responses to the information and document requests of the North Carolina Utilities Commission and the Public Staff made during the April 19, 2022 Technical Conference in the above-referenced matter. Portions of the responses pertaining to fuel sources and fuel arrangements are being filed under seal, and the Companies respectfully request that they be treated confidentially pursuant to N.C. Gen. Stat. § 132-1.2. Public disclosure would reveal commercially sensitive information about the performance of the Companies' generators under various modeled scenarios. The Companies will make the confidential information available to parties upon the execution of an appropriate confidentiality agreement.

If you have any questions, please do not hesitate to contact me. Thank you for your assistance with this matter.

Sincerely,

Jack E. Jirak

Enclosure

cc: Parties of Record

CERTIFICATE OF SERVICE

I certify that a copy of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC's Additional Responses to Requests for Information, in Docket Nos. M-100, Sub 163 and E-100, Sub 173, has been served by electronic mail, hand delivery, or by depositing a copy in the United States mail, postage prepaid, properly addressed to parties of record.

This the 29th day of April, 2022.

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Docket Nos. E-100, Sub 173 and M-100, Sub 163
April 19, 2022 Technical Conference
Commission and Public Staff Additional Requests for
Duke Energy Carolinas and Duke Energy Progress, LLC

Requests from the North Carolina Utilities Commission

1. **Provide materials on messaging to customers about how customers can prepare for extreme weather.**

   Response:

   The image show below would appear on the Companies' website during an extreme weather event. Below is a summary of the information the customer would see after clicking the "Learn How" button.

- To help lessen the energy demand on the power grid for the next 24 hours, Duke Energy is requesting that customers reduce their energy use and reduce the potential of isolated power outages as follows:
  - Select the lowest comfortable thermostat setting and bump it down several degrees whenever possible.
  - Avoid using large appliances – this means appliances with a three-pronged plug, such as dishwashers, ovens and dryers – during high-demand periods like early winter mornings.
  - Shift non-essential activities, like laundry, to a later date, when power demand is lower.

- Turn off unnecessary lighting.
- Turn off televisions, computers and other electronic equipment when not in use.
- If you have an electric water heater, limit the use of hot water as much as possible.
- For more energy-saving, bill-lowering tips, check out our Lower-My-Bill toolkit.

2. Provide an exhibit showing the technical configurations and fuel arrangements for each black start unit on the DEC/DEP systems.

Response:

Below the Companies have provided a description of each blackstart unit on the DEC/DEP systems. It is the Companies' understanding that the Commission would like specific information about blackstart units that are dual fuel capable (i.e., natural gas and fuel oil). Accordingly, the Companies have provided specific information regarding fuel sources and fuel arrangements for those units. Portions of the Companies' responses are confidential.

Blackstart Capable Units - DEC

- Oxford 1 & 2 – blackstart capable (hydro)
- Jocassee 1, 3, 4 – blackstart capable (pumped storage hydro)
- Jocassee 2 – blackstart designated per BS Resource Agreement (pumped storage hydro)
- Keowee 1 & 2 – blackstart capable (hydro)
- Lee CT 7 & 8 – GE LM6000 (Aeroderivative) – blackstart designated per BS Resource Agreement
  - Fuel Oil:
    - [redacted] with approximately [redacted] gallons of capacity.
    - Fuel oil is procured through delivered fuel oil agreements to the site with company suppliers and via trucking agreements where company can utilize its own offsite terminal inventory.
  - Gas:
    - Natural gas supply is procured through firm natural gas supply agreements on Transco through Company procurement activities.

    [redacted]WS Lee Combined Cycle (CC) - Procured natural gas supply bought by the Company from firm natural gas suppliers on Transco is moved to the plant on Piedmont Natural Gas Company, Inc. (the LDC). The Company has a [redacted]

    [redacted]Combustion Turbines - Procured natural gas supply bought by the Company from firm natural gas suppliers on Transco is moved to the plant on Piedmont Natural Gas (the LDC). The Company has a [redacted]

[redacted]

- Cedar Creek 1 & 2 – blackstart capable (hydro)
- Fishing Creek 2 & 3 – blackstart capable (hydro)
- Wylie 2 & 3 –- blackstart capable (hydro)
- Cowans Ford 1, 3, 4 – blackstart capable (hydro)
- Cowans Ford 2 – blackstart designated per BS Resource Agreement (hydro)
- Rockingham CT 1 – 3, 5 Siemens/Westinghouse 501FD1 Heavy (Frame) – blackstart capable
- Rockingham CT 4 – blackstart designated per BS Resource Agreement
  - Fuel Oil: [redacted] gallons of capacity. If tanks are full, usable fuel oil for all CTs on-site is approximately [redacted]
    - Fuel oil is procured through delivered fuel oil agreements to the site with Company suppliers and via trucking agreements where company can utilize its on offsite terminal inventory.
  - Gas:
    - Natural gas supply is procured through firm natural gas supply agreements on Transco through the Company procurement activities.
    - Combustion Turbines – Procured natural gas supply bought by the Company from firm natural gas suppliers on Transco is moved to the plant on Piedmont Natural Gas (the LDC). The Company has a [redacted]

Blackstart Capable Units - DEP

- Weatherspoon CTs – Pratt-Whitney GG4 packaged by Worthington Industries (ER-224 power turbine). (Aeroderivative) – blackstart designated per BS Resource Agreement
  - Fuel oil:
    - [redacted] with approximately [redacted] of capacity, If tank is full, usable fuel oil is approximately [redacted].
    - Fuel oil is procured through delivered fuel oil agreements to the site with Company suppliers and via trucking agreements where the Company can utilize its offsite terminal inventory.

[redacted]Sutton Combined Cycle: Procured natural gas supply bought by the Company from firm natural gas suppliers on Transco is moved to the plant on Piedmont Natural Gas (the LDC). The Company has a [redacted]

- Sutton CT 4 & 5 –- GE LM6000 (Aeroderivative) –- blackstart designated per BS Resource Agreement

  [redacted]Sutton 4 and 5 CT's: Procured natural gas supply bought by the Company from firm natural gas suppliers on Transco is moved to the plant on Piedmont Natural Gas

(LDC). The Company has an [redacted] CC firm redelivery transportation service on [redacted]

- Hydro – Blewett Unit 3-5, Tillery 2 – 4, Walters CPLW
- Blewett CTs – [redacted] – blackstart capable [redacted] with approximately [redacted] of capacity. If tank is full, usable fuel oil is approximately [redacted]

Requests from the Public Staff

1. **Provide an update on the three action items identified in response to Public Staff Data Request 3(b).**

   Response:

   - Action Item 1: Ensure a Lessons Learned session is held at end of each peak season, winter/summer.
     - Status: The Regulated and Renewable Energy (RRE) Operations Working Team (OWT) has a standing agenda item to discuss lessons learned across the fleet following/preceding the peak seasons. These OWT meetings occur every other month, so this standing agenda item is discussed throughout the year.
   - Action Item 2: Ensure fuel oil operation is reliable on units with fuel oil as back-up fuel and pre-winter testing frequency is adequate to ensure reliability.
     - Status: The Company has published a Standard for Combustion Turbine Generation Operations on Liquid Fuel in RRE. All of the simple cycle CT units are currently operating on liquid fuel multiple times per year. The combined cycle CT (CCCT) units are working to upgrade systems to ensure liquid fuel functionality. Currently, 13 out of 21 CCCTs are available to operate on liquid fuel. In comparison, prior to this past winter, only 2 CCCTs were fully functional on fuel oil. Several of the remaining units will be tested this spring (2022).
   - Action Item 3: Identify vital offsite power supplies related to power generation and coordinate with Distribution to ensure they are on the critical load list. Consider support systems required for continued station operation, such as: municipal water supplies, gas compressor stations, etc.

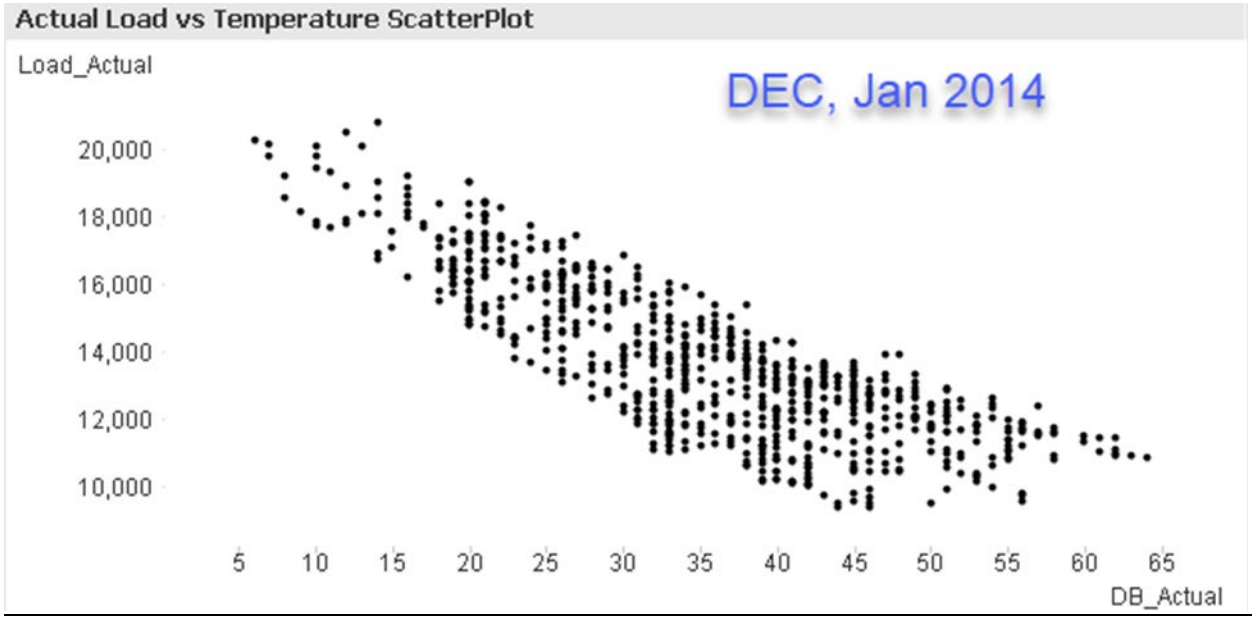
- Status: Regulated and Renewable Energy does not have any vital offsite power supplies related to power generation. Fuel System Optimization (FSO) provided the list of electric compressor stations to the Distribution Control Center (DCC) team to be included in feeder prioritization as part of the 2021 Texas Event Lessons Learned. An updated list was provided from FSO to the DCC team in Q1 2022.

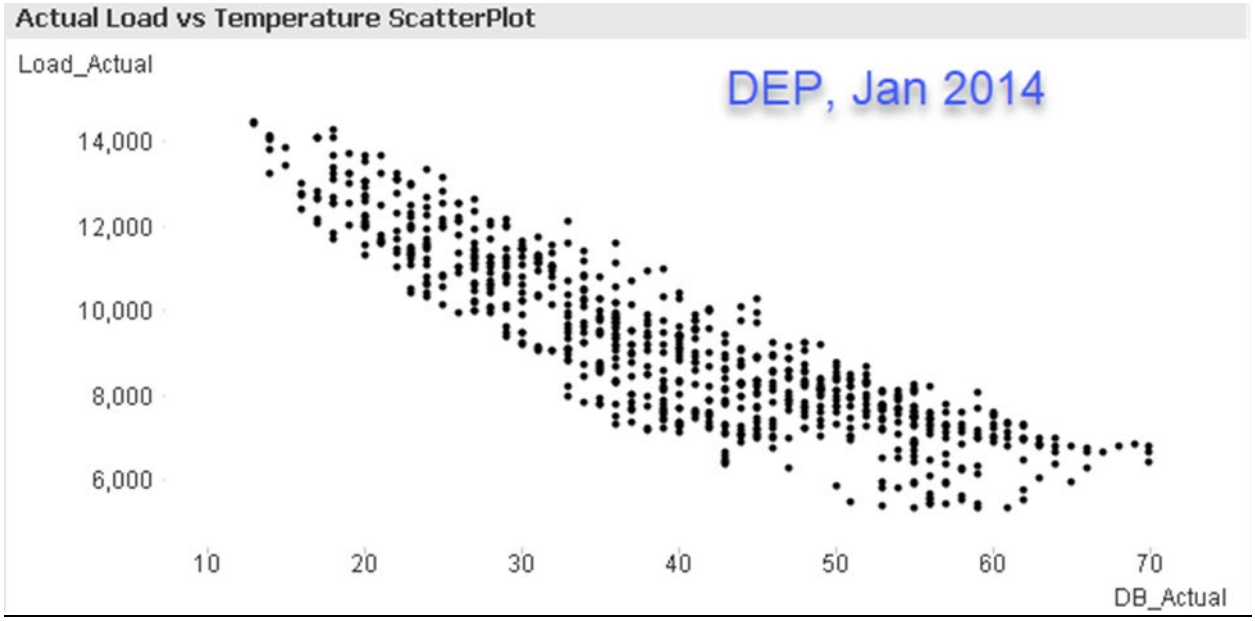
2. **Provide an explanation for why DEP reported outages during the 2015 and 2018 winter peaks (as described in the Companies' response to Public Staff Data Request 8), but DEC reported none.**

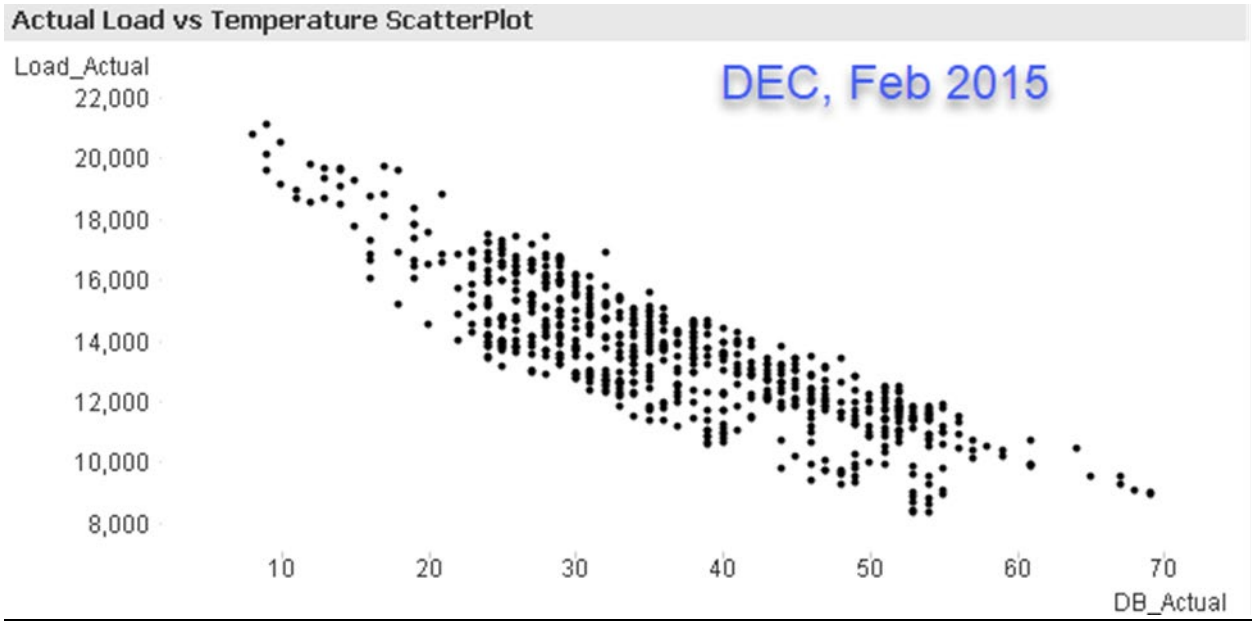
   Response: For both the 2015 and 2018 winter peaks, the equipment at the DEP stations was primarily exposed to the elements, while DEC station equipment was within buildings. This difference caused most of the freezing event outages, with one other outage (Sutton) stemming from earlier unknown damage. Modifications have been made at each outage site to prevent future freeze issues.

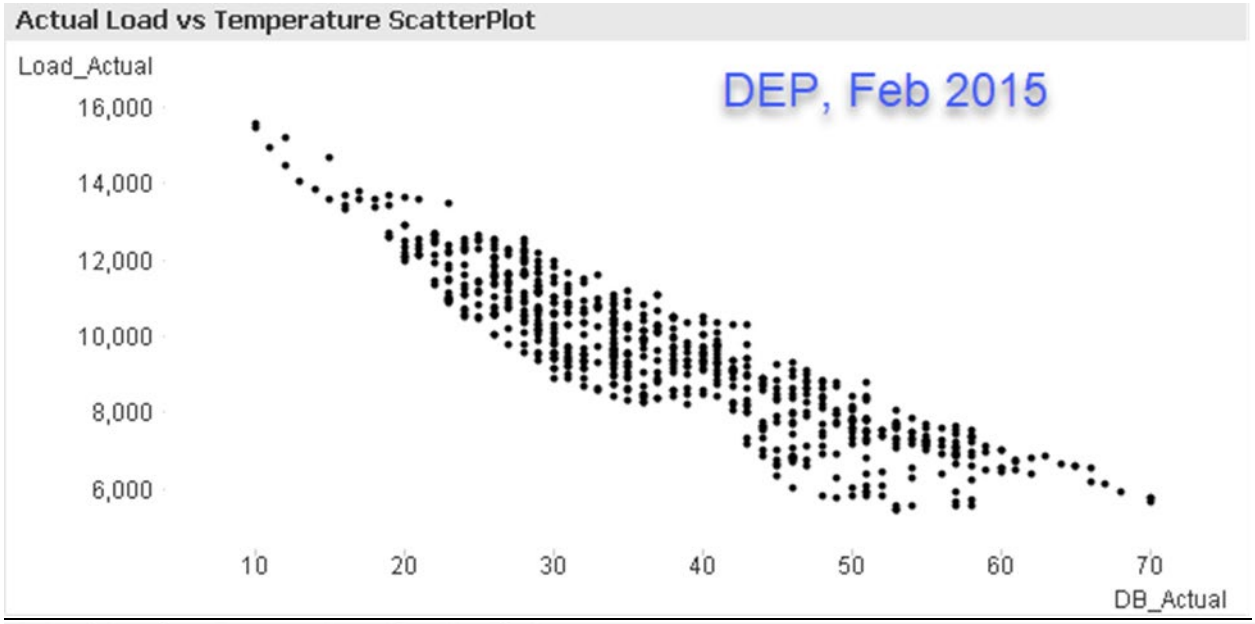
3. **Referencing Public Staff Data Request 6, provide a temperature/load response curve that reflects extreme cold weather temperatures. The graph shown in the Companies' response to Data Request 6 reflects 20 degrees as the lowest temperature, which Public Staff does not believe reflects extreme cold weather. As such, we would appreciate temperature/load response curves for 2014, 2015, and 2018.**

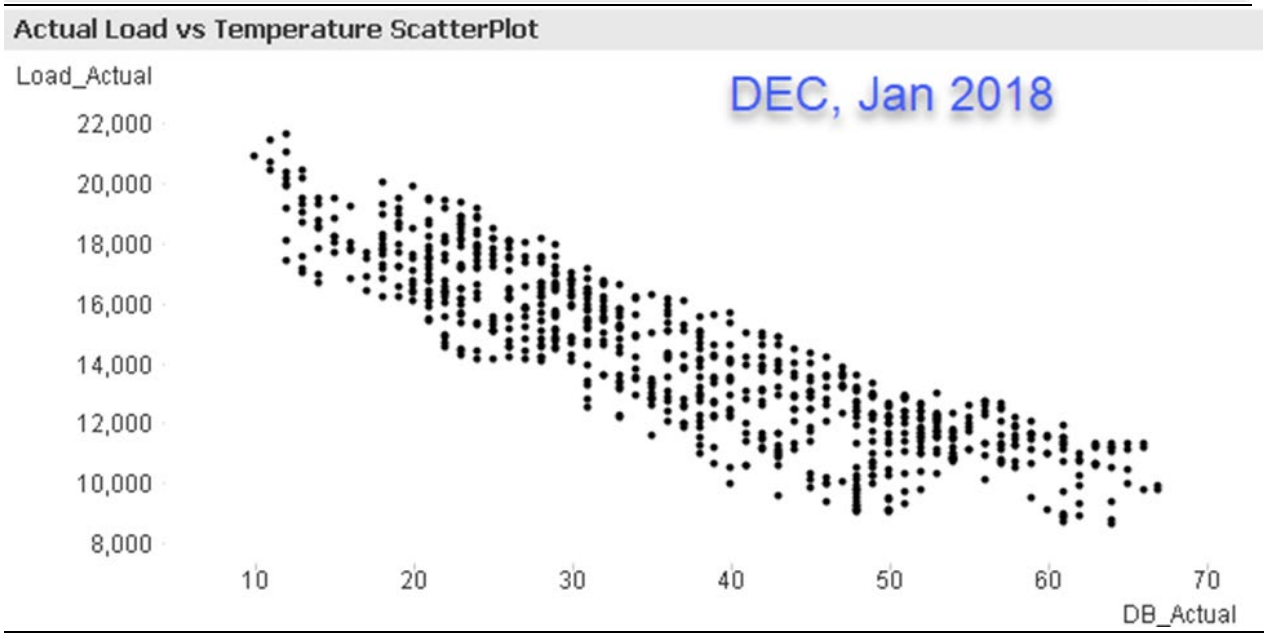
   Response: Please see the below graphs.

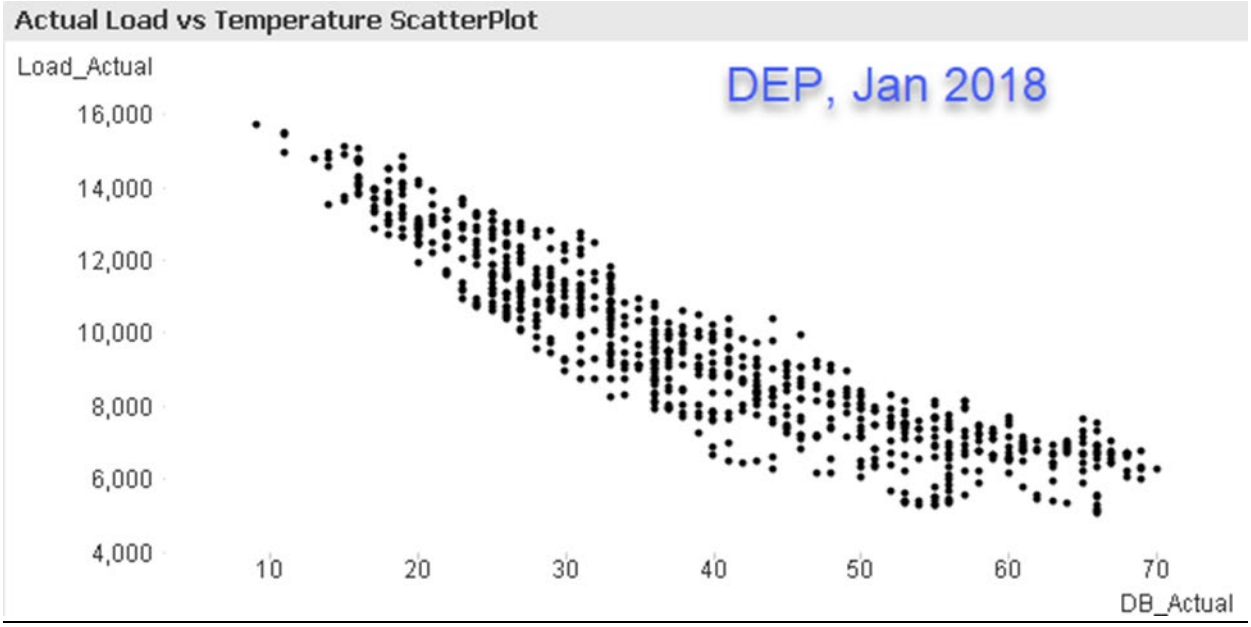












4. **In response to Item 4 of the Commission's Questions, the Company addressed how its load models would fare in case of temperatures 10% degrees below the lowest recorded temperature over the last 30 years, and both DEC and DEP BA load models indicated that such temperatures would not compromise the reliability of the system. Please evaluate this scenario under a simulation that includes a reasonable level of forced outage. The Company's hardening of its system since 2014 should be reflected in the simulation.**

   Response: Please see the attached confidential 'PST Extreme Cold Scenarios with EFOR.ppt.'

   As mentioned in responses to prior data requests, these scenarios were considered to be extreme worst-case scenarios including a high EFOR at 7.2%. With the cold winter weather preparedness procedures now in place at the generator sites incorporating lessons learned from past extreme cold weather events, the EFOR should be much less than 7.2%. In addition, these scenarios were modeled as island scenarios, i.e., no neighbor assistance was considered in these extreme worst-case scenarios.

DUKE ENERGY CORPORATION

CONFIDENTIAL PST EXTREME COLD SCENARIOS WITH EFOR

FILED UNDER SEAL

DOCKET NO. M-100, SUB 163

DOCKET NO. E-100, SUB 173