



**NORTH CAROLINA
PUBLIC STAFF
UTILITIES COMMISSION**

January 7, 2022

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

Re: Docket No. M-100, Sub 163 – Investigation Regarding the Ability of
Carolina's Electricity, Natural Gas, and Water/Wastewater Systems
to Operate Reliably During Extreme Cold Weather

Dear Ms. Dunston:

Please find enclosed for filing the Public Staff's Data Request No. 2 –
Questions on Winter Storm Elliott to Piedmont Natural Gas Company, Inc.

Please do not hesitate to contact me with any questions.

Sincerely,

Electronically submitted
/s/ Gina C. Holt
Manager, Public Staff Legal
Natural Gas, Water, Sewer,
Transportation & Telephone Sections

cc: Parties of Record

Attachment

Executive Director
(919) 733-2435

Accounting
(919) 733-4279

Consumer Services
(919) 733-9277

Economic Research
(919) 733-2267

Energy
(919) 733-2267

Legal
(919) 733-6110

Transportation
(919) 733-7766

Water/Telephone
(919) 733-5610

Piedmont Natural Gas, LLC
Docket No. M-100, Sub 163
Public Staff Data Request No. 2 – Questions on Winter Storm Elliott
Date Sent: February 7, 2023
Requested Date Due: February 17, 2023

Public Staff Technical Contact: **Blaise Michna**
Phone #: (919) 733-08+97
Email: blaise.michna@psncuc.nc.gov

Public Staff Legal Contacts: **Lucy Edmondson**
Phone #: (919) 715-3803
Email: lucy.edmondson@psncuc.nc.gov

Gina Holt
Phone #: (919) 733-0971
Email: gina.holt@psncuc.nc.gov

This data request is being filed in the docket. Please file your responses to this data request in the docket as well so that the Commission and other parties have access to the responses.

Please provide responses to this request in a searchable native electronic format (e.g., Excel, Word, or PDF files). If in Excel format, please include all working formulas. In addition, please include: (1) the name and title of the individual who has the responsibility for the subject matter addressed therein; and (2) the identity of the person making the response by name, occupation, and job title.

Topic: Piedmont's (PNG) winter planning and system preparedness

1. Provide a general description and list of the Company's policies and procedures for routine winter preparedness.
 - a. Please provide a copy of the "Winter Playbook" referenced in the Company's presentation at the January 30th Staff Conference.
 - b. Please provide a detailed discussion of all changes made to the Company's policies and procedures since the 2018 cold weather event in North Carolina and in response to Winter Storm Uri.

- i. Please discuss how these changes to the Company's policies and procedures improved the Company's preparedness for Winter Storm Elliott.
 - ii. Please discuss changes the Company plans to implement from lessons learned during Winter Storm Elliott.
 - iii. Please provide detailed discussion on how these changes will help the system's performance.
2. Identify and describe the Company division, department, staff, etc. responsible for completing the winter preparedness checklists.
 - a. Please describe how the Company performs quality control and verifies through secondary or independent means that all steps are completed/reviewed and accurate.
 - b. Provide each of the completed checklists (or equivalent) for each LNG plant, compressor station, gas infrastructure and other associated infrastructure to supply fuel for electric generation, large commercial and/or industrial customers for each year from 2020 winter preparedness to present, as well as:
 - i. the date the checklist was completed;
 - ii. the party/entity who signed off on the completed checklist;
 - iii. the parties/entities who reviewed the checklist; and
 - iv. a list and description of any open or outstanding checklist items that were not completed and how the open item could impact the reliability of the equipment/component/plant.

3. Is the Board of Directors of the Company or Duke Energy, Inc. (Boards), any committee of the Boards, or the Senior Management Committee briefed on: (1) winter preparedness; and (2) whether any open or outstanding items may impose a risk to system reliability. If so, when did the last briefing occur?
 - a. Please list by name and title all attendees of such meetings.
 - b. Does the Company consider or classify December 2022 as part of its 2022 winter preparedness or 2023 winter preparedness? Please explain how the Company makes this determination.
 - c. How is the briefing provided/communicated to all Board members, committee members and/or Senior Management Committee?
 - d. If the Board, any committee of the Board, or the Senior Management Committee was briefed in 2020 regarding its 2021 winter preparedness, in 2021 regarding its 2022 winter preparedness, and/or in 2022 regarding its 2023 winter preparedness, please provide any associated Board/committee materials (e.g., Power Point, memo, email, document, meeting minutes, etc.) and workpapers and supplemental information used in the creation of the Board/committee materials.

Storm planning and restoration from storm related outages

4. Please describe the Company's typical actions and planning for an anticipated winter storm.

5. Provide a timeline, from December 19, 2022, through December 25, 2022, of the Company's actions related to the pending winter weather event. The timeline should include, at a minimum, sufficient detail of the Company's internal processes and actions taken in advance of the pending weather event. Please provide the following:
- a. The daily weather forecasts that were produced internally by the Company and/or by vendors/contractors, including system average temperature, wind chills, dew points, and supporting documentation.
 - b. A narrative that explains the communication and coordination of weather forecasts with Company staff and interstate pipelines and/or storage staff (both on-system and off-system) during the period in question.
 - i. Please include key communications with gas suppliers and fuel availability.
 - ii. Please include the time frame when all communication was received and length of time any action plan was to remain in effect during the timeline in question.
 - c. The firm vs interruptible service ratio of the Company's daily imported gas supply over this period.
 - i. Please describe any actions taken to prevent gas supply interruption due to potentially interrupted service.
 - ii. Please provide the common platform for such communication and all parties who would have access to this platform.

- d. If not already provided in response to prior questions, identify pertinent information related to the Company's decision making based on information it received from or provided to operations/planners/management/specific generation units (e.g., changes in weather, wind speed, timing of the storm, locational impacts, load/demand impacts, etc.).
- 6. Please provide a detailed discussion of how the Company was preparing for the storm impacts given the pending holiday weekend.
 - a. Provide all general internal memos and minutes of meetings held or general bulletin announcements from business unit leaders, senior managers, and vice presidents to divisions or division leads of the Company advising of the potential storm, the need for staff, and requests to work through the holiday, gas conservation, along with the dates of these communications.
- 7. Please describe how the Company's internal pipeline service employees are deployed when a storm or winter weather event occurs.
 - a. Please indicate whether the Company's winter weather response requires scheduling additional work crews, what those procedures are, and if the Company's field crews are cross trained for these responses.

- b. Please discuss if changes implemented after Storm Uri led to better weather impact response during the Storm Elliott.
- 8. Please describe the Company's protocols for the following customer classes beginning when curtailments are possible, when they occur, up to the point when service is restored:
 - a. Firm Transportation customers
 - b. Firm Sales service customers
 - c. Interruptible Transportation customers
 - d. Interruptible Sales service customers

Lead-up to December 2022 cold weather event

- 9. On a daily basis, beginning December 19, 2022, please describe how the Company considered and prepared for the pending weather event.
- 10. Please discuss the Company's planning and its process on executing its reserve margin management on an as needed basis during such winter storm events.
- 11. Please describe any "line pack" process the Company deployed leading to this event and how this would benefit the system in the oncoming Storm. Please include the timeline.
- 12. Please discuss how the Company was preparing for and forecasting cold temperatures and system responses compared to its responses to the

2014, 2015, and 2018 polar vortexes and cold weather build up events prior to the beginning of the December 2022 cold weather event, including daily updates. Please include the following:

- a. Weather forecasting models and tools used.
- b. Whether the predicted peak demands were performed in-house.
- c. The predictive methods employed in 2014, 2015, and 2018 versus today.
- d. A discussion of the similarities between the December 2022 cold weather event versus those of the 2014, 2015, and 2018 polar vortexes and cold weather event, including whether the prior cold weather events had both a storm component (wind event that contributed to curtailments) in addition to the extreme cold weather events.
- e. Explain the complications, from a system operational standpoint, that occurred during this event compared to the 2014, 2015, and 2018 polar vortex or cold winter weather events.

December 2022 cold weather event

13. Please provide a timeline beginning when the system started to experience storm related impacts through midnight December 26, 2022, in 15-minute increments, including but not limited to:

- a. For each interstate pipeline receipt point at the Company or the Company's city gates:
 - i. The expected and measured operating pressure, and
 - ii. The tolerance and low pressure set point at each receipt point.
- b. For each compressor station point:
 - i. The expected and measured operating pressure, and
 - ii. The tolerance and low pressure set point at each receipt point.
- c. At the meter and relay station (or equivalent) at each electric generation asset in North and South Carolina:
 - i. The expected and measured operating pressure, and
 - ii. The tolerance and low pressure set point at each receipt point.
- d. Any customer curtailment or outages that occurred.
 - i. If a process was put in place to curtail its interruptible customers during this time frame, please provide a discussion of the expected impact to existing gas supply and the Company's reserve margin.
 - ii. Volumes of gas bought (dts) and the respective gas price at zone 3 and 5 respectively as a response to tightened

operating conditions for customers and to prevent outages or curtailments.

- e. General map or other locational guidance showing how the weather was impacting the Company's overall system.
13. Please identify the actual hourly demands observed for December 24, 2022. This response should include a timeline of the long-range load forecast, the seven-day ahead forecast, the three-day ahead forecast, and the day-ahead forecast showing the loads that the Company was anticipating prior to December 23, 2022, through December 28, 2022. In the Company's response, please distinguish between residential, commercial, and gas demand for electric generation.
14. Please provide graphs and supporting data (in working Excel files with working formulas intact) that illustrate the following: demand; LNG draws; gas storage; expected gas supply; and quantity of interrupted service or supply (if applicable) from December 23, 2022, through December 28, 2022, with Company service area specific information in as granular periods as possible, but no less than hourly. (Note: Individual graphs or a composite of graphs may be provided in response.)
15. For the period December 23, 2022, through December 26, 2022, please provide a general timeline in 15-minute increments showing changes in, but not limited to:
- a. Day ahead and hourly demand forecasts;

- b. Notifications (phone calls, emails, social media, etc.) to other utilities, gas suppliers, or other regulatory agencies;
 - c. Gas purchases; gas sales; firm or interruptible purchases/sales;
 - d. Fuel source availability notifications from fuel source suppliers or shippers of fuel constraints or fuel deliverability restrictions;
 - e. Transmission system constraints;
 - f. Gas conservation notifications to customers;
 - g. Curtailment notification to interruptible customers;
 - h. Operational Flow Order (OFO) notices from Transco or any other suppliers on the distribution system;
 - i. OFO notices from Piedmont to its customers; and
 - j. Any other information that would show how the Company was informed or provided information as the situation was unfolding.
16. For the period December 23, 2022, through December 26, 2022, please provide a detailed list of the natural gas fueled generation units Duke Energy called on to operate/dispatch and how PNG performed with regards to gas supply and demand.
- a. Please provide any communications that occurred between the Company's interstate pipeline suppliers/storage, Duke Energy, and PNG regarding the pressure drop on the PNG system.
17. In regard to gas supply system performance, customer curtailment, and demand exceeding predicted supply, provide dates and times of meetings,

emails, discussions, and other communications in which decisions were made, as well as a list of all persons participating in decision making, including their job titles.

18. Please provide the following unit outage information:
 - a. A list of PNG assets that were known to be unavailable going into December 23, 2022.
 - b. A list of PNG assets that were expected to be online or available but failed or failed to respond when called upon from December 23, 2022, through December 28, 2022.
 - c. A list of PNG assets that underperformed or were constrained (gas supply below expected output) from December 23, 2022, through December 28, 2022.
 - i. A list of the amount of constrained natural gas in dts, and the dates and hours impacted for each component and/or gas purchase.
19. For all units/resources/programs that failed to perform, perform as expected, or perform at full nameplate potential from December 23, 2022, through December 28, 2022, please provide:
 - a. The time at which they failed/underperformed;
 - b. Period of time associated therewith;
 - c. The root cause (or most likely suspected cause) of the failed/underperforming asset;
 - d. Amount of lost gas supply at each component; and

- e. Steps taken to mitigate such issues.
20. Regarding gas supply from December 23, 2022, through December 28, 2022, please describe the Company's understanding of the status of the natural gas supply and any potential impacts on its operation before and during the event period for:
- a. Transco;
 - b. Other interstate pipeline/storage providers and suppliers/marketers.
21. Please provide a detailed discussion regarding when the Company received notifications from its interstate pipeline/storage provider, suppliers/marketers, etc., of potential natural gas supply or pressure issues.
- a. Please provide a general timeline of the notifications and what the Company did in reaction to the notifications.
 - b. Please list how the notifications were issued to the Company and the timeframe for each.
 - c. Please provide a list of all the mitigating actions required due to loss of pressure on Transco's system.
 - d. Did the Company inquire about potential spot or Z5 purchases?
22. Please discuss how the Company provided its customers, including electric generation customers, notification of impending gas supply issues or curtailment.

23. Please provide the commodity prices being used during this period, along with supporting information from source data (values should be expressed in \$/dts).
24. In regard to potential load curtailment, please provide:
- a. A general narrative (or any written procedures) that describe the Company's process for determining when to begin its process for potential curtailments.
 - b. A description of how close the Company was to potentially performing curtailments to maintain system reliability.
 - i. Was curtailment the next feasible action to be taken at any point during from December 22, 2022, through December 28, 2022? If so, list each time this was so.
 - c. A discussion of how a system operator determines that a curtailment is needed and the process by which the operator selects the customers to curtail and outage durations.
 - d. A description of the process for notifying customers prior to curtailment.
 - e. A discussion and copies of any mass communications provided to customers regarding gas conservation and potential curtailment events.
 - f. A discussion and copies of all communications the Company had with the NCUC and NC Public Staff:
 - i. Prior to event.

- ii. Real time during event.
- iii. Subsequent to event, through December 28, 2022.

25. Please provide any notifications, request for relief, or emergency operations to or from the Department of Energy or the FERC from December 23, 2022, through December 28, 2022.

Liquid Natural Gas usage

26. Please provide any cost-benefit or system analysis that was performed to determine whether to withdraw from the Company's LNG plants versus curtailing interruptible customers.

- a. Please provide the Company's calculation to determine the amount of load on the system that would have been required to begin curtailment.
- b. Please provide the Company's calculation to determine the system pressure that would have resulted in curtailments.

27. Please provide any cost benefit or system analysis that was performed to determine which LNG facilities to withdraw from and at what rates.

28. Please provide the Company's hourly withdrawals and pressures from each of its LNG plants compared to their maximum and minimum withdrawal capability.

- a. Did the pressure degradation on Transco's system impact the Company's decision with regards to the withdrawal rate from its LNG facilities?
- 29. Please provide the conditions that would be required for the Company to justify refueling LNG plants within the winter months.
- 30. Please provide all withdrawal requests made of off-system by gas-day, volumes requested, and supplier. Please specify whether these requests were accepted and volumes delivered or if they were rejected.
- 31. With regard to the Company's January 30, 2023, Winter Storm Elliott update presentation to the NCUC:
 - a. Slide 2: Please discuss the term, 'significant.....' and list all operational issues on PNG's system if not already discussed above.
 - b. Please provide the Company's system pressure sensitivity analyses upon completion of conducting operational lessons.
 - c. For each day of the event, please provide any notification received from gas producers/marketers on existing well-head conditions and all related gas supply.
 - d. At each of the Company's compressor stations, please list the following:
 - i. Location of the compressor station (show on a map).

- ii. Operating pressure before Winter Storm Elliott and operating pressure during December 23, 2022, through December 28, 2022.
- iii. Mitigation measures put in place to overcome the pressure differentials in order to serve:
 - i. Firm customers; and
 - ii. Interruptible customers.
- iv. The location of the Company's vulnerable points where the Company experienced pressure drops on a map.
- e. Slide 4: detailed discussions on lessons learned from observing the impact of Winter Storm Elliott on Midwest and Tennessee LDC operations and measures put in place for the system benefit.
- f. Slide 8: Had Winter Storm Elliott arrived mid-week of a non-holiday work week, please discuss:
 - i. Likely curtailments;
 - ii. Natural gas demand v/s what the Company actually experienced;
 - iii. Changes in interstate pipeline/storage gas supply or on-system LNG withdrawals.