

SOUTHERN ENVIRONMENTAL LAW CENTER

Telephone 919-967-1450

601 WEST ROSEMARY STREET, SUITE 220
CHAPEL HILL, NC 27516-2356

Facsimile 919-929-9421

April 27, 2021

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

**Re: Docket No. E-100, Sub 158 - Biennial Determination of Avoided Cost Rates
for Electric Utility Purchases from Qualifying Facilities – 2018
Reply to Duke Energy Response to Order Requiring Additional Information**

Dear Ms. Campbell,

On March 29, 2021 the Commission issued its *Order Requiring Additional Information* in this 2018 biennial avoided cost proceeding and in the interconnection proceeding, Docket No. E-100, Sub 101, requiring Duke Energy Carolinas, LLC (DEC), and Duke Energy Progress, LLC (DEP) (collectively, Duke) to provide additional information in response to two questions by April 13. The Order permitted other parties to respond to the same questions by April 13, and allowed all parties to file replies on or before April 27.

On behalf of the Southern Alliance for Clean Energy and the North Carolina Sustainable Energy Association, we submit the attached reply prepared by Brendan Kirby, P.E.

If you have any questions, please do not hesitate to contact us. Thank you.

Sincerely,

/s/ Nick Jimenez

Nicholas Jimenez, Staff Attorney
Southern Environmental Law Center
919-967-1450
njimenez@selcnc.org
Attorney for Southern Alliance for Clean Energy

/s/ Benjamin Smith

Benjamin Smith, Regulatory Counsel
North Carolina Sustainable Energy Association
919-832-7601 x 111
ben@energync.org

Concerns with Duke's Treatment of Geographic Smoothing as the Solar Fleet Grows

Brendan Kirby P.E. 27 April 2021

Question 1: 6% and 12% Volatility Thresholds

On March 29, 2021 the Commission asked Duke to: "Explain how Duke derived the six-percent and 12-percent volatility thresholds for SISC reduction." Duke's answer does not recognize that the solar fleet has grown significantly since the 5-minute data from October 2016 to October 2017 was collected. Geographic smoothing (aggregation) greatly reduces the relative impact of individual plants on short-term variability.¹ Data collected from the current larger solar fleet will already show a significant reduction. The larger future solar fleet will have even less relative short-term variability.

The Commission should direct Duke to update its short-term variability analysis, focus on total power system variability, and recognize the geographic smoothing benefits that naturally occur as the solar fleet grows in size.

Question 2: Duke Variability Study

Duke's solar integration analysis has continuously failed to recognize the geographic smoothing benefits for reducing short-term variability impacts on the power system that naturally occur as larger numbers of solar plants are added to the power system. Short-term variability is largely uncorrelated between solar generators, resulting in partial cancelation of short-term variability among individual solar plants (and loads). It is only the net short-term variability of the entire power system, including all of the solar plants and loads, which Duke must balance. Stated simply, short-term variability does not increase linearly as new solar plants are added to the power system and Duke's analysis overstates the total-system net short-term variability that will occur with higher penetrations of solar generation.

Analysis of actual short-term variability data from individual solar plants and the total power system will show the geographic smoothing benefits as the solar fleet grows. Duke stated in its July 31, 2020 Reply Comments that it would install additional metering (at no expense to the solar plants) to study the solar plant volatility for two years and report back to the Commission. Clearly, the more solar plants that provide data for the study the better.

On March 29, 2021 the Commission asked Duke to "Explain exactly what facilities will be eligible to receive these meters, where they will be placed, what they will be measuring, and how this metering arrangement

¹ M. Milligan, B. Kirby, J. King, S. Beuning, 2010, *Potential Reductions in Variability with Alternative Approaches to Balancing Area Cooperation with High Penetrations of Variable Generation*, NREL/MP-550-48427, August, <https://www.nrel.gov/docs/fy10osti/48427.pdf>

will be addressed contractually. Also explain what Duke intends to study, and when, if ever, Duke plans to charge QFs for these meters.”

Unfortunately, Duke’s April 13, 2021 Response did not answer the Commission’s question. Duke did say that it does not trust Seller provided data and that Duke’s own meters are required: “The Companies also felt it important to require a second meter in order to be able to audit the volatility results that the Seller provided.” Duke implies that it does not intend to collect data from many solar plants when it says: “Since this is a new program and the Companies don’t expect to have many initial participants, the Companies have agreed to not charge the cost of the second meter to the Seller at this point in time.” Duke also fails to explain what will be studied and only states: “The Companies proposed to study this methodology, including the second meter, for a period of two years in order to evaluate whether the data collection process and data resolution are adequate or if changes should be made to this approach.”

The Commission should require Duke to provide sufficient metering, without charge, at all solar plants to quantify the geographic smoothing benefits to short-term variability reduction that naturally accrue through aggregation. The Commission should require that Duke study short-term variability impacts at the solar plant and total power system level as a function of the size of the solar fleet. Duke should be required to report results back to the Commission.

Question 2: 5-Minute Revenue Metering Requirement

Duke’s April 13, 2021 Response to the Commission’s March 29, 2021 Order states: “It is not possible to collect both 5-minute and 15-minute interval data from the same meter, so a second revenue quality meter to capture the 5-minute production data is required.” This is not accurate. Data from a 5-minute interval meter can be aggregated to provide the same information as a 15-minute interval meter. Duke could replace the 15-minute revenue quality meters currently at QF sites with 5-minute revenue quality meters so that only a single meter was still required.

The Commission should not accept the need for multiple meters as an excuse for inaction or delay.

CERTIFICATE OF SERVICE

I hereby certify that all persons on the docket service list have been served true and accurate copies of the foregoing filing either by electronic mail or by deposit in the U.S. Mail, postage prepaid.

This the 27th day of April, 2021.

/s/ Nick Jimenez
N.C. State Bar No. 53708
Southern Environmental Law Center
601 W. Rosemary Street, Suite 220
Chapel Hill, NC 27516
919-967-1450
njimenez@selcnc.org