SOUTHERN ENVIRONMENTAL LAW CENTER

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August 7, 2015

Via Electronic Filing

Ms. Gail Mount
Chief Clerk
North Carolina Utilities Commission
430 North Salisbury Street
Dobbs Building
Raleigh, NC 27603-5918

RE: In the Matter of: Biennial Determination of Avoided Cost Rates for Electric Utility Purchases from Qualifying Facilities – 2014
Docket No. E-100, Sub 140

Dear Ms. Mount:

Enclosed for filing in the referenced docket are Reply Comments of Southern Alliance for Clean Energy. By copy of this letter, I am serving all parties of record on the service list.

Please let me know if you have any questions about this filing.

Sincerely,

s/ Robin G. Dunn
Administrative Legal Assistant
N.C. Certified Paralegal

RGD
Enclosures
cc: Parties of Record

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-100, SUB 140

In the Matter of: Biennial Determination of Avoided Cost Rates for Electric Utility Purchases from Qualifying Facilities – 2014	)	**REPLY COMMENTS OF SOUTHERN ALLIANCE FOR CLEAN ENERGY**

Pursuant to the Commission's January 8, 2015 *Order Establishing Procedural Schedule and Scheduling Public Hearing*, as modified by its May 29, 2015 *Order Granting Motion for Extension of Time* and July 24, 2015 *Order Granting Motion for Extension of Time*, Southern Alliance for Clean Energy ("SACE") files these reply comments on selected issues raised by other parties in their initial comments filed in this proceeding, which in turn commented on the proposed rates and standard form contracts filed on March 2, 2015 by Duke Energy Carolinas, LLC ("DEC"), Duke Energy Progress, Inc. ("DEP") (together, "Duke"), and Dominion North Carolina Power ("DNCP") (collectively, "the Utilities").

AVOIDED ENERGY COSTS

A. DEC's and DEP's Use of Natural Gas Price Forecasts

In their initial comments, both the Public Staff—North Carolina Utilities Commission ("Public Staff") and the North Carolina Sustainable Energy Association ("NCSEA") critiqued DEC's and DEP's use of forward price data in developing their avoided energy costs. DEC and DEP each incorporated 10 years of future spot prices and other forward price data in their avoided energy cost, in direct contrast to several earlier IRP and avoided cost filings. In the 2014 IRPs, DEC and DEP relied on 5 years of forward price data rather than 10 years. In both its 2012 IRP and 2012 avoided cost

calculations, DEC used a shorter term (two years) for forward price data, combined with 24 months of transitional data and a long-term natural gas price forecast. According to the Public Staff, an over-reliance on forward price data can call into question the reliability of the long-term forecasts. NCSEA contends that by emphasizing unusually low futures market prices and ignoring the likelihood of an upswing in gas prices, DEC and DEP (as well as DNCP) have reduced their avoided energy costs to an unreasonably low level.

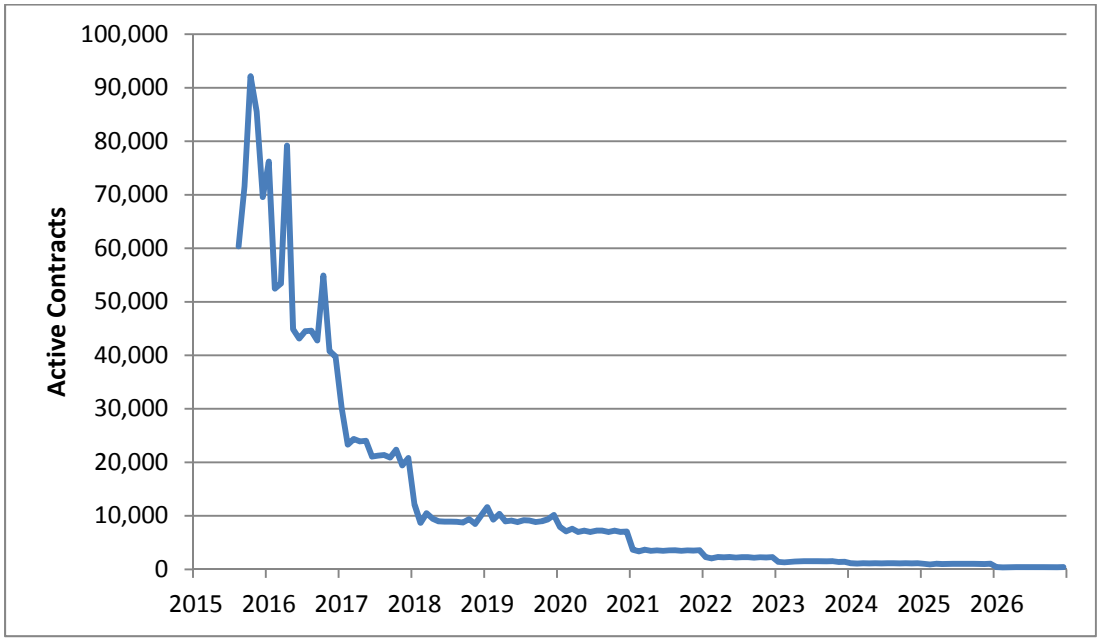
SACE agrees with the Public Staff and NCSEA's criticisms of the DEC and DEP fuel price forecasts as proposed and recommends that DEC and DEP use only three years of NYMEX Henry Hub natural gas futures prices and then transition to long-term forecasts when calculating avoided energy.

A natural gas futures price is the price one would pay today to procure natural gas at the Henry Hub at a specific date in the future. Futures are traded when both buyers and sellers anticipate performing a transaction at a later date and both sides are concerned that the spot price at the later date will be less favorable than an agreed upon price today. Gas futures are traded in monthly increments: one could buy (or sell) a future for next month, three months from now, or thirty-seven months from now, so long as there is a seller (or buyer) interested in the same quantity and a price can be settled.

In theory, one could use the futures price for any upcoming month as a very good proxy for the expected spot price of natural gas in that future month. In practice, however, this can only be done in the near-term future because a sufficient quantity of futures transactions only exists for the next few dozen months. For a market price to have validity, there must be sufficient volume to have relative certainty that the market

participant could get a very similar price for the quantity the participant is interested in buying or selling. Thus, the NYMEX natural gas futures market can only be used as a good indication of the price of natural gas in upcoming months for a time range of two to three years. The lack of trading volume for NYMEX gas futures more than two-to-three years ahead prohibits prices beyond that window from being robust forecasters of gas prices. The graph below shows the number of futures contracts going forward.[1] After about three years the market activity drops to about one-tenth of current levels. Where there are fewer participants and much less money is at stake, the market consensus is much weaker, and thus there is less validity to the prices.

Figure 1. Monthly NYMEX Market Interest in Henry Hub Natural Gas Futures



The preferred method for longer-term energy price forecasts is to look at the resource base and the expected production costs. The basic rationale is that these factors are fairly stable and that markets will settle or fluctuate around those costs. This is the

[1] Based on data obtained from CME for the NYMEX Futures Market as of 7/20/15 (http://www.cmegroup.com/market-data/settlements/). A natural gas futures contract represents 10,000 mmBtu.

approach used by the U.S. Energy Information Administration for its Annual Energy Outlook ("AEO") and by many others such as the New England Avoided Energy Supply Cost studies.[2]

In terms of planning, the best approach is to consider a range of possible futures and to evaluate that with scenario or risk analysis. However if only a single forecast is used, the best approach is to use futures prices for two-to-three years where the market is fairly robust, and then use a resource and cost based approach for the later years. A reasonable source for the longer term forecast is that from the latest AEO, which is public and well documented.

As pointed out by the Public Staff in its initial comments, using futures prices for 10 years before switching to gas forecast price is inappropriate because the market for 10-year futures is relatively illiquid. While the Public Staff recommends that DEC and DEP use futures for five years (consistent with Duke's approach in its most recent IRP), SACE recommends using futures for only two to three years. The number of contracts in excess of the two-to-three year window is extremely small (be it for 4-year or 5-year or 10-year futures), so using futures prices for a two-to-three year window effectively reduces reliance on positions with low trade volumes. DEP and DEC should be allowed to use only the next three years of NYMEX Henry Hub natural gas futures prices before transitioning to long-term forecasts when calculating avoided energy.

B. The Utilities' Calculation of the Fuel Hedging Value of Renewables

SACE's initial comments critiqued DEC's and DEP's use of the "ask" gas price forecast in calculating the fuel hedging benefits associated with purchases of renewable

[2] See http://www.eia.gov/forecasts/aeo/ and http://ma-eeac.org/wordpress/wp-content/uploads/2015-Regional-Avoided-Cost-Study-Report1.pdf .

energy. The Public Staff's and NCSEA's initial comments echo SACE's critique of DEP's and DEC's bid/ask method of calculating fuel hedging value. As the Public Staff notes, DEC and DEP's approach does not "properly reflect… the hedging value of renewables."[3] The Public Staff recommends that the Utilities use the Black-Scholes Option Pricing Model or a similar method to calculate the hedge value of renewable energy purchases.

It is important that the input parameters and calculation assumptions for the Black-Sholes value are carefully considered. A Black-Scholes calculation requires a number of inputs: the commodity's current price, exercise price, time to maturity, annualized volatility, and the annual risk-free interest rate. For a given period of time within the NYMEX bounds of sufficient trading volume discussed above, the current price, exercise price, and time to maturity are easily obtained. The annual risk-free interest rate (Treasury bill rate) for the time to maturity is also available. However, a critical parameter for the Black-Scholes calculation is the assumed annual volatility rate. This parameter is critical because small changes in this value have significant effects on the calculated Black-Scholes value, and because it is impossible to know what the volatility of the spot price of natural gas over the future time period will be. With these parameters in mind, SACE reiterates its initial criticisms of the fuel hedging calculations offered by DEC and DEP and supports the use of a Black-Scholes calculation as a better approach for all three Utilities.

[3] Initial Statement of the Public Staff at 35.

AVOIDED CAPACITY COSTS

A. DNCP's Use of the Siemens Combustion Turbine and a 10% Contingency Factor

In their initial comments, the Public Staff and NCSEA both question DNCP's choice of a Siemens model combustion turbine ("CT") in calculating avoided capacity costs and further critique adjustments made to the costs. As the Public Staff notes, "DNCP does not have a Siemens Model CT in its fleet, nor does it have experience with the construction and operation of a Siemens Model CT. As a result, a number of other adjustments such as the applicable contingency factor associated with the facility, capital spare parts, and O&M would need to be adjusted to reflect DNCP's limited experience with the unit."[4]

NCSEA also observes that the Utilities have used unreasonably low contingency factors, and points out that DNCP assumes a 10% contingency factor for engineering, construction and procurement costs ("EPC"), plus a 9% owner's contingency for non-EPC. While these contingency factors are the same as those assumed by Brattle in the PJM Net Cost Of New Entry report, other sources (such as Black & Veatch and EIA) use higher contingency factors, particularly when the project is not yet well defined and less detail is included in the estimate.[5] SACE concurs that the combination of DNCP's limited experience with the Siemens unit and the very rough nature of the cost estimate would require using a higher contingency factor in determining avoided capacity cost.

B. The Utilities' Useful Life Assumptions

In its December 31, 2014 *Order Setting Avoided Cost Parameters*, the Commission specified that "a reasonable estimate of useful life of a CT" should be used

[4] Initial Statement of the Public Staff at 37.
[5] Initial Comments by NCSEA at 30-31.

"in the calculation of the installed cost of a CT" to "be included in the calculation of avoided capacity costs."[6] NCSEA notes that all three Utilities assumed a useful life for a CT that is longer than both the publicly available Brattle Group/Sargent & Lundy estimate of 20 years and the confidential EPRI TAG assumption.[7] In fact, the Brattle Report "calculated depreciation based on the current federal tax code, which allows generating companies to use the Modified Accelerated Cost Recovery System (MACRS) of 20 years for a CC plant and 15 years for a CT plant."[8]

The Brattle Group and Sargent & Lundy have also discussed the appropriate useful life to assume in calculating the cost of new entry in stakeholder discussions in ISO-New England. There, they note that while power generation plants may physically last for 30+ years, in financial modeling it is appropriate to use a shorter economic life due to "market risks, including lower cost capacity resources entering market," and the risk of "market interventions that depress prices."[9] Therefore, they maintained the assumption of a useful life of 20 years for all technologies. For these reasons, a useful life assumption of 15 to 20 years is more reasonable for use in economic modeling than the much longer useful life assumed by the Utilities.

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[6] *Order Setting Avoided Cost Parameters*, Ordering Paragraph No. 7 (Dec. 31, 2014).
[7] Initial Comments by NCSEA at page 35.
[8] Brattle (2014) Cost of New Entry for CTs and CCs in PJM at 39, citing Internal Revenue Service (2013), Publication 946, How to Depreciate Property (February 15, 2013), available at http://www.irs.gov/pub/irs-pdf/p946.pdf.
[9] Newell, Samuel, and Chris Ungate, *Net CONE for the ISO-NE Demand Curve, 3rd Response to Stakeholder Comments and Draft Proposal*, Presented to the NEPOOL Markets Committee, February 27, 2014, slides 15-16. Available at http://www.iso-ne.com/committees/comm_wkgrps/mrkts_comm/mrkts/mtrls/2014/feb272014/a03a_the_brattle_group_demand_curve_net_cone_responses_02_27_14.pptx.

CONCLUSION

For the reasons discussed in the above sections, as well as for the reasons discussed in detail in the initial comments of SACE, NCSEA and the Public Staff, the Utilities have failed to comply with the Commission's December 31, 2014 *Order Setting Avoided Cost Parameters* in certain key respects. As a result, the Utilities' proposed rates likely do not capture all of the costs that purchases of power from QFs allow them to avoid, and accordingly, may not represent fair rates that allow QFs to be compensated at the full avoided cost rate to which they are entitled under PURPA.

Respectfully submitted this 7th day of August, 2015.

s/ Gudrun Thompson
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CERTIFICATE OF SERVICE

I certify that the foregoing Reply Comments of Southern Alliance for Clean Energy as filed today in Docket No. E-100, Sub 140 have been served on all parties of record either by electronic mail or by deposit in the U.S. Mail, postage prepaid.

This the 7th day of August, 2015.

s/ Robin G. Dunn