

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-100, SUB 175

In the Matter of:)
Biennial Determination of Avoided Cost) JOINT REPLY COMMENTS
Rates for Electric Utility Purchases from) OF CCEBA AND NCSEA
Qualifying Facilities – 2021)

JOINT REPLY COMMENTS OF CCEBA AND NCSEA

Pursuant to the North Carolina Utilities Commission’s (“Commission”) orders¹ issued in this docket, the North Carolina Sustainable Energy Association (“NCSEA”) and the Carolinas Clean Energy Business Association (“CCEBA”) (NCSEA and CCEBA, collectively, “Joint Commenters”) hereby jointly reply to the initial comments of the Southern Alliance for Clean Energy (“SACE”) and the North Carolina – Public Staff (“Public Staff”).

I. INTRODUCTION

In the *Initial Statement of the Public Staff* (“PS Initial Comments”) and the *Initial Comments of the Southern Alliance for Clean Energy* (“SACE Initial Comments”), the Public Staff and SACE raise several issues which the Joint Commenters believe need further analysis. Specifically, the Joint Commenters will respond to the issue of the cost of carbon analysis, the need to examine and determine a pathway for third-party ancillary services, the future of “peaker” avoided cost methodology, and the correct way to determine the solar integration services charge (“SISC”). Joint Commenters note that NCSEA has filed a separate set of comments on the Public Staff’s proposal on the NEM-

¹ *Order Establishing Biennial Proceeding, Requiring Data, and Scheduling Public Hearing* (E-100, Sub 17, August 13, 2021); *Order Granting Joint Motion for Extension of Time* (E-100, Sub 175, February 7, 2022); *Order Granting Motion for Extension of Time of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC* (E-100, Sub 175, March 25, 2022).

specific solar profile avoided cost rate and that the Joint Commenters have come to an agreement with Duke Energy Carolinas, LLC (“DEC”) and Duke Energy Progress, LLC (“DEP”) (DEC and DEP, collectively, “Duke”) on the Notice of Commitment (“NOC”) form issue raised by the Joint Commenters in *Joint Initial Comments of CCEBA and NCSEA* (“Joint Initial Comments”). As such, neither the NEM specific solar profile avoided cost rate proposal nor the NOC issue are discussed in these reply comments.

II. COST OF CARBON

a. Public Staff

In the PS Initial Comments, the Public Staff discusses the inclusion of carbon costs in avoided energy rates.² Specifically, the Public Staff notes that under North Carolina SL 2021-165 (“H.B. 951”) the Commission is required to approve a Carbon Plan by December 31, 2022 and that the Carbon Plan will incorporate the carbon dioxide (“CO2”) emissions reduction required by H.B. 951.³ The Public Staff explains that although H.B. 951 does not impose a direct price on CO2 emissions, the statute imposes a limit on total CO2 emissions – a “mass cap” – which is directly related to a carbon price because “[i]n capacity expansion models, setting a mass cap will yield a model result with an implied price on carbon, which is indicative of the cost per ton of carbon abatement. Decreasing the amount of allowed emissions will increase the implied carbon price.”⁴ As a result, “[t]he increase

² PS Initial Comments at 6-11.

³ “The Utilities Commission shall take all reasonable steps to achieve a seventy percent (70%) reduction in emissions of carbon dioxide (CO2) emitted in the State from electric generating facilities owned or operated by electric public utilities from 2005 levels by the year 2030 and carbon neutrality by the year 2050.” H.B. 951, Part 1, Section 1.

⁴ PS Initial Comments at 8.

in total system costs associated with carbon regulation, whether implemented via a mass cap or carbon price, is the total cost of carbon abatement.”⁵

The Public Staff states however that “[n]ot all of the total cost of carbon abatement is avoidable in the context of calculating avoided costs” and that the Public Staff will “review the Carbon Plan and seek to make a determination in that docket of the appropriate avoidable cost of carbon, if any, that should be included in the calculation of avoided energy rates.”⁶ The Public Staff proposes that “once a Carbon Plan is approved and the avoidable cost of carbon, if any, is determined within those proceedings” Duke should be required to “use the approved Carbon Plan as the expansion portfolio and include the Commission-approved avoidable cost of carbon in its calculation of avoided energy and capacity rates, if appropriate.”⁷

b. SACE

In its initial comments SACE similarly discusses the application of a carbon price in the calculation of avoided cost rates based on the carbon-reduction mandate of H.B. 951.⁸ SACE states that these carbon reduction requirements “must guide Duke’s procurement beginning immediately” and the H.B. 951 “makes it possible to calculate a cost of carbon.”⁹ SACE proposes that rather than waiting until a final Carbon Plan has been approved, Duke should apply the carbon price used in its IRP to represent a reasonable proxy – \$5/ton in 2025 and escalated at a rate of \$5/ton per year thereafter, or in the alternative the RGGI allowance price.¹⁰ SACE states that it is inappropriate for Duke to

⁵ *Id.*

⁶ *Id.* at 9.

⁷ *Id.*

⁸ SACE Initial Comments at 33.

⁹ *Id.* at 39.

¹⁰ *Id.* at 34.

wait until subsequent proceedings to incorporate the carbon reduction mandates of H.B. 951 into the calculation of avoided cost rates and that Duke should include these costs immediately in the calculation of avoided cost rates.¹¹

c. Joint Commenters' Reply

Joint Commenters agree with the Public Staff and SACE that the carbon reduction mandates of H.B. 951 should be incorporated into the calculation of avoided cost rates. The peaker methodology is designed to determine a utility's marginal capacity and marginal energy cost. Avoided *energy* rates are produced by generation production cost modeling, and the Joint Commenters agree with the Public Staff that it would be appropriate for Duke to include the approved Carbon Plan in the production cost modeling used to determine avoided energy rates under the peaker method, although Joint Commenters acknowledge that the appropriate application of this modeling will require further analysis and discussion at that time. Joint Commenters also agree with SACE, however, that it would not be appropriate for Duke to delay the modeling of Carbon Plan compliance until 2030 when the 70% reduction mandate is required. Given that Duke will be required to take action to achieve the 70% reduction long before 2030, Duke's modeling should incorporate the incremental implied carbon price as such changes are made between 2022 and 2030.

Joint Commenters do not object in concept to Public Staff's proposal to further evaluate the appropriate application of the Carbon Plan in the calculation of avoided cost rates after the Carbon Plan has been approved. However, rather than waiting for Duke to incorporate the Carbon Plan in its 2023 avoided cost filings, Joint Commenters believe it would be appropriate for the parties to address these issues prior to the 2023 avoided cost

¹¹*Id.* at 36-37.

filings in either this proceeding, the Carbon Plan proceeding, or in some other docket as the Commission may deem appropriate.

III. ANCILLARY SERVICES

a. Public Staff

In its initial comments the Public Staff discusses the potential for QFs to provide ancillary services and appropriate compensation.¹² Public Staff states that it has had “numerous discussions with intervenors and Duke to discuss what, if any, ancillary services might be provided by QFS, and whether it is reasonable and cost effective for Duke to procure these services from QFs within the context of PURPA.” The Public Staff states that it “is not aware of any other regulated utility in the country outside of an RTO or [ISO], that procures ancillary services from a third party power supplier” but that “while PURPA’s mandatory purchase obligation does not extend to ancillary services, it also does not prohibit the procurement of ancillary services from QFs.”¹³

Public Staff states that “as Duke procures additional renewable generation to comply with its Carbon Plan, some ancillary services may be provided at least cost from inverter based resources (“IBRs”) such as solar PV, both with and without energy storage,” citing a 2017 NREL study demonstrating the ability of standalone solar to provide certain ancillary services.¹⁴ Public Staff asserts that a QF’s ability to provide ancillary services may require the generator to produce less energy because “some output is withheld to maintain the ability to ramp up, or is decreased following a ramp down signal” and “without knowing Duke’s ancillary service costs, it is difficult to determine the degree to which

¹² Public Staff Initial Comments at 17-19.

¹³ *Id.* at 17-18.

¹⁴ *Id.* at 18, fn. 27.

procuring ancillary services from QFs could provide savings to ratepayers.”¹⁵ As a result the Public Staff takes the position that “it is not appropriate at this time to compensate QFs for ancillary services beyond the increment provided to QFs that are able to avoid Duke’s SISC by smoothing their volatility,” but solicits feedback on the potential benefits of initiating a proceeding to investigate this matter and potentially establishing a pilot program to procure a small amount of ancillary services from IBRs.¹⁶

b. SACE

In its initial comments SACE addresses Duke’s arguments regarding the ability of QFs to provide ancillary services including the extent to which QFs are already compensated for ancillary services, Duke’s inability to control QFs in a way that can elicit ancillary services, that QFs would need to produce less than its maximum energy output to provide ancillary services, and that QFs increase rather than decrease the need for ancillary services.¹⁷

SACE recommends that the Commission evaluate opportunities for QFs to receive compensation for ancillary services they can provide by either “requiring Duke to commission an independent and stakeholder-informed study of the potential for QFs to provide ancillary services and the appropriate compensation, or by establishing a pilot program for ancillary services, subject to clear guidelines and transparency requirements.”¹⁸

¹⁵ *Id.* at 18.

¹⁶ *Id.*

¹⁷ SACE Initial Comments at 25-31.

¹⁸ *Id.* at 31.

c. Joint Commenters' Reply

Joint Commenters agree with both the Public Staff and SACE that it is appropriate for the Commission to evaluate the extent to which solar facilities can provide ancillary services and the appropriate compensation for the provision of such services. Joint Commenters agree with the Public Staff that it is difficult to determine the appropriate value of ancillary services provided by a third party “without knowing Duke’s ancillary service costs”, and Joint Commenters reiterate the point made in their initial comments that Duke should be required to provide detailed information on how it procures and compensates those services currently.

As discussed in the Joint Initial Comments, it would be appropriate for the Commission to establish a stakeholder process in which these technical, contractual, and legal questions are further evaluated. Given the significant Carbon Plan implementation process which the Commission must approve by December 31, 2022, Joint Commenters would support the initiation of such ancillary services stakeholder process in early 2023 following the approval of the Carbon Plan with the intent that such stakeholder process could inform the utilities’ 2023 avoided cost filings.

Joint Commenters also believe that a pilot program as suggested by the Public Staff and SACE could provide valuable information regarding the provision of ancillary services, but that any pilot program should be in addition to, and not in lieu of, a stakeholder process and/or study to establish a mechanism for the provision of and compensation for ancillary services from solar generators.

IV. PEAKER METHODOLOGY

a. Public Staff

The Public Staff states that

In past biennial proceedings, the Commission has consistently approved the component or ‘peaker’ methodology for the Utilities. Under this methodology, avoided capacity costs are estimated using the capital costs of the lowest-cost capacity option available to the utility, typically a peaking unit (e.g., a CT). Avoided energy costs are estimated using a cost simulation model to analyze marginal system running costs with and without a block of QF power.¹⁹

The Public Staff then states that, while it supports continuing use of the peaker method “at this time,” it recognizes that with the continuing additions of renewable resources to the grid to accomplish decarbonization, the peaker method based on CT resources may become less appropriate, and “there may come a time when the peaker methodology is not appropriate for use in North Carolina.”²⁰ The Public Staff further recommends that “[a]t some point . . . it may be appropriate to look to other resources to determine the avoided cost of capacity or adopt a new methodology which reflects the changing energy landscape.”²¹

b. SACE

In its initial comments, which were generally supported by Joint Commenters, SACE recommends “in the very near term” that Duke and the Commission consider the use of aeroderivative gas turbines as the resource to be used for the peaker method. SACE notes that “the flexibility and other operating characteristics of an aeroderivative gas turbine would better match the needs of the changing grid, while also providing the same

¹⁹ Public Staff Initial Comments at 24.

²⁰ *Id.*

²¹ *Id.* at 25.

basic generating capacity services as a CT.”²² In the longer term, as North Carolina moves to comply with the requirements of H.B. 951, SACE recommends revisiting the peaker method entirely, stating “in a carbon-constrained planning context, it is unclear whether the peaker method is capable of capturing [the effects of massive additions of zero-marginal-cost renewable resources].”²³

c. *Joint Commenters’ Reply*

As in their Initial Comments, Joint Commenters join SACE and the Public Staff in encouraging the Commission to carefully study the role of the peaker method in the Carbon Plan and future Avoided Cost proceedings. As more and more renewable technologies integrate into the system and reduce the applicability of the currently utilized CT peaker method, particularly as it applies to new QFs, new methodologies and resources should be carefully considered and, as necessary, edited to reflect the reality of more valuable, carbon free energy. The Joint Commenters also support the use of the aeroderivative gas turbine as the appropriate resource.

V. **SISC METHODOLOGY**

a. *Public Staff*

In reviewing the Solar Integration Services Charge proposed by Duke, the Public Staff first discusses issues identified in the Sub 158 Order and addressed by the Technical Review Committee (“TRC”). The Public Staff focuses on the inclusion of a SISC calculated under the Joint Dispatch Agreement between DEP and DEC, allowing them to share load following reserves at least cost in the event of intra-hour net load violations.²⁴

²² SACE Initial Comments at 4.

²³ *Id.*

²⁴ *PS Initial Comments* at 22.

The Public Staff describes as an “improvement” the 2021 Astrapé study’s focus on “returning the system to pre-solar levels of reliability, rather than on incorporating NERC reliability standards into the model.”²⁵ The Public Staff also notes and approves that Astrapé has modeled the need for load following reserves only “when solar volatility is a factor” rather than “in all hours of the day” as the 2018 study did.²⁶

The Public Staff later observes that the SISC proposed by Duke Energy is lower than those approved in the Sub 158 and Sub 167 proceedings and contends that “the reduction in the SISC is largely driven by methodology changes.”²⁷ The Public Staff notes that among these changes is the inclusion of an ability to share load-following reserves across the DEC/DEP divide, rather than the islanded process previously used. Comparing the current study to the prior islanded process, the Public Staff states that “DEC’s SISC would have increased by 30% relative to the Sub 167 SISC, and DEP’s would have increased by 1%.”²⁸ On this basis, the Public Staff finds that Duke Energy “satisfied the requirements of the Sub 158 Order during the TRC process and recommends that DEC’s and DEP’s proposed SISCs be approved and the TRC Report be accepted.”²⁹

b. SACE

SACE provides an in-depth critique of Duke’s methodology for determining the Solar Integration Services Charge (“SISC”), including Exhibit A to SACE Initial Comments, the 22 February 2022 report of Brendan Kirby, P.E.. In his report, Kirby acknowledges that the 2021 SISC Study took into account some suggestions from the TRC

²⁵ *Id.*

²⁶ *Id.*

²⁷ *Id.* at 45.

²⁸ *Id.*

²⁹ *Id.*

and is thus an improvement over the 2018 Duke Energy Solar Ancillary Service Study.³⁰ Nevertheless, because Duke Energy did not adjust its methodology in certain key areas, Kirby's conclusion is that "Duke Energy's proposed solar integration charge is based on an analysis methodology that does not represent how the DEC and DEP power systems are physically operated or the reliability requirements imposed by NERC mandatory reliability standards" and should thus be redone.³¹ In particular, Kirby identifies several "major errors":

- (1) Solar incremental load following reserve requirements were imposed during hours when there is no solar generation.
- (2) The DEC DEP Combined Case analysis failed to account for the reduction in solar load-following reserves that are required under Joint Dispatch Agreement (JDA) operations. Reserve requirements are likely overstated by 10% (Tranche 1) to 20% (Tranche 2).
- (3) The Flexibility Violations reliability metric is unrelated to mandatory NERC reliability requirements and is inappropriate for this analysis. Reserve requirements are significantly overstated.³²

Kirby's report details the bases for these critiques, and notes that Duke Energy received these critiques from the TRC but did not adjust the SISC methodology accordingly. He thus concludes that the proposed SISC should be rejected because "the solar integration costs developed in the SISC Study do not reflect actual increased reserve requirements or actual impacts on the operating costs that the Companies will likely experience as a result of increased solar generation."³³

c. Joint Commenters Reply

Joint Commenters support the SACE Initial Comments and the detailed critique provided by Mr. Kirby. While the Public Staff is right to support Duke for making certain

³⁰ SACE Initial Comments, Ex. A, at 1.

³¹ *Id.*

³² *Id.*

³³ *Id.* at 16.

adjustments to the methodology, these adjustments may only amplify the effect of the remaining errors. Joint Commenters join SACE in requesting the Commission to order Duke to account for the errors pointed out by Mr. Kirby and recalculate the SISC for both DEP and DEC.

VI. CONCLUSION

For the reasons set forth herein, the Joint Commenters request the Commission granted such relief as requested herein, relief as sought in the Joint Initial Comments, and any further relief the Commission deems just and proper.

Respectfully submitted this the 1st day of April, 2022.

/s/ Benjamin W. Smith
Benjamin W. Smith
N.C. State Bar No. 48344
4800 Six Forks Road
Suite 300
Raleigh, NC 27609
(919) 832-7601 Ext. 111
ben@energync.org

Counsel for NCSEA

John D. Burns
N.C. State Bar No. 24152
811 Ninth Street, Suite 120-158
Durham, NC 27705
919-306-6906
Counsel@CarolinasCEBA.com

Counsel for CCEBA

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This the 1st day of April, 2022.

/s/ Benjamin W. Smith
Benjamin W. Smith
Associate General Counsel
NCSEA
N.C. State Bar No. 48344
4800 Six Forks Road
Suite 300
Raleigh, NC 27609
(919) 832-7601 Ext. 111
ben@energync.org