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November 18, 2019

VIA ELECTRONIC FILING

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

**Re: Duke Energy Carolinas, LLC's and Duke Energy Progress, LLC's
Requirements for Avoidance of SISC
Docket No. E-100, Sub 158**

Dear Ms. Campbell:

Pursuant to Ordering Paragraph four (4) of the North Carolina Utilities Commission's *Supplemental Notice of Decision* issued in the above-referenced docket on October 17, 2019, Duke Energy Carolinas, LLC ("DEC") and Duke Energy Progress, LLC ("DEP," and together with DEC, the "Companies") hereby respectfully submit the proposed guidelines for Qualifying Facilities selling under Schedule PP (DEC) and Schedule PP-4 (DEP) to become "controlled solar generators" and thereby avoid application of the Solar Integration Services Charge (the "Requirements for Avoidance of SISC"). The Companies note that the Requirements for Avoidance of SISC contained herein are identical to the Requirements for Avoidance of SISC contained in Exhibit 11 to the Companies' *Pro-Forma* Competitive Procurement of Renewable Energy Program Tranche 2 Power Purchase Agreement filed on October 15, 2019 in Docket Nos. E-2, Sub 1159 and E-7, Sub 1156.

Please do not hesitate to contact me if you have any questions. Thank you for your assistance in this matter.

Sincerely,

Kendrick C. Fentress

Enclosures

cc: Parties of Record

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**Docket No. E-100, Sub 158
Requirements for Avoidance of SISC**

Process for Calculating SISC Reduction

If the Seller intends to utilize an Energy Storage device, installed in accordance with the requirements of this Agreement, or other means reasonably acceptable to Duke Energy in writing, to reduce solar volatility, they must provide notification to the Contract Administrator at DERContracts@duke-energy.com. In all cases, information provided by Seller to support validation of Seller's efforts to mitigate the Solar Integration Services Charge must reasonably demonstrate, to Buyer's reasonable satisfaction, that the reduction in variability was actually achieved.

The Seller shall be required to collect 5-minute solar output data for the Facility, for purposes of calculating the Solar Site Volatility Metric (as defined below), using their Facility Plant Controller or other means proposed by Seller and reasonably accepted by Buyer. The Buyer will provide an excel template with the calculations (see calculation description under "Solar Site Volatility Metric" below) allowing the Seller to enter 5-minute solar output from the Seller's metering facilities. In addition, in order to qualify for the SISC exemption, a revenue quality meter capable of recording five-minute (5-minute) usage data ("SISC Meter") shall be installed at the Facility by Duke Energy at Seller's expense. The SISC shall be owned by Duke Energy but shall be paid for by the Seller under the Extra Facilities plan for interconnection facilities.

Each month, Seller will enter 5-minute data into the spreadsheet template to calculate the monthly solar volatility. Within ten (10) business days of month end, Seller will attest to Buyer the degree to which it has achieved the target volatility reduction. Buyer will then determine the amount of the SISC charge reduction based on the Volatility Thresholds specified below calculated in accordance with the Solar Volatility Metric as described below:

- Volatility less than or equal to 12%: Partial reduction in SISC of 50%
- Volatility less than or equal to 6%: Full reduction in SISC of 100%
- Volatility greater than 12% shall receive at zero-percent (0%) reduction in SISC,

Should the Seller fail to deliver the attestation within the required time it will be considered as noncompliance with the volatility requirement and Buyer will be charged the full SIS on the monthly invoice. The Parties may mutually agree to adjust the timing of monthly attestation and billing adjustments as provided above.

Buyer will retain audit rights to review the 5-minute usage data and verify that the monthly attestations are correct. Usage data provided by the SISC Meter will also be reviewed as an independent verification of compliance and in cases of dispute shall be the determinant in assessing the appropriate charge. Should Buyer determine that Seller received a partial or full reduction of the SISC in error, or find that Seller should have received a reduction that was not included on the invoice, Buyer will make an appropriate adjustment on a future invoice.

In the event that the SISC Meter fails to register the generation data, the calculation will exclude the entire day containing the missing data from the calculation, as long as a minimum of twenty (20) days is

available for the month. Should the meter provide less than the required data for the month, then for purposes of preparing any affected invoice, the Parties shall negotiate in good faith to determine an estimate of the 5-minute Energy delivered during the relevant Billing period.

Solar Site Volatility Metric

The solar site net output volatility metric (the “Solar Volatility Metric”) shall be calculated as the average of the Facility’s volatility computed for each daylight hour for each month divided by the average of the Facility’s generation over each daylight hour and month. The calculation steps are as follows:

1. Calculate 10-minute change in the Facility’s net AC generation at 5-minute intervals. For example, calculate changes between 8:00 and 8:10, 8:05 and 8:15, 8:10 and 8:20 and so on.
2. For each daylight hour, for each month, calculate
 - a. The standard deviation of 10-minute changes within the hour using all days of the month.
 - b. The average power output from the Facility within the hour over all days of that month.
3. Average over all daylight hour and month groups to calculate
 - a. The average daylight volatility in MW as the mean of the standard deviations calculated in step 2.a
 - b. The average daylight generation in MW as the mean of the average power output calculated in step 2.b
4. Calculate the volatility score as a ratio of the average daylight volatility to the average daylight power output calculated in steps 3a and 3b.

The Solar Volatility Metric captures the volatility caused by the Facility’s generation output fluctuating from one timestep to the next beyond what is expected for each daylight hour in each month. A Facility with higher volatility scores show larger unpredictable deviations from the average profile. Larger fluctuations in solar output lead to higher regulating reserves that need to be served by other flexible dispatchable assets on the system leading to higher solar integration costs. While different hours of the year may have higher or lower integration costs, a flat averaging of all daylight month/hour combinations was chosen to simplify the calculation. In the calculation, 10-minute changes are used because assets that can serve regulating reserves on the Duke system need to be flexible enough to ramp their generation up or down within a 10-minute timeframe.

The daylight hours for the calculation are selected from full hours of non-zero solar generation measured on the System for each month for a one-year period. The first and last hours in each month are discarded to eliminate partial hours and periods of low generation around sunrise and sunset. The resulting definition of daylight hours in Eastern Standard Time (non-DST adjusted) is as follows:

Daylight Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
From HE (Inclusive)	9	9	8	8	7	7	7	8	8	8	9	9
To HE (Inclusive)	17	17	18	18	18	18	18	18	18	17	16	16

CERTIFICATE OF SERVICE

I certify that a copy of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC's Requirements for Avoidance of SISC, in Docket No. E-100, Sub 158, has been served on all parties of record either by electronic mail, hand delivery or by depositing a copy in the United States mail, postage prepaid.

This the 18th day of November, 2019.



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