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October 29, 2019

VIA ELECTRONIC FILING

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

RE: Reply Comments of Duke Energy Progress, LLC and Duke Energy Carolinas, LLC on CPRE SISC
Docket Nos. E-2, Sub 1159 and E-7, Sub 1156

Dear Ms. Campbell:

Enclosed for filing in the above-referenced dockets, please find Duke Energy Progress, LLC's and Duke Energy Carolinas, LLC's Reply Comments on CPRE SISC.

If you have any questions, please do not hesitate to contact me. Thank you for your assistance with this matter.

Sincerely,

Jack E. Jirak

Enclosure

cc: Parties of Record

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-2, SUB 1159
DOCKET NO. E-7, SUB 1156

In the Matter of Petition for Approval of Competitive Procurement of Renewable Energy Program to Implement N.C. Gen. Stat. § 62-110.8	))))	**REPLY COMMENTS OF DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC**

As authorized in the North Carolina Utilities Commission's ("Commission") October 7, 2019, *Order Requesting Comments*, Duke Energy Carolinas, LLC's ("DEC") and Duke Energy Progress, LLC's ("DEP," and together with DEC, the "Companies" or "Duke") submit the following Reply Comments for the Commission's consideration and in response to certain issues raised in the initial comments of the North Carolina Clean Energy Business Alliance and North Carolina Sustainable Energy Association ("NCCEBA/NCSEA"), First Solar, Inc. ("First Solar"), the Public Staff-North Carolina Utilities Commission ("Public Staff"), as well as the Competitive Procurement of Renewable Energy ("CPRE") Program Independent Administrator, Accion Group, LLC (the "IA").

In summary, consistent with the Companies' Initial Comments, Duke requests the Commission (i) adopt Duke's and the Public Staff's recommended approach of implementing a fixed Solar Integration Services Charge ("SISC") for CPRE Tranche 2 of $2.39/MWh in DEP and $1.10/MWh in DEC; (ii) maintain the SISC as a separate charge to be considered by CPRE market participants ("Market Participants") in developing their bids versus reducing the CPRE Tranche 2 avoided cost cap established under N.C. Gen. Stat. § 62-110.8(b) ("CPRE Tranche 2 Avoided Cost Cap"); and (iii) accept Duke's proposed Exhibit 11 to the CPRE Tranche 2 power purchase agreement ("PPA") (the

"CPRE SISC Avoidance Protocols") as a reasonable and appropriate mechanism to implement the "controlled solar generator" option within CPRE Tranche 2 consistent with the Commission's *Supplemental Notice of Decision* issued in Docket No. E-100, Sub 158 ("Sub 158 proceeding") for solar generators contracting to sell power under North Carolina's implementation of the Public Utility Regulatory Policies Act of 1978 ("PURPA") pursuant to N.C. Gen. Stat. § 62-156.

REPLY COMMENTS

I. Duke's and Public Staff's recommended approach of implementing a fixed SISC for CPRE Tranche 2 is reasonable, supported by the IA, addresses concerns raised by NCCEBA/NCSEA and First Solar, and should be approved.

Duke's and the Public Staff's Initial Comments recommend the Commission authorize the SISC to be applied in CPRE Tranche 2 as a fixed charge for the duration of the 20-year CPRE term. The SISC applicable to CPRE bidders in DEP would be $2.39/MWh, while the SISC applicable to CPRE bidders in DEC would be $1.10/MWh.[1] Winning bidders will be responsible for paying the SISC unless the CPRE solar generator is operated as a "controlled solar generator" that materially reduces or eliminate the intra-hour volatility of its output. Duke concurs with the Public Staff that this approach is the "most straightforward and administratively efficient way to incorporate the ancillary services cost of adding incremental solar through the CPRE Program."[2]

Utilizing the proposed fixed SISC addresses concerns raised by NCCEBA/NCSEA regarding a "variable" and uncapped SISC mechanism.[3] Market Participants will have

[1] Duke Initial Comments, at 10-11; Public Staff Initial Comments, at 9.
[2] Public Staff Initial Comments, at 4.
[3] NCCEBA/NCSEA Comments at 11, 15 ("If the SISC is implemented in CPRE Tranche 2 and thereafter, the SISC should be a fixed charge, rather than a variable charge with a cap . . .").

certainty as to the SISC, and may evaluate whether to recognize the SISC in determining their bid price or plan to partially or fully avoid the SISC by reducing the intra-hour volatility of the solar generator's output. Duke's recommendation to fix the SISC, albeit for a significantly longer contract term than negotiated PURPA PPAs, also aligns with the Commission's recent *Supplemental Notice of Decision*.

Duke's and Public Staff's proposed approach also fully achieves NCCEBA/NCSEA's request for the Commission to implement the SISC in a "predictable, sensical, and forward-thinking" manner.[4] While Duke does not necessarily agree with NCCEBA/NCSEA that this approach of fixing the SISC at the currently known and quantified level of solar integration costs for the full 20-year duration of the CPRE PPA will "lessen the impact on ratepayers via passthrough of the charge," both Duke's and the Public Staff's initial comments concur that this approach is reasonable in light of the certainty provided to Market Participants and other considerations.[5]

While deferring to the Commission regarding whether the SISC should apply to CPRE resources, the IA also supports application of a fixed SISC as a separate charge over the 20-year CPRE PPA term. The IA explains that assessing the SISC as a separate, fixed charge will mitigate complexity in the evaluation process that would arise from future unknown biennial adjustments to the integration costs assigned to solar generators bidding into CPRE.[6]

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[4] NCCEBA/NCSEA Initial Comments, at 15.

[5] Public Staff Initial Comments, at 9 (explaining that "[w]hile this approach may not fully capture changes in the integration costs over the 20-year PPA that result from higher solar penetration rates, it would assign the portion of these costs that is currently known and measurable to the bidders, as well as provide a clear price signal to bidders to incentivize them to reduce the volatility of their generation"); Duke Initial Comments, at 11 (recognizing that "[a]pplying an average SISC fixed over the 20-year term of CPRE PPAs does place risk on the Companies' customers of future increases in solar integration costs as the Companies' ancillary services costs over the duration of the CPRE PPA increase . . .").

[6] Accion Initial Comments, at 2.

Based upon the foregoing and as further supported in these Reply Comments, Duke requests the Commission approve implementation of the SISC based upon the approach supported by Duke and the Public Staff in Initial Comments.

II. Applying the SISC as a decrement to avoided energy cost would increase the complexity of the Tranche 2 CPRE bid evaluation process and would not provide the appropriate price signals and structure to incent the reduction of intra-hour volatility.

NCCEBA/NCSEA identify that the Commission's *Supplemental Notice of Decision* stated that Duke's approach in the Sub 158 proceeding of designating the SISC as a separate cost or charge should not be approved and, instead, directed Duke to "account for increased ancillary services costs when calculating each utility's avoided energy costs."[7] Based upon this directive, NCCEBA/NCSEA assert that if the SISC is applied to CPRE Tranche 2, it should be applied as a reduction to the CPRE Tranche 2 Avoided Cost Cap.[8]

Duke's and Public Staff's Initial Comments support applying the fixed-cost SISC as a separate charge and oppose applying the SISC as a reduction to the CPRE Tranche 2 Avoided Cost Cap.[9] These parties—along with the IA—support this approach for two

[7] NCCEBA/NCSEA Initial Comments, at 9, *citing Supplemental Notice of Decision*, at 2.

[8] NCCEBA/NCSEA also assert that market participants should not be required to both pay a SISC and also be evaluated under a CPRE Tranche 2 Avoided Cost Cap that has been lowered by the SISC. No party to this proceeding has ever asserted that the SISC should both reduce the CPRE Tranche 2 Avoided Cost Cap and then also be applied as a charge. For the sake of clarity, Duke supports only applying the SISC as a charge and not also reducing the CPRE Tranche 2 Avoided Cost Cap.
Section III.b of NCCEBA/NCSEA's comments attempt to rely upon a recent 9th Circuit Court of Appeals decision, *Californians for Renewable Energy v. Cal. PUC*, 922 F.3d 929 (2019), to argue that applying the SISC as an avoided cost decrement is inappropriate under the circumstances of the CPRE Program. This creative legal argument should be rejected, however, as the CPRE Program is not a state-mandated procurement of utility-scale solar (all new renewable energy facility technologies are eligible under N.C. Gen. Stat. § 62-110.8(a)) and because the objective of the CPRE Program is to procure new renewable energy capacity at or below avoided costs based upon the methodology most recently approved by the Commission.

[9] Duke Initial Comments, at 11-13; Public Staff Initial Comments, at 6. Duke is also preparing its compliance filing in accordance with the Commission's *Supplemental Notice of Decision* in the Sub 158 proceeding, including evaluating how to implement the Commission's directive to "account for increased ancillary services costs when calculating each utility's avoided energy costs."

primary reasons.

First, this approach significantly reduces the complexity of the initial bid evaluation process. The IA asserts that it would present a "significant challenge if the [market participants] were permitted to elect to be evaluated without inclusion of SISC."[10] To accomplish this alternative approach to bid evaluation, the IA explains that Duke will be required to develop a second, higher CPRE Tranche 2 Avoided Cost Cap for solar-only projects that indicate an intent to reduce their intra-hour volatility, and then the IA would need to assess "whether the Project would have equipment that could reduce or eliminate reliance on the ancillary services for a 20-year period."[11] The IA would need to exercise an immense amount of subjective, technical judgments regarding the ability of the generator to actually reduce intra-hour volatility over a 20-year period (*e.g.*, assess whether the battery appropriately sized, will the operation of the battery require mid-term replacement, *etc.*). In addition, Market Participants would also be limited to proposing to mitigate the increased solar volatility and ancillary services based upon technology available at the time proposals are submitted into CPRE Tranche 2 and would effectively be prevented from leveraging potential future technology that might be developed over the next 20 years to avoid the increased solar volatility.[12] This very concern (*i.e.*, unnecessarily constraining the ability of CPRE solar generators to employ future technologies to reduce intra-hour volatility) was expressed by numerous Market Participants during the CPRE stakeholder process and led to changes to the CPRE PPA.

It is also not clear how the IA would compare one bid that "committed" to reduce

[10] Accion Initial Comments, at 2.
[11] *Id.*
[12] *Id.*

intra-hour volatility against another bid that did not commit to reduce intra-hour volatility. For instance, if DEP Bidder A submitted a $40 bid price but "committed" to reduce intra-hour volatility and Bidder B submitted a $39 bid price but did not commit to reduce intra-hour volatility, it is not clear which bid should be selected. Bidder A is more cost effective "on paper" because of the DEP SISC of $2.39/MWh, but that assumes that Bidder A is successful at eliminating intra-hour volatility for every hour of every year of a twenty-year term. In contrast, Duke's and the Public Staff's proposed approach eliminates this complexity and allows bid prices to be compared on an "apples to apples" basis, while allowing Market Participants that plan to reduce their intra-hour volatility to offer lower bid prices.

Furthermore, under NCCEBA/NCSEA's proposed approach (*i.e.*, Market Participants that commit to reduce intra-hour volatility are evaluated under a higher CPRE Tranche 2 Avoided Cost Cap), there would need to be a contractual mechanism to ensure that, if selected, such Market Participants actually do reduce intra-hour volatility. And if there is such a contractual mechanism, then there would also need to be a monetary penalty for failing to reduce intra-hour volatility, which penalty would be equal to the SISC. In other words, a simple commitment to reduce intra-hour volatility must be paired with a contractual mechanism to ensure compliance—which is precisely what is achieved by applying the SISC as a separate charge paired with Duke's proposed CPRE SISC Avoidance Protocols (discussed in more detail below).

Duke provided a similar perspective in Initial Comments,[13] and continues to believe that requiring the IA to assess whether a solar generator can mitigate intra-hour volatility

[13] Duke Initial Comments, at 13.

over the next 20 years introduces significant complexity and uncertainty into the bid evaluation process. The Public Staff also concurred with Duke's comments on this issue, explaining that "because the SISC will be paid by all uncontrolled solar generators (including utility self-build projects) as a decrement to their bid price, it is not necessary for the IA to incorporate the SISC into its evaluation process."[14] Based upon the Initial Comments of the Public Staff, the IA, and Duke, the Commission should authorize the use of a CPRE Tranche 2 Avoided Cost Cap without a reduction for the SISC and then apply the SISC to winning CPRE bidders as a separate charge, subject to reduction or elimination based on the generator's actual operations as determined in accordance with the CPRE SISC Avoidance Protocols.

The second important reason to maintain the SISC as a separate charge is that this approach allows Market Participants to apply business judgement today to determine whether to fully recognize the SISC in making their bid into Tranche 2 and provides CPRE solar generator owners the ongoing optionality to reduce intra-hour volatility and thereby reduce or avoid the SISC in accordance with the terms of the CPRE SISC Avoidance Protocols. The Companies' Initial Comments explained that because Duke's CPRE SISC Avoidance Protocols enable a solar generator owner to avoid the SISC based on the facility's actual, "as measured" reduction in volatility, application of the SISC to all CPRE resources as a potentially-avoidable charge allows the generator's overall compensation to align with the actual performance of the solar generator.[15] The Public Staff agreed, explaining that establishing the SISC as a charge that is avoidable based upon actual performance "treats all bidders equitably . . . [and] shifts the risk to bidders to meet the

[14] Public Staff Initial Comments, at 6.
[15] Duke Initial Comments, at 13.

volatility reduction targets, as well as provides bidders with a price signal to incentivize the development of projects that have reduced volatility."[16]

First Solar argues that "if Duke is allowed to impose the SISC, CPRE project developers will incorporate the additional cost of the SISC into their CPRE Program bids, resulting in higher bid prices for the renewable facilities that the General Assembly intended Duke to procure."[17] This is not correct for the reasons stated by Duke and the Public Staff's initial comments.[18] Establishing the SISC as a fixed charge provides certainty to CPRE bidders and allows each Market Participant to make a determination whether it will be able to reduce intra-hour volatility and thereby avoid the SISC under the CPRE SISC Avoidance Protocols. If the Market Participant determines that it can reduce intra-hour volatility, then its bid price will presumably be lower to reflect the fact that it will not have to pay the SISC. Once again, a significant attribute of the Companies' CPRE SISC Avoidance Protocols is its simplicity—winning CPRE Market Participants can avoid the charge based on actual, real-world results.

Duke also does not see any material advantages to extending the approach ordered in the *Supplemental Notice of Decision* for legacy PURPA facilities to solar generators bidding into CPRE Tranche 2. As explained by both Duke and Public Staff, measuring the solar volatility caused by the generator and charging the generator (or not) based upon the generator's actual intra-hour volatility is a significantly more simplified and straightforward approach. Accordingly, Duke requests that the Commission accept Duke's proposed CPRE Tranche 2 SISC and controlled solar generator framework, with the SISC

[16] Public Staff Initial Comments, at 6.
[17] First Solar Initial Comments, at 6.
[18] Duke Initial Comments, at 11; Public Staff Initial Comments, at 9.

being maintained as a separate charge outside of the bid evaluation process and then allowing successful bidders to operate as controlled solar generators by reducing their actual intra-hour volatility and thereby avoiding or reducing the SISC in accordance with the CPRE SISC Avoidance Protocols.

III. NCCEBA/NCSEA's and First Solar's argument that all solar generators procured through the CPRE Program are controlled solar generators and should therefore be exempted from the SISC is incorrect and should be rejected.

NCCEBA/NCSEA and First Solar argue that the control and dispatch rights contemplated under the CPRE Statute[19] and included in the CPRE PPA make all solar generators procured under the CPRE Program "controlled" generators and, therefore, all CPRE generators should be exempt from being charged the SISC or, in the alternative, should be evaluated under a CPRE Tranche 2 Avoided Cost Cap that has not been reduced by the SISC. NCCEBA/NCSEA, for example, allege that "the fact that the CPRE facilities are controllable and dispatchable by Duke is sufficient control to allow for an ancillary services cost offset consistent with the concept outlined in Paragraphs 9 and 10 of the *Supplemental Notice of Decision*." [20] Similarly, First Solar argues that "CPRE Program facilities should be deemed 'controlled solar generators' and therefore be exempt from the SISC."[21]

Contrary to these assertions, the curtailment and dispatch rights permitted under HB589 and included in the CPRE PPA are neither designed nor sufficient to reduce the inherent intra-hour volatility of solar resources—whether owned by a third-party or Duke.

[19] N.C. Gen. Stat. § 62-110.8(b).
[20] NCCEBA/NCSEA Initial Comments, at 10.
[21] First Solar Initial Comments, at 5.

As accurately explained by the Public Staff, the CPRE 5%/10% economic dispatch rights contracted for in the DEC and DEP CPRE PPAs, respectively, are "designed to allow the utilities to economically dispatch the projects, [but] they do not provide the utilities with sufficient real-time control of the resources (including their own intermittent generation) to offset the additional ancillary service costs resulting from the volatility of intermittent resources."[22]

NCCEBA/NCSEA's statement that there is "an apparent disconnect between what the CPRE Statute allows for in terms of control and dispatch and what Duke and the Public Staff seek to cure with the SISC" is, in fact, correct.[23] As the Public Staff further explains, the additional operational control and flexibility provided in the 5%/10% economic dispatch rights provisions of the CPRE PPA "do not capture the additional ancillary services costs incurred by the utilities as a result of adding additional intermittent generation to their system, whether through CPRE or other procurements."[24] This is because the SISC and the CPRE PPA's economic dispatch rights are solving for different costs and system operational needs.

Duke witness Glen Snider and Public Staff witness Jeff Thomas recently testified in the Sub 158 Proceeding[25] that the SISC is designed to capture the increased ancillary service costs now being imposed on the DEC and DEP systems due to the intra-hour

[22] Public Staff Initial Comments, at 10.
[23] NCCEBA/NCSEA Initial Comments, at 13.
[24] *Id*.
[25] Direct Testimony of Glen A. Snider, at 34, Docket No. E-100 Sub 158 (filed May 21, 2019) (explaining "the Companies have determined that the costs avoided by growing levels of solar QFs that provide intermittent, non-dispatchable power is markedly different from integrating firm power and that it is appropriate to recognize integration costs in valuing the energy and capacity provided by QFs eligible for Schedule PP"). *See* Public Staff Initial Comments, at 2 *citing* Direct Testimony of Jeff Thomas, at 4, Docket No. E-100 Sub 158 (filed June 21, 2019)(explaining that "The Public Staff agrees that integrating intermittent, non-dispatchable energy sources cause system operators to make decisions and deploy the fleet of Utility-owned generation assets in ways that can increase costs to ratepayers").

volatility of solar resources experienced during each daylight hour of the year when solar is generating. In contrast, the economic dispatch rights contracted for under the Tranche 2 PPA will provide Duke system operators tools to more cost-effectively and reliably manage challenges now being experienced on the DEP and DEC systems such as dispatching down solar generators to reduce operationally excess energy, dispatching down solar to enable load following fleet generators to remain online at their lowest reliable operating limit, or managing the increasingly steep ramping requirements being imposed on load following dispatchable generating units to respond to load net of solar generation. Simply put, the operational impacts being addressed through the CPRE economic dispatch provisions are distinct from the increased ancillary services costs to manage the increased intra-hour volatility under the SISC, and NCCEBA/NCSEA's efforts to equate the two should be rejected.

Similarly, NCCEBA/NCSEA's attempt to buttress this argument by characterizing CPRE solar generators as "wholly different" from PURPA solar generators due to the economic dispatch rights provided for under the CPRE Program is also inaccurate and should be rejected.[26] The more expansive dispatch rights under CPRE do not change the fundamental reality that solar generators create intra-hour volatility. In light of this inherent intra-hour volatility, the only way that dispatch rights alone could even theoretically be used to reduce intra-hour volatility would be to substantially reduce the output of the facility below the minimum output levels that would occur as a result of intermittent cloud cover. In that scenario, intra-hour volatility would be reduced to negligible levels due to the output being so substantially reduced. However, operation in

[26] NCCEBA/NCSEA Initial Comments, at 13.

that manner would be economically inefficient and would quickly consume the 5%/10% curtailment rights provided for in the CPRE PPA.

Both Duke-owned and third-party owned solar generators are imposing increased ancillary services costs caused by the real-time volatility of their output and the economic and operational dispatch rights provided in the CPRE Program are not sufficient to address this issue. The SISC is properly designed to assign and recover these costs from all future solar generators installed on the Duke systems causing these integration costs. As Duke explained in initial comments, these increased ancillary services costs should be recognized and assigned to both Duke-owned and third-party solar generators procured through CPRE.[27] Thus, absent a solar generator operating its facility to smooth its output in a manner that mitigates or eliminates the increased integration costs on the system (as shown in Section V below), all solar generators bidding into CPRE Tranche 2 should be subject to the SISC.

IV. There is no basis to modify the Companies' approach to modeling the integration costs of CPRE solar generators to reflect "CPRE-focused inputs."

NCCEBA/NCSEA also argue that "if an additional ancillary services cost charge is to be incurred the underlying model should be redone with proper CPRE-focused inputs which include the control and dispatchability allowable by statute which should offset most if not all of the ancillary services costs."[28] The Companies' understanding is that NCCEBA/NCSEA's reference to the "underlying model" is the Astrape Solar Ancillary Services Study model used to determine the incremental ancillary services cost of integrating additional solar generation. NCCEBA/NCSEA's position appears to be that

[27] Duke Initial Comments, at 13.
[28] NCCEBA/NCSEA Initial Comments, at 13.

when the Astrape model takes into account the dispatch rights afforded to the Companies under CPRE, it would show a reduction in ancillary services costs. However, as described above, the CPRE dispatch rights are neither intended nor able to reduce intra-hour volatility and would not "offset" increased ancillary services costs. Therefore, the Commission should reject NCCEBA/NCSEA's apparent argument that, in light of the CPRE dispatch rights, the Astrape model be rerun.

V. The CPRE SISC Avoidance Protocols meets NCCEBA/NCSEA's and First Solar's objective of allowing solar generators to solve their own intermittency and volatility impacts in order to avoid the SISC.

NCCEBA/NCSEA state that "a market participant should be able to mitigate, reduce, or eliminate the SISC in the CPRE Program through the incorporation of technologies that offset the need for utility ancillary service costs."[29] First Solar similarly argues that Duke's proposed imposition of the SISC is "ignoring the capabilities inherent in solar resources" to smooth solar variability and that "CPRE Program facilities can solve for intermittency challenges more cost-effectively and efficiently than Duke's proposed SISC by using operational capabilities inherent in solar resources."[30]

Duke is in complete conceptual agreement with the statements above. Specifically, under Duke's and the Public Staff's proposal, a Market Participant can "mitigate, reduce, or eliminate the SISC…through the incorporation of technologies that offset the need for utility ancillary service costs" and solar generators are both permitted and incented through avoidance of the SISC to "solve for intermittency challenges." To that end, the Companies have proposed the CPRE SISC Avoidance Protocols as the objective, measurable

[29] NCCEBA/NCSEA Initial Comments, at 16.
[30] First Solar Initial Comments, at 5-6.

framework by which solar generators bidding into CPRE Tranche 2 can reduce or avoid the SISC.

As Duke explained in Initial Comments, the CPRE SISC Avoidance Protocols establishes a "Solar Site Volatility Metric" to measure the facility's actual intra-hour volatility. If the facility can reduce intra-hour volatility of its energy injections below 12%, the SISC is reduced by 50%. If the facility can reduce intra-hour volatility below 6%, the SISC is eliminated completely. The CPRE Avoidance Protocols have been designed to provide an objective, measurable and "results-focused" metric that provides maximum flexibility to solar generator owners and allows each facility to assess what path to pursue based on its own operational capabilities and economics. If, as First Solar suggests, a solar generator is able to more cost-effectively and efficiently reduce intra-hour volatility, then the SISC can be reduced or completely eliminated. This performance-based approach also allows a solar generator to operate its solar facility differently—if economically advantageous to do so—during differing time periods of the year or during differing years over the PPA term.

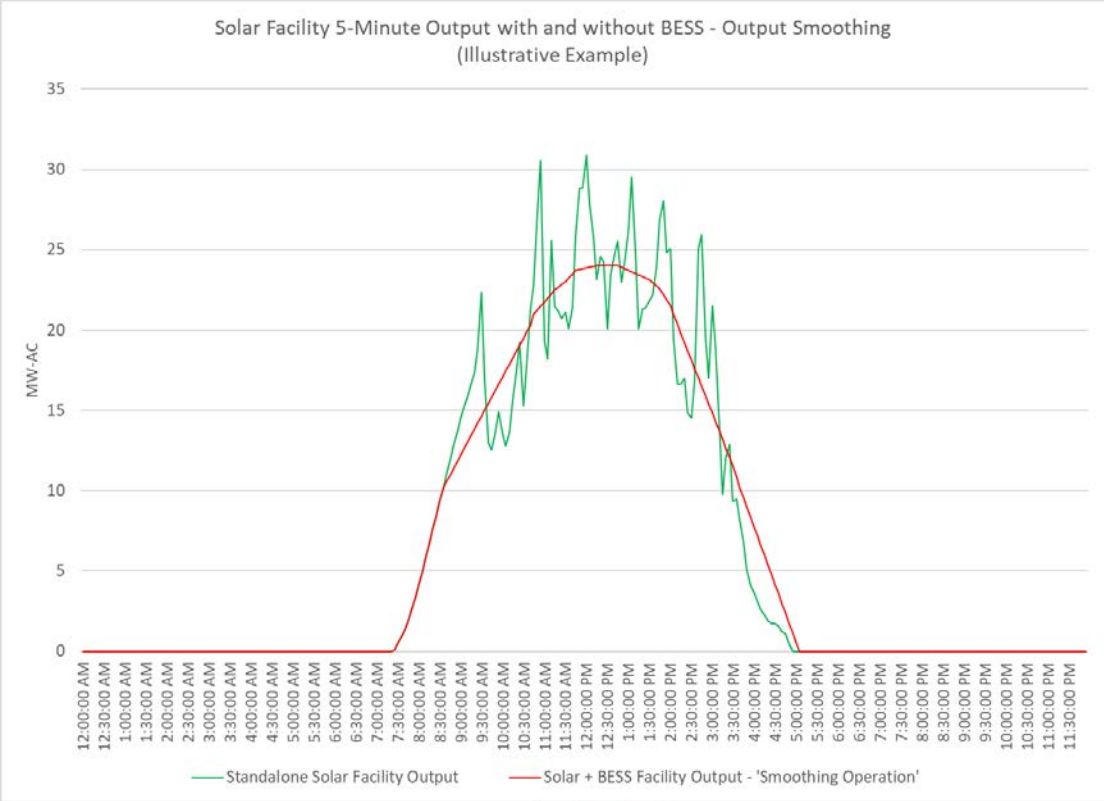
The CPRE SISC Avoidance Protocols combined with the more granular Sub 158 pricing periods also allows solar generators to make their own economic decision regarding how best to operate a co-located battery energy storage system to either smooth output to avoid the SISC or to shift output to deliver maximum energy to the grid during on-peak and premium-peak hours when energy is most valuable to the system. NCCEBA/NCSEA express concern that the Companies' proposed approach "outlines a process of 'smoothing' via paired electric storage with a solar facility as a means to avoid the SISC" and that this smoothing requirement "limits the purpose and utility of a solar plus storage facility where

storage can be used in a number of ways to help the grid, such as peak-shaving which may not reduce the SISC despite being, at times, a much more valuable grid asset than mere smoothing."[31] NCCEBA/NCSEA fail to appreciate the flexibility provided under the CPRE SISC Avoidance Protocols, which neither limit the technology utilized nor limit a solar generator owner's optionality to elect to operate its facility in the manner the generator owner deems in its own economic or operational interest. More precisely, the generator owner can either smooth the output of its facility to avoid the SISC during each period based upon its actual operations or can elect not to do so and pay the SISC.

To explain further, the CPRE SISC Avoidance Protocols builds on the Companies' explanation of the controlled solar generator provisions of the May 21, 2019, SISC Stipulation filed with the Commission in the Sub 158 proceeding. As subsequently presented in Figure 3 of Duke witness Glen Snider's rebuttal testimony in the Sub 158 proceeding, a generator can elect to smooth its output and operate as a controlled solar generator to avoid imposing increased ancillary services costs and to thereby avoid the SISC.[32]

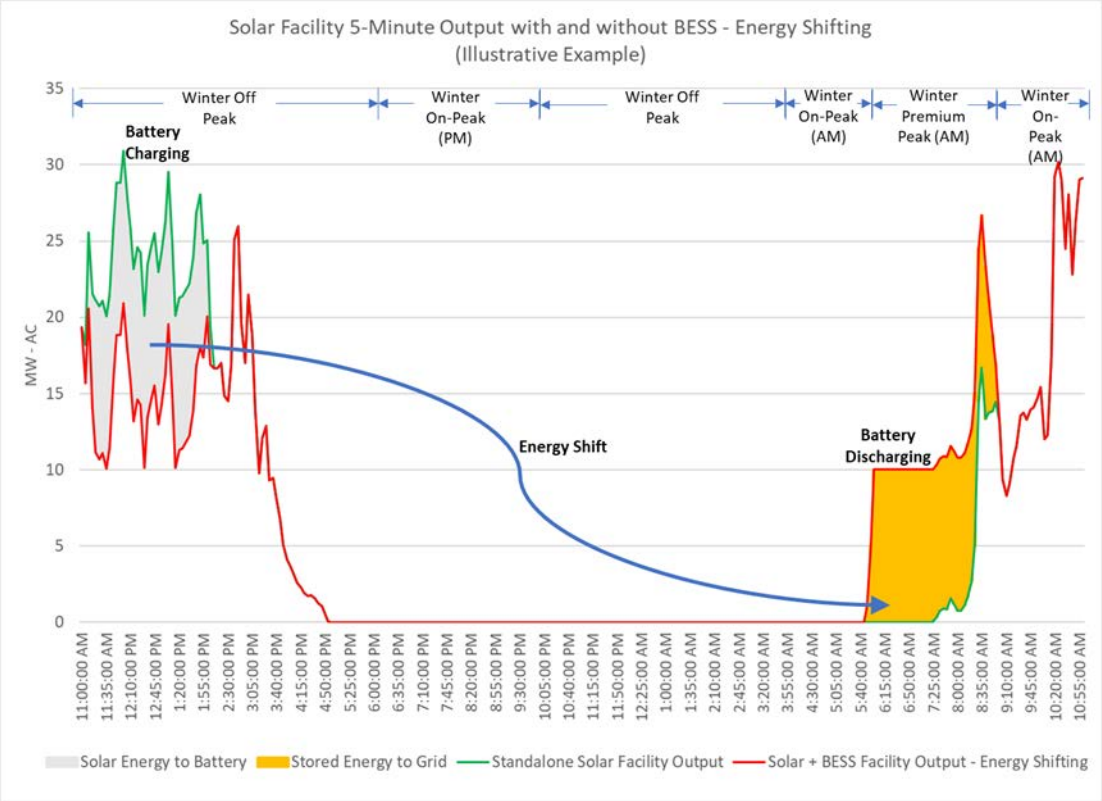
[31] NCCEBA/NCSEA Initial Comments, at 16.
[32] Rebuttal Testimony of Glen A. Snider, at 62, Docket No. E-100 Sub 158 (filed July 3, 2019).

Snider Sub 158 Rebuttal Figure 3



Operating the solar generator or solar + battery facility to deliver energy consistent with the red line represents the smoothing operation that would conform to the requirements of the CPRE SISC Avoidance Protocols. In contrast, as Duke witness Snider explained in the Sub 158 Proceeding and NCCEBA/NCSEA recognize in their comments, a solar generator may design and operate its facility to shift energy by diverting a portion of the solar energy from the grid to the battery during off-peak hours and then discharge that stored energy during winter premium peak hours the next day to maximize output (and revenue) during the winter premium peak hours.

Snider Sub 158 Rebuttal Figure 5



Importantly, while this operation provides capacity benefits to the utility by delivering during peak hours, as well as economic benefits to the QF by maximizing its energy delivery during the highest-value premium peak hours, it is important to note that operating the solar + battery facility in this manner does not eliminate, or even reduce the intermittency and intra-hour volatility of the facility. The objective of the CPRE SISC Avoidance Protocols is to measure whether the solar generator is smoothing its output (similar to the red line in Figure 3) and mitigating the intra-hour volatility of solar output in its real world operations. In sum, of the combination of the SISC and the CPRE SISC Avoidance Protocols provide appropriate pricing signals to allow solar generators to make those decision for themselves. The key is that whichever path a generation owner chooses, customers are held neutral.

Contrary to the concerns expressed by NCCEBA/NCSEA and First Solar, the CPRE SISC Avoidance Protocols are designed to allow CPRE solar generator to make the business decision of whether it is more cost-effective and efficient to reduce intra-hour volatility than paying the SISC. If the solar resource is designed and operated to do so, then the Companies can avoid the ancillary service costs of maintaining additional fossil-generation reserves and the CPRE resource is appropriately compensated. But if the CPRE resource cannot, or chooses to operate its facility in a manner that does not, eliminate or reduce intra-hour volatility, then the Companies will in fact incur cost to maintain fossil-generation operating reserves and the SISC is appropriately applied.

VI. Market Participants in CPRE have already had adequate opportunity to comment on the CPRE SISC Avoidance Protocols

NCCEBA/NCSEA state that "Duke's 'Solar Site Volatility Metric,' proposed without input from NCSEA or NCCEBA, needs to be evaluated, discussed, and negotiated between Duke and the intervenors."[33] This assertion is misleading, at best.

As explained in the Companies' Initial Comments, the CPRE SISC Avoidance Protocols have been introduced, vetted and considered in the context of the IA-led CPRE Stakeholder Process that was ordered by the Commission. Specifically, the Companies introduced the CPRE SISC Avoidance Protocols at the September 12th CPRE stakeholder meeting. The Companies' representatives described the protocols and were available for questions by any Market Participant. Next, the CPRE SISC Avoidance Protocols were made available for comment on the IA website. Representatives for NCCEBA specifically requested that the IA extend the period of time for comment and the IA granted that request.

[33] NCCEBA/NCSEA Initial Comments, at 16.

The CPRE SISC Avoidance Protocols were then once again discussed at the October 10th stakeholder meeting and all parties were provided an opportunity to discuss the issue and ask questions of the Companies' representatives.

Furthermore, while only limited comments were received during the IA-led comment period, the Companies did incorporate changes to the CPRE SISC Avoidance Protocols based on such limited feedback. The initial CPRE SISC Avoidance Protocols contemplated that storage would be used to reduce intra-hour volatility. However, in response to Market Participant comments, the Companies updated the language to eliminate the presumption that installing battery storage would be required to meet the volatility reduction requirements. In other words, in one of the few areas in which market participants requested modification, the Companies (with the approval of the IA) implemented the change. This change was described in the Companies October 15, 2019 filing in the CPRE dockets and reflected in the revised CPRE PPA attached thereto, which was made prior to the date of initial comments in these dockets.

In sum, all parties had an opportunity to review and comment on the CPRE SISC Avoidance Protocols and Duke submits that these protocols are appropriate for implementing CPRE Tranche 2.

VII. The Commission need not consider generalized recommendations to introduce new concepts and requirements in now-open CPRE Tranche 2.

In addition to generally opposing the SISC, both First Solar and NCCEBA/NCSEA have taken this opportunity to rehash generalized policy positions and to advocate for potentially significant changes to CPRE Tranche 2—changes that are far outside of the scope of topics identified by the Commission in its *Order Requesting Comments*. First Solar, for example, recommends the Commission again consider its dispatchable PPA

model, as recommended in prior comments, and again highlights demonstration studies from other parts of the Country where solar assets have been operated to provide more real-time operational control and flexibility.[34] First, the Commission has already determined that it would be premature to redesign the CPRE Tranche 2 solicitation to procure the "flexible dispatch services" that First Solar advocates solar generators can provide.[35] Second, Duke Vice President of System Planning and Operations John Samuel Holeman III recently testified in a proceeding before the South Carolina Public Service Commission that Duke's preliminary assessment of the 2017 First Solar-CAISO demonstration project is that operating conditions in the Carolinas are significantly less favorable (primarily driven by significantly more intra-day cloud cover) and would make it much more challenging for solar generators to provide real time dispatch and essential reliability services in the Carolinas as compared to the California desert.[36] Accordingly, Mr. Holeman suggested that "significantly more evaluation and operational experience would be needed to validate that solar resources can provide ancillary service to the DEC and DEP [Balancing Authorities] in the Carolinas."[37] Consideration of such proposals are certainly not appropriate for now-open Tranche 2.

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[34] First Solar Initial Comments, at 7-8.

[35] Order Modifying and Accepting CPRE Program Plan, at 17 Docket Nos. E-2, Sub 1159, E-7, Sub 1156 (July 2, 2019)(finding "approval of the use of the dispatchable PPA proposed by First Solar is premature at this time").

[36] *See* Rebuttal Testimony of John Samuel Holeman III, at 47-52 South Carolina P.S.C. Docket Nos. 2019-185-E; 2019-186-E (filed Oct. 2, 2019) ("During these periods, the operational uncertainty of this very large 300 MW solar PV plant dropping 160 MW in output in an unscheduled manner over a two-minute period under seemingly optimal weather conditions, I have significant concerns that Mr. Burgess' conclusion that solar PV could provide reliable regulation capability based upon this Study is flawed…. The purpose of presenting these Figures is to show that, in the real world Duke BAs, it would [not] have been possible to get predictable regulation and load following service from a solar facility near Raleigh, NC and Columbia, SC on August 24, 2016. This difference in weather makes the Carolinas poorly suited for solar facilities to provide regulation and load following services because, unlike California, cloud cover makes the dependability and certainty in capability of solar facilities in the Carolinas very poor from day-to-day, hour to-hour, minute-to-minute….").

[37] *Id.* at 47.

First Solar also recommends the addition of intra-day "hour-ahead forecasts" with "fifteen minute granularity" be required to provide greater certainty to Duke as to the amount of energy to be expected within the operating hour.[38] Duke generally agrees with First Solar's overarching comment that improved solar forecasting can provide operational benefits, and Duke continues to refine and improve its solar output forecast methods to reduce forecast error between expected and actual solar output. For example, Duke is participating in a U.S. Department of Energy-funded study designed to develop probabilistic solar forecasts and, once completed, could allow for optimized system dispatch based on the results of the study.[39] While Duke continues to look for ways to improve solar forecasting and cost-effective system operations to respond to solar integration challenges, Duke does not believe requiring each CPRE bidder in the Tranche 2 RFP to provide this detailed hour-ahead solar forecast is necessary or would be cost effective at this time. Duke will continue to evaluate this issue for future CPRE Tranches.

Finally, NCCEBA/NCSEA once again introduce the concept of paying solar generators for ancillary services, suggesting that"[g]iven that the CPRE Program is a competitive program mandated by statute, NCSEA and NCCEBA think it is a natural fit to incorporate an ancillary service market."[40] Putting aside the fact that the CPRE Program only contemplates the purchase of "energy and capacity" as well as the fact that Duke's Vice President of System Operations has recently testified that significantly more operational experience would be necessary before Duke could determine whether solar

[38] First Solar Initial Comments, at 10.
[39] Holeman South Carolina Rebuttal Testimony, at 36-37.
[40] NCCEBA/NCSEA Initial Comments, at 14.

generators can provide essentially reliability services in the Carolinas, it would be inappropriate to delay the now-open Tranche 2 to consider such a concept.

CONCLUSION

In conclusion, the Companies believe that the Commission should (i) adopt Duke's and the Public Staff's recommended approach of implementing a fixed SISC for CPRE Tranche 2 of $2.39/MWh in DEP and $1.10/MWh in DEC; (ii) maintain the SISC as a separate charge to be considered by CPRE Market Participants in developing their bids versus reducing the CPRE Tranche 2 Avoided Cost Cap; and (iii) accept Duke's proposed CPRE SISC Avoidance Protocols as a reasonable and appropriate mechanism to implement the "controlled solar generator" option within CPRE Tranche 2 consistent with the Commission's *Supplemental Notice of Decision* issued in Docket No. E-100, Sub 158 ("Sub 158 proceeding"), and (iv) grant such other and further relief as the Commission deems just and reasonable and in furtherance of the public interest.

Respectfully submitted, this the 29th day of October, 2019.

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CERTIFICATE OF SERVICE

I certify that a copy of Duke Energy Progress, LLC's and Duke Energy Carolinas, LLC's Reply Comments on CPRE SISC, in Docket Nos. E-2, Sub 1159 and E-7, Sub 1156, has been served by electronic mail, hand delivery, or by depositing a copy in the United States mail, postage prepaid, properly addressed to parties of record.

This the 29th day of October, 2019.

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