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**VIA Electronic Filing**

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

**Re: Study Process Report for Addition of Storage at Existing Generation  
Sites Docket No. E-100, Sub 101**

Dear Ms. Campbell:

In its *Order Approving Revised Interconnection Standard and Requiring Reports and Testimony* dated June 14, 2019 (“*NCIP Order*”), the North Carolina Utilities Commission (the “Commission”) directed Duke Energy Carolinas, LLC (“DEC”) and Duke Energy Progress, LLC (“DEP” and together with DEC, the “Companies” or “Duke”) to file a report setting forth:

- (1) a streamlined process for efficiently studying the addition of storage at existing generation sites and that builds upon the grouping study approach that is already under development as required by the Stipulation
- (2) details of how the addition of storage to the direct current side of an existing generator would impact the facility's original System Impact Study results.

The Commission also directed the Companies to host stakeholder meetings and TSRG meetings regarding these issues. The attached report (**Exhibit A**) is being filed in response to the Commission’s directive and describes the Companies’ proposed expedited study process for the addition of storage at existing generation sites that builds upon the grouping study approach. In addition, this letter describes the Companies’ stakeholder engagement, provides further background on the issue and addresses the queue equity

problem for projects currently requesting interconnection through the North Carolina Interconnection Procedures (“NCIP”).<sup>1</sup>

The Companies’ proposed approach is intended to provide a streamlined process to facilitate the greatest number of interconnection requests in the most efficient manner possible and, consistent with the Commission’s direction, builds upon the grouping study process. Importantly, the Companies view the proposed approach as a first step and will continue to explore ways in which such a process can be included within the queue-wide grouping study being considered in connection with the ongoing queue reform stakeholder process.<sup>2</sup>

### **Stakeholder Engagement**

The Companies hosted two separate stakeholder meetings. The first meeting occurred on August 7, 2019. The second meeting occurred on September 9, 2019.

Sixty-three stakeholders attended the first stakeholder meeting, (forty-seven on the webinar and sixteen in person). During the first meeting, the Companies presented its high-level approach to retrofitting storage at existing solar facilities. The Companies’ presentation detailed an overview of eligibility, potential data requirements for an application, a high-level process overview, allowable storage retrofit configurations and storage production modes for study.

As part of the first meeting, the Companies also provided benchmarking information for storage study processes that have been implemented by utilities in other states. Based on the Companies benchmarking efforts, North Carolina would be the first state to permit a storage retrofit with exporting capability. Table 1 summarizes the benchmarking analysis.

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<sup>1</sup> Capitalized terms not otherwise defined herein shall have the meaning assigned to them in the NCIP.

<sup>2</sup> It is also important to note that under the current NCIP, existing Generating Facilities are permitted to submit an Interconnection Request at any time to add storage within the serial study process and nothing about the Companies’ proposed process abrogates or alters such process. The proposed expedited process is an alternative process that operates outside of the serial study process. Furthermore, Section 1.5.2.1 identifies particular changes that “are not indicia of a Material Modification before the System Impact Study Agreement has been executed by the Interconnection Customer.” Specifically, Section 1.5.2.1.1 specifically identifies “a change in the DC system configuration to include additional equipment including...energy storage devices, so long as the proposed change does not violate any of the provisions laid out in Section 1.5.1.1.” Therefore, where energy storage is added to an existing Interconnection Request prior to execution of a System Impact Study Agreement, such a change does not constitute a Material Modification so long as it does not violate the provisions laid out in Section 1.5.1.1.

TABLE 1

| <b>Benchmarking Analysis</b>  |                 |                          |                  |               |
|---|-----------------|--------------------------|------------------|---------------|
| <b>Technical Issue</b>  | <b>New York</b> | <b>California</b>        | <b>Minnesota</b> | <b>NC – ?</b> |
| <b>Exporting Facilities – allows changes to IR pre-SIS</b>  | Yes             | No                       | No               | Yes           |
| <b>Non-Exporting Facilities – allows changes to IR pre-SIS</b>                                    | Yes             | Yes                      | Yes              | Yes           |
| <b>Exporting Facilities – Allows changes to IA after COD</b>                                      | No              | No                       | No               | Yes           |
| <b>Non-Exporting Facilities – Allows changes to IA after COD</b>                                  | No              | Yes                      | No               | Yes           |
| <b>Limited generation window assumed for solar-only study (e.g. 8am to 6pm, 9am to 5pm, etc)</b>  | Yes             | Yes                      | Yes              | Yes           |
| <b>Storage Retrofit Study uses 24-hour generation profile</b>                                     | No              | Yes                      | Yes              | Yes           |
| <b>Storage Retrofit Study uses Fast Track screens</b>   | Yes             | Yes<br>(new IR required) | Yes              | Yes           |
| <b>Storage Facility interconnection requires time-restricting equipment - i.e. recloser block</b> | Yes             | Yes                      | No               | No            |

After the first meeting, stakeholders provided helpful questions and comments. Based on the feedback received, the Companies recognized the need for additional clarity and an expansion of issues that had yet to be considered. The Companies scheduled the second meeting to provide clarity and address the following, additional issues that stakeholders highlighted in response to the first meeting:

- 1) Is the retrofit process limited to existing facilities or those with interconnection agreements?
- 2) What is the cost and timeline of the process?
- 3) Will this create an additional queue?

- 4) Are there enough people or resources to perform it?
- 5) If control devices are necessary, what will that be?
- 6) Will solar plus storage facilities be permitted to export more energy than the solar only facility?
- 7) Does the storage facility require inspection/commissioning?
- 8) Will retrofit facilities be subject to operating protocols?
- 9) Will projects require a winter peak assessment since it would have been assumed that solar facilities would not have been generating at that time, in the solar only study?
- 10) Will Duke examine the storage facility as a possible solution to interconnection screen violations such as voltage, transmission back feed or in rush?

Forty-seven stakeholders attended the second meeting (thirty-seven on the webinar and ten in person). During this meeting, the Companies presented a refined overview of the retrofit storage process for studying existing solar facilities. The Companies also invited feedback from stakeholders outside of the meetings and engaged in a number of informal discussions with various stakeholders.

In the Companies' ongoing dialogue with stakeholders, the most significant concern related to the one-time nature of the process. As discussed above, the Companies believe that the retrofit study process could potentially be included in the system-wide grouping study process under development as part of the Companies' queue reform efforts. Alternatively, the Companies are open to engaging in further dialogue regarding whether there should be additional enrollment windows in the future. On this topic and others, the Companies intend to continue stakeholder dialogue after this filing and will seek to achieve consensus wherever possible.

#### **Background on Historic Study Assumptions for Solar-Only Generating Facilities**

In order to better understand the Companies' proposal, some background information is necessary. Historically, solar-only generation facilities were evaluated for system impacts during the hours of 9 AM to 5 PM, given that insolation is highest during those hours (and low or non-existent in all other hours). As was explained in detail by the Companies' witnesses in the recent proceeding in Docket No. E-100, Sub 101, this approach was designed to ensure that solar-only generating facilities were not assigned Upgrades based on modeled system impacts during non-daylight hours during which it was impossible for solar-only generating facilities to produce output. While this approach was not the most "conservative" approach, it was certainly the most equitable approach in light of the nature of solar-only generating facilities. In contrast, all other types of interconnecting generators are studied for export 24 hours of the day (including a solar plus storage generator).

Stated differently, the Companies' existing Interconnection Agreements ("IA") for solar-only facilities on the distribution system presume, based on the technology, that the

facility would not export in hours when the sun is not shining and therefore should not be assigned Upgrades for those hours. This study assumption means that the IA is technology-specific. In taking this approach, the Company assumed that fundamentally changing the nature of the facility (*i.e.*, by adding battering storage) would be indicia of Material Modification and require additional study in accordance with terms of the NCIP. While the IA did not explicitly state that the Maximum Facility Export was approved only for certain hours of the day, the IA does specify a technology type and such technology type cannot be unilaterally modified outside of the Material Modification procedures in the NCIP.

The fact that solar-only generation facilities were only evaluated for system impacts during the hours of 9 AM to 5 PM informs the process proposed by the Companies, as is explained in more detail in **Exhibit A**.

### **Interconnection Queue Equity Concerns**

The capacity of transmission and distribution lines is finite. As the Commission is aware, the NCIP utilizes a serial study process, meaning that projects are assessed for system impacts based on their relative position in the serial interconnection queue. Earlier queued projects therefore have the right to utilize available transmission and distribution capacity prior to later-queued projects.

The Material Modification construct of the NCIP is designed, in part, to ensure that the serial study process is maintained. The concept is that projects that have commenced or completed the interconnection process should not be permitted to adjust their Interconnection Request (*e.g.*, modify their proposed Generating Facility) in a manner that would adversely impact a later-queued project.

To take a very simple example, an interconnected 5 MW project (Project #1) should not be permitted to increase its Maximum Generating Capacity to 10 MW if, in doing so, it causes a project that is already in the interconnection queue (Project #2) to get assigned Upgrades that would not have been assigned but for the additional 5 MW generating capacity that Project #1 is seeking to add. Furthermore, if Project #2 has already commenced the Section 4 study process and Project #1 is permitted to increase its Maximum Generating Capacity, Project #2 would need to be restudied, causing Project #2 to be forced to incur additional study costs and delaying the interconnection process for Project #2. In summary, the Material Modification is designed to respect the serial nature of the interconnection process and protect the rights inherent to the queue position of each interconnection request. Simply stated, projects that are allowed to make changes that consume additional transmission and distribution capacity are consuming capacity that will not be available to later-queued projects.

These equitable considerations are very relevant when considering the addition of energy storage to existing facilities. Considering a slightly different scenario than was discussed above, if Project #1 is permitted to add a storage facility, and the addition of the storage facility causes a Project #2 to incur Upgrades that would not otherwise have been

incurred, then that could be viewed as an inequitable outcome contrary to the serial study process. Furthermore, even if no new Upgrades are identified for Project #2, but Project #2 is required to be restudied as a result of the addition of storage to Project #1 (resulting in additional study costs and delays for Project #2), then that too could be considered an inequitable outcome contrary to the serial study process.

Taking a more complex example, consider the following scenario:

|            |  |
|------------|--|
| Project #1 | Interconnected 80 MW solar-only Generating Facility              |
| Project #2 | 80 MW solar-plus-storage Generating Facility in Facilities Study |
| Project #3 | 30 MW storage-only Generating Facility in System Impact Study.   |

If Project #1 is permitted to add storage, then Project #2 and Project #3 will need to be restudied. As described above, aside from the queue equity concerns regarding assigned Upgrades, Projects #2 and #3 are impacted due to the additional study costs and delay required by re-studying.

However, if the scenario is changed slightly as follows, the situation becomes much more complex.

|             |  |
|-------------|--|
| Project #1A | Interconnected 20 MW solar-only Generating Facility              |
| Project #1B | Interconnected 20 MW solar-only Generating Facility              |
| Project #1C | Interconnected 20 MW solar-only Generating Facility              |
| Project #1D | Interconnected 20 MW solar-only Generating Facility              |
| Project #2  | 80 MW solar-plus-storage Generating Facility in Facilities Study |
| Project #3  | 30 MW storage-only Generating Facility in System Impact Study.   |

Now, if Projects #1A, #1B, #1C and #1D all seek to add storage, each request will trigger the need for restudy of Projects #2 and #3. That is, there is a cascading effect that occurs each time that an earlier queued project makes a material change. If each of Projects 1A, #1B, #1C and #1D, make those requests at different times, that cascading effect will even more substantially harm Project #2 and #3.

Therefore, as a general matter, allowing interconnected generating facilities to add storage outside of the serial study process raises the potential for inequitable outcomes contrary to the serial study process both in terms of assigned Upgrades and study costs and

delays. There is also the potential that Interconnection Customers located in South Carolina or interconnecting in North Carolina or South Carolina under the terms of the Companies' Federal Energy Regulatory Commission ("FERC") Joint Open Access Transmission Tariff ("OATT") could allege discrimination to the extent that this process is deemed to allocate system capacity in manner contrary to the serial study process. For instance, if a later-queued FERC Interconnection Customer is assigned transmission-upgrades that it would not have been assigned but for this process, such Interconnection Customer could allege that discrimination has occurred. Nevertheless, the Companies are proposing a proposed study process in response to the Commission's directive.

While the Companies' proposal for a one-time option to add storage does not alter the fact that such additions of storage may result in later-queued projects being assigned Upgrades that such projects would not otherwise have been assigned, it does limit the potential additional study costs and delays that result from allowing interconnected projects to add storage outside of the serial study process. Once again, this is necessary to limit the magnitude of the cascading impact on later queue projects. Taking the example above, if Projects #1A, #1B, #1C and #1D can add storage at any time, an even greater amount of uncertainty and inequity will be imposed on later-queued projects in contravention of the serial study nature of the interconnection process.<sup>3</sup>

These equitable considerations were the basis for the Companies' decision to propose an initial, one-time option for the addition of storage to existing Generating Facilities. As discussed above, the Companies are open to offering future additional enrollment windows, at the direction of the Commission. However, if ultimately implemented, the queue-wide grouping study approach that is already under development would fundamentally change the interconnection process and there would be an opportunity to link the grouping studies with a process for adding storage to existing sites, subject to the equity concerns discussed above.

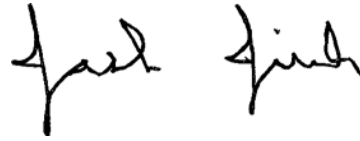
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<sup>3</sup> For conceptual reference, it is instructive to contrast the proposed ESS Retrofit Study Process with the CPRE grouping study process. Under CPRE, the serial queue is respected because the CPRE projects are assessed based on a system baseline that includes all earlier queued projects (with a few limited exceptions). Therefore, the CPRE study process ensures that the CPRE projects are studied in a way that ensures that earlier queued non-CPRE projects are not harmed by the CPRE projects, but instead retain their rights to available transmission and distribution capacity.

In contrast, in the case of the ESS Retrofit Study Process, the project adding storage is being studied without the system baseline of all later-queued projects.

Please feel free to contact me if you have any questions. Thank you for your assistance with this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Jack E. Jirak". The signature is written in a cursive, flowing style with a large initial "J" and "E".

Jack E. Jirak



## Exhibit A

### Proposed Study Process for Storage Interconnection Requests at Existing Generation Sites

#### I. ESS Retrofit Interconnection Request

The Energy Storage System (“ESS”) Retrofit Study Process begins with the Companies’ acceptance of interconnection requests seeking to add storage to existing generation sites (“ESS Retrofit Interconnection Request”).<sup>4</sup> If the ESS Retrofit Study Process is approved by the Commission, the Companies will open a one-time enrollment window for ESS Retrofit Interconnection Requests within thirty (30) calendar days after a Commission order is issued approving any necessary revisions to the NCIP.<sup>5</sup> The submission window for ESS Retrofit Interconnection Requests will then remain open for ninety (90) calendar days after opening. The Companies anticipate that efforts to facilitate the proposed System Impact Grouping Study (discussed in more detail below) will require sixty (60) calendar days after the enrollment window closes. Additional time may be needed to process applications before starting the grouping study, depending on the volume of applications and when they are received in the enrollment window.

Interconnection Customers will be required to provide the following information in an ESS Retrofit Interconnection Request:

- 1) ESS Retrofit application
- 2) Updated single-line diagrams
- 3) Updated site plan showing new equipment location
- 4) ESS module data sheets
- 5) List of inverter configuration or type changes
- 6) Data sheets for inverter changes
- 7) List of transformer and grounding configuration changes
- 8) Data sheets for transformer changes and grounding reactance or impedances
- 9) Required equipment certifications
- 10) Production Profile

#### II. Eligibility Requirements

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<sup>4</sup> Capitalized terms not otherwise defined here shall have the meaning given to them in the NCIP.

<sup>5</sup> Contingent on the Commission’s direction in this issue, the Companies will submit proposed revision to the NCIP necessary to facilitate the ESS Retrofit Study Process. Based on discussions with stakeholders, the Companies understand that Interconnection Customer’s project-specific decisions will be based in many cases on the Commission’s decision in Docket No. E-100, Sub 158. Therefore, the Companies will continue to engage stakeholders regarding an optimal enrollment window in light of the need for such alignment.

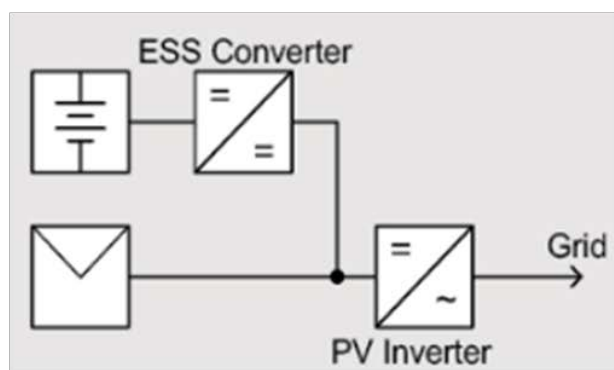
To be eligible for the ESS Retrofit Study Process, solar facilities must meet the following requirements:

- 1) Have received a North Carolina Interconnection Agreement from the Companies prior to the date on which the window opens for enrollment.<sup>6</sup>
- 2) Be adding storage to an existing site and have no change of POI. (NCIP Section 1.5.1.2.1)
- 3) Not exceed the Maximum Physical Export Capability of the applicable Interconnection Agreement. (NCIP 1.5.1.2.6, 1.5.1.2.7)
- 4) Pass engineering review of transformer, inverter and site configuration. (NCIP 1.5.1.2.4, 1.5.1.2.5)
- 5) Be DC-coupled or have a hybrid inverter, subject to review (the storage is not permitted to be AC coupled). (NCIP 1.5.2.1.1). See Figure 1 for basic solar-plus-storage configurations.
- 6) For transmission-connected sites, for protection and stability purposes, the proposed retrofit must retain the inverters that were originally studied.
- 7) Only charge from the existing Generating Facility specified in the Interconnection Agreement (and not from the Utility system).
- 8) Be certified to applicable IEEE (1547), UL(1741/9540), OSHA Codes and Standards including:
  - Electrical Safety Code Requirements
  - Tech Specs for Application (e.g. cooling requirements, containment, etc.)
  - Auxiliary Systems (e.g. Fire Prevention / Suppression Systems, etc.)
  - Additional Codes/Standards as specified by Authority Having Jurisdiction (AHJ)

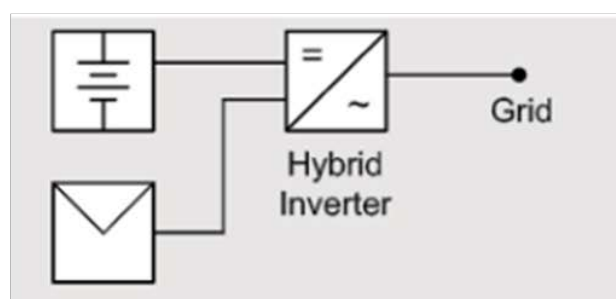
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<sup>6</sup> While the Commission's *NCIP Order* directed the process to be applicable to "existing generation sites," the Companies have slightly expanded the eligibility criteria in response to stakeholder feedback.

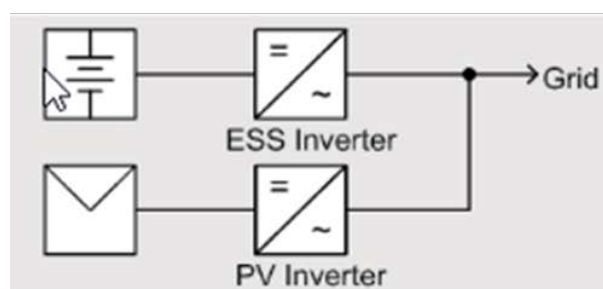
Figure 1



DC Coupled Power System for Solar plus Storage



Hybrid Solar Plus Storage Inverter



AC Coupled Solar Plus Storage System

### Figure 1-Solar-Plus-Storage Configurations

Figure 1 illustrates three possible interconnect configurations. The ESS Retrofit Study Process will only be available to ESS Retrofit projects that utilize either the *DC Coupled Power System for Solar Plus Storage* or *Hybrid Solar Plus Storage Inverter* configurations or a similar configuration. As discussed above, ESS Retrofit projects that have the capability to charge from the grid, such as *AC Coupled Solar Plus Storage System* will not be eligible for the ESS Retrofit Study Process and will therefore, will be processed in accordance with the NCIP process applicable to Material Modifications.

Solar facilities that fail to satisfy any of the eligibility requirements specified in Section II and are thus ineligible for the ESS Retrofit Study Process may submit a new

Interconnection Request and receive a new queue number for the ESS only (and where applicable, the original solar-only Interconnection Request will retain its original Queue Position).

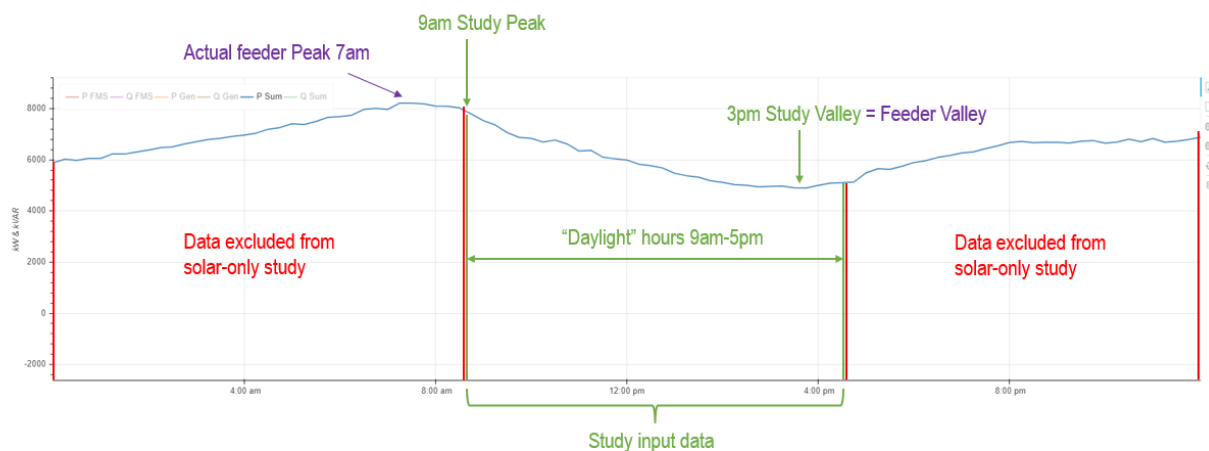
### III. Study Overview and Background

Several levels of review will be required to evaluate the impact of the proposed ESS retrofit on the distribution and transmission systems. The initial technical review will be required to confirm eligibility and technical compliance. If violations (e.g., voltage or thermal) are identified at any point in the ESS Retrofit Study Process (which generally require additional Interconnection Facilities or Upgrades), the project will be required to submit a new Interconnection Request and receive a new queue position and proceed with the storage addition in accordance with the NCIP process applicable to Material Modifications.

Because existing solar generation sites have already been studied based on Maximum Physical Export Capability during daylight hours (i.e. between 9am and 5pm), those facilities seeking to add storage for discharge only during daylight hours do not require further review. The applicable Interconnection Agreement may be amended to reflect such limitation.

#### Figure 2-Feeder Analysis

Figure 2 illustrates the times of day solar-only projects are studied and not studied. Note: The figure is for illustrative purposes only and does not imply that the feeder peak and valley from the 18-month data set occur on the same day.



"Peak" and "valley" feeder loading studies  
 Steady state voltage – worst case in "valley"  
 Rapid voltage change (RVC) – worst case in "peak"

Existing generators that were studied based on Maximum Physical Export Capability during the 24-hour period (such as hydro, biomass, and landfill gas) do not require further review.

#### IV. Study Process - Distribution Impact Review

The purpose of the distribution impact review is to identify potential steady state voltage or rapid voltage change violations when adding storage to an existing distribution-connected Generating Facility. The distribution impact review process will assess whether there are any different peak and valley points based on historical loads and voltages outside the daylight hours that were previously studied. If the daylight peak and valley points remain valid (i.e., occurred during daylight hours), then no further study is needed. However, if either a different peak or different valley is identified outside of the daylight hours, then a power flow study will be conducted. The distribution impact analysis will consider both the Net Capacity of the storage module in non-daylight hours and the Net Capacity of the solar plus storage Generating Facility in daylight hours.

#### V. Study Process - Transmission Impact Review

Existing generation sites over 250kW seeking to add storage (both distribution- and transmission-connected) will be studied for transmission system impacts in the winter peak scenario. Since such projects were previously not technically capable of contributing significantly to winter peak conditions, they were not previously studied in the winter peak scenario. All Projects submitting an ESS Retrofit Interconnection Request during the applicable enrollment window will be studied in a grouping study using a base case that includes all projects that have received a full System Impact Study report (i.e., all projects that have passed the System Impact Study portion of the Section 4 interconnection process, which would include all projects with Interconnection Agreements). The grouping study will assess the impact on the transmission system. The primary benefit of a grouping study is the efficiency of being able to process numerous ESS Retrofit Interconnection Requests at one time rather than having to conduct individualized assessments. Any project that results in significant impact (3% distribution factor/1% of line loading) to the transmission system in the grouping study will be required to submit a new Interconnection Request and will be processed in accordance with the NCIP process applicable to Material Modifications. The save case used to determine transmission system impact will be made available on-request to applicants that have met the requirements for a FERC Critical Energy Infrastructure Information request.

#### VI. Interconnection Agreement Amendment

A Generating Facility that passes the ESS Retrofit Study Process will be required to execute an amended Interconnection Agreement (“IA”). The amended IA will contain updates to Appendices 2, 3, and 4 of the Interconnection Agreement. An NCIP Section 5.1 Construction Planning Meeting will not be required because construction on the Utility

side of the POI will not be required for projects that have passed the ESS Retrofit Study Process. However, NCIP Section 5.2 Interconnection Agreement Timelines will be applicable generating facilities participating in the ESS Retrofit process. NCIP Section 5.2 references to the Construction Planning Meeting will be replaced by a notice that the ESS Retrofit Process application has completed the study requirement.

## VII. Commissioning

NCIP Section 6.5 Commissioning and Post-Commissioning Inspection will be required for a Generating Facility seeking to re-connect after adding storage to an existing site.

## VIII. Deposits and Fees

Consistent with the applicable fee assigned to the NCIP Section 3 Fast Track Process, Interconnection Customers will pay a non-refundable \$1,000 fee for required administrative and technical review activities when submitting an interconnection request for the ESS Retrofit Process. Interconnection Customers will also pay \$5,000 deposit to cover study process costs and will ultimately be assessed a share of the actual grouping study costs (netted against the deposit paid).

## IX. Impact of Additional Storage on Existing Generator's Solar-only System Impact Study Results

The Commission's NCIP Order requested "details of how the addition of storage to the direct current side of an existing generator would impact the facility's original System Impact Study results." In summary, because the results of a System Impact Study are completely dependent on the particulars of the distribution and transmission system configurations for each project (*e.g.*, the amount of generation and load on the particular circuit), it is impossible to provide a generic, one-size fits all answer to this issue.

Figure 3 below illustrates the 9am-5pm period that was studied in original System Impact Studies for existing solar-only generating facilities. Figure 4 shows additional time periods that will require additional study when storage is added to the DC side of an existing generator. Since solar-only facilities do not generate substantial output during the winter peak, the winter peak was excluded from the original System Impact Study. However, a solar plus storage facility is capable and likely to generate during the Winter Peak and must be evaluated in that scenario. Line ratings are often higher in winter, but so are customer load and conventional generation. Therefore, it is impossible to accurately predict whether issues will arise in winter with storage retrofit until a power flow study is conducted of the particular distribution or transmission circuit. Additionally, distribution-connected storage additions that discharge in lightly-loaded non-daylight hours may cause voltage issues or trigger requirements for anti-islanding protections. These additional considerations related to a Winter Peak assessment will also need to be studied to maintain a safe and reliable system.

Figure 3-Original System Impact Study

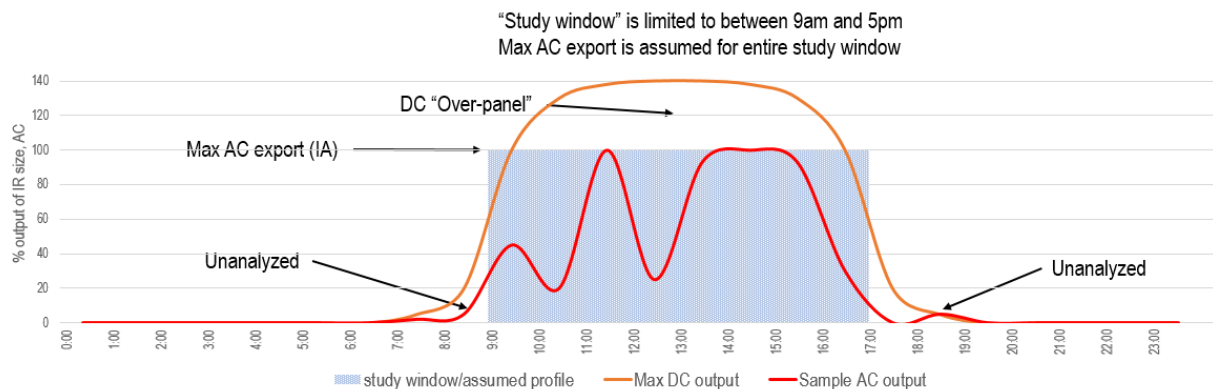
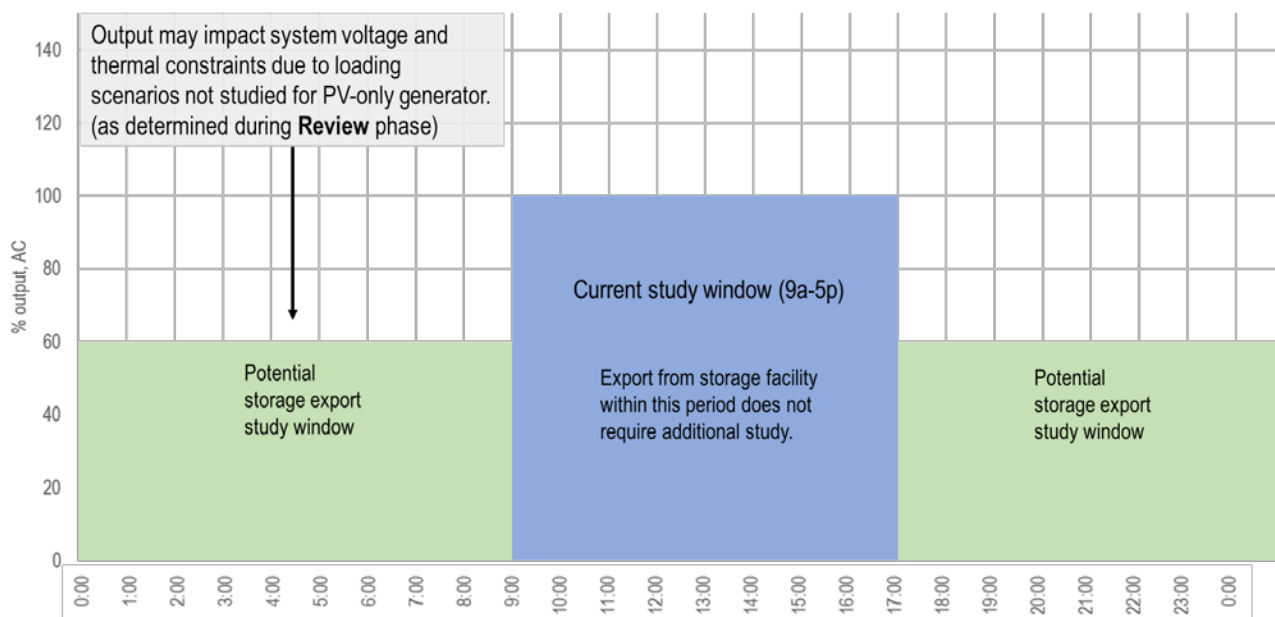


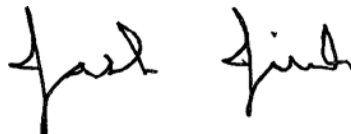
Figure 4-Solar-Plus-Storage Study Window



**CERTIFICATE OF SERVICE**

I certify that a copy of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC's Study Process Report for Addition of Storage at Existing Generation Sites, in Docket No. E-100, Sub 101, has been served by electronic mail, hand delivery or by depositing a copy in the United States mail, postage prepaid to parties of record.

This the 30<sup>th</sup> day of September, 2019.

A handwritten signature in black ink, appearing to read "Jack Jirak", written in a cursive style.

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