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September 29, 2021

**Via Electronic Filing**

Ms. Antonia Dunston, Interim Chief Clerk  
North Carolina Utilities Commission  
Dobbs Building  
430 North Salisbury Street  
Raleigh, North Carolina 27603

Re: ESS Retrofit Compliance Filing  
Docket Nos. E-100, Sub 101 and E-100, Sub 158

Dear Ms. Dunston:

Pursuant to Ordering Paragraph 6 of the North Carolina Utilities Commission's ("Commission") August 17, 2021 *Order Approving SISC Avoidance Requirements and Addressing Solar-Plus-Storage Qualifying Facility Installations* ("Order"), Duke Energy Carolinas, LLC ("DEC") and Duke Energy Progress, LLC ("DEP" and together with DEC, "Duke Energy" or the "Companies") hereby submit (1) a request for waivers from the North Carolina Interconnection Procedures ("NCIP") to implement the updated energy storage system ("ESS") expedited study processes described below and (2) the Companies' procedure for how a Qualifying Facility ("QF") seeking to retrofit an ESS at an existing generation site establishes eligibility for a bifurcated avoided cost rate. Included as attachments to this filing are the following documents:

- Attachment A: Energy Storage System Retrofit Study Process available to solar Interconnection Customers indicating ESS Export between 9:00 AM – 5:00 PM,
- Attachment B: Limited Waiver of Definitive Interconnection System Impact Study ("DISIS") Phase 2 and Facility Study Applicability to Certain Existing DC-Coupled Transmission-interconnected Interconnected Customers indicating 24-hour ESS Export when entering in future DISIS, and
- Attachment C: Procedure for ESS Retrofit at an Existing QF Generation Site to Establish Eligibility for Avoided Cost Rates.

## **Background**

On June 14, 2019, the Commission issued an *Order Approving Revised Interconnection Standard and Requiring Reports and Testimony* in Docket No. E-100, Sub 101, which, among other things, directed the Companies to develop, in a stakeholder process, a streamlined process for interconnecting energy storage systems to existing generation sites. In the months that followed, Duke Energy and stakeholders worked to develop such a process. On January 17, 2020, the Companies filed in Docket No. E-100, Sub 101 a petition for waiver from certain provisions of the NCIP in order to implement its proposed ESS Retrofit Study Process.

On April 15, 2020, the Commission issued an *Order Establishing Standard Rates and Contract Terms for Qualifying Facilities* in Docket No. E-100, Sub 158 in which it found, among other things, that the output of an energy storage system that is added to an existing QF should be paid at the then-current avoided cost rate. The Commission also directed Duke Energy to organize a virtual stakeholder process to address other issues related to the addition of energy storage systems at existing QFs.

On April 28, 2020, in Docket No. E-100, Sub 101, the Commission issued an *Order Granting Waiver and Requiring Report*. The Order granted the request of the Companies for a waiver from certain provisions of the NCIP in order to implement the ESS Retrofit Study Process, directed Duke Energy to open the first enrollment window for that process on May 28, 2020, and directed the Companies to file a report on the ESS Retrofit Study Process results within two months of the conclusion of that process.

On May 15, 2020, Duke Energy and the North Carolina Clean Energy Business Alliance (“NCCEBA”) filed in Docket No. E-100, Sub 101 a Motion for Extension of Time to Open Enrollment Window for ESS Retrofit Study Process, stating that an extension was needed because requesting QFs were not yet able to fully assess whether to enroll in the ESS Retrofit Study Process. On May 27, 2020, at the parties’ request, the Commission issued an order in Docket No. E-100, Sub 101 that suspended the enrollment window for the ESS retrofit study process so that issues related to the addition of energy storage systems to existing QFs could be addressed in the ongoing stakeholder process in the avoided cost docket.

On September 15, 2020, the Commission issued its *Order Approving Queue Reform*, which approved the Companies’ queue reform proposal as filed on August 31, 2020, to transition from a serial interconnection study process to a Definitive Interconnection Study Process.

On August 17, 2021, the Commission issued its *Order Approving SISC Avoidance Requirements and Addressing Solar-Plus-Storage Qualifying Facility Installations* (“Order”). Ordering Paragraph 6 directed the Companies to file “1) a comprehensive waiver request reflecting all waivers that are needed from the North Carolina Interconnection Procedures, in order to comply with the Commission’s directive to move

ahead with an enrollment window for the ESS Retrofit Study Process; and 2) the procedure for how a QF establishes eligibility for the avoided cost rate or methodology applicable to the output of the energy storage addition.”

On August 19, 2021, the Commission issued an *Order Implementing Queue Reform*, making effective the Companies’ queue reform proposal and the Definitive Interconnection Study Process.

### **Expedited Study of ESS Retrofit Interconnection Requests**

In response to the Commission’s Order, the Companies have refined the original ESS Retrofit Expedited Study Process to align with the now-effective Definitive Interconnection Study Process while continuing to allow certain Interconnection Customers seeking to retrofit an operating QF generating facility with ESS to proceed under an expedited study process. Customers ineligible for the ESS Retrofit Expedited Study Process may proceed through the Definitive Interconnection Study Process pursuant to the NCIP.

Expedited study is now available for solar Interconnection Customers requesting interconnection service for ESS Export between 9:00 AM – 5:00 PM and will be made available to certain DC-Coupled transmission-interconnected Interconnection Customers indicating 24-hour ESS Export when entering in future DISISs:

#### **Attachment A: Expedited ESS Retrofit Study Process:**

Solar Interconnection Customers indicating ESS Export between 9:00 AM – 5:00 PM will begin the expedited process by submitting an *ESS Retrofit Process Application* at any time without regard to the DISIS enrollment window. They will also be required to provide a Non-Refundable Processing Fee of \$1,000 along with their completed *ESS Retrofit Process Application*.<sup>1</sup> These projects will then be screened and undergo a technical review before proceeding to an amended Interconnection Agreement.

#### **Attachment B: Waiver of DISIS Phase 2 and Facility Study Applicability to Certain Existing DC-Coupled Transmission-Interconnected Sites**

Eligible DC-Coupled transmission-interconnected Interconnection Customers will proceed through the initial Definitive Interconnection Study Process pursuant to NCIP Section 4.4. Once DISIS Phase I is completed, however, eligible DC-Coupled transmission-interconnected Interconnection Customers determined not to cause or contribute to the need for Network Upgrades may exit the DISIS in a manner that departs from the DISIS process detailed in Section 4.4.7 of the NCIP and the Facility Study process

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<sup>1</sup> This Application is included in Attachment A: Exhibit 1.

detailed in NCIP Section 4.5.<sup>2</sup> Specifically, these Interconnection Customers may exit the Definitive Interconnection Study Process after the post-Phase 1 Customer Engagement Window identified in Section 4.4.7.1, assuming their retrofit ESS does not cause or contribute to the need for Network Upgrades.<sup>3</sup> These Interconnection Customers will not be required to complete the DISIS Phase 2 Study described in NCIP Section 4.4.7 or Facility Study described in NCIP Section 4.5 would only be required where Network Upgrades are needed for the proposed retrofit ESS. Instead, these Interconnection Customers may proceed directly to an amended Interconnection Agreement at this time.

More information detailing the expedited study of ESS for eligible Interconnection Customers is contained in Attachments A and B. The below table also summarizes eligibility for expedited study of a retrofit ESS.

Voltage Level	Export Hours Requested	Configuration	Inverters	Process	Off-Ramp	Power Flow and Voltage	Short Circuit and Stability	Transformer Inrush
Distribution	9-5	DC-Coupled	Original	ESS Retrofit	-	N	N	N
		AC-Coupled	New	ESS Retrofit	-	N	Y	per review
	24x7	DC-Coupled	Original	DISIS	NCIP 4.4.7.1	Y	N	N
		AC-Coupled	New	DISIS	NCIP 4.4.7.1	Y	Y	per review
Transmission	9-5	DC-Coupled	Original	ESS Retrofit	-	N	N	-
		AC-Coupled	New	DISIS	No	N	Y	-
	24x7	DC-Coupled	Original	DISIS	Waiver	Y	N	-
		AC-Coupled	New	DISIS	No	Y	Y	-

### **Request for Waiver**

In accordance with the Commission's Order, the Companies hereby request that the Commission grant a waiver from the NCIP to allow the Companies to implement the ESS Retrofit Study Process in the manner described in Attachment A. The Companies also specifically request a waiver from NCIP Sections 4.4.7 and 4.5 to implement the expedited study of ESS retrofits for eligible DC-Coupled transmission-interconnected Interconnection Customers. Granting these waivers will offer eligible Interconnection Customers an expedited and efficient means for interconnecting retrofit ESS throughout North Carolina, while allowing the Companies to ensure power quality and reliability of interconnected generating facilities and retrofit ESS through the interconnection study process.

<sup>2</sup> NCIP Section 4.4.7.1 already provides an expedited process for distribution-level Interconnection Customer determined through Phase 1 study not to cause or contribute to the need for Network Upgrades. This proposal would extend this exemption to DC-Coupled transmission-interconnected Interconnection Customers.

<sup>3</sup> Eligible DC-Coupled transmission-interconnected Interconnection Customers would still be required to adhere to readiness milestones M1 and M2 pursuant to NCIP Section 4.4.10. M3 may be waived assuming no Facilities Study is required and the Interconnection Customer and Utility proceeds to Interconnection Agreement as further described herein.

**Attachment C: Procedure for Energy Storage System Retrofit at an Existing QF Generation Site to Establish Eligibility for Avoided Cost Rates**

Pursuant to Ordering Paragraph 6 of the Commission’s Order, the Companies have also developed a procedure to govern how an operating QF proposing to materially alter its generating facility to integrate an ESS would establish eligibility for the avoided cost rate or methodology applicable to the output of the energy storage addition (“New ESS retrofit avoided cost rate”). The Companies have developed a process that is intended to meet the requirements of the Order and to align with the interconnection study process for ESS retrofit additions. Recognizing that approximately 560 QF solar facilities above 1 MW totaling approximately 3,650 MW are selling under power purchase agreements (“PPA”) and are eligible to retrofit their QF generator to integrate ESS under the Order, the Companies’ process is also designed to be administratively efficient. Eligibility for a New ESS retrofit avoided cost rate shall be limited to existing QFs that established either a legally enforceable obligation or entered into a PPA with the Companies under rates and terms approved by the Commission on or before November 15, 2016, and shall extend only for the term of the QF’s current solar PPA, whether currently existing or executed pursuant to an existing LEO established prior to November 15, 2016.

As detailed in Attachment C, to establish eligibility for New ESS retrofit avoided cost rates, a QF proposing to materially alter its generating facility to integrate an ESS must submit a Notice of Commitment form to establish a legally enforceable obligation. Interconnection Customers submitting a Notice of Commitment Form prior to November 1, 2023, will be eligible to receive a published avoided cost rate for the term that remains on the QF Interconnection Customer’s original PPA as of January 1, 2023. These published rates will remain available until the earlier of November 1, 2023, or when 100 MW of incremental ESS retrofit additions have submitted Notice of Commitment Forms under the new rates. Interconnection Customers submitting a Notice of Commitment form after November 1, 2023, will be eligible to receive a negotiated New ESS retrofit avoided cost rate consistent with the Commission-approved methodology at the time the QF commits to the ESS retrofit and obligates itself to sell the ESS’ output to Duke Energy.

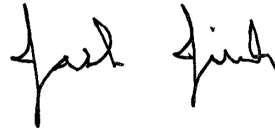
More information regarding this process is contained in the Procedure for Energy Storage System Retrofit at an Existing QF Generation Site to Establish Eligibility for Avoided Cost Rates included as Attachment C to this letter.

**Conclusion**

DEC and DEP respectfully request that the Commission accept its updated ESS Retrofit Study Process and expedited study of ESS retrofits for eligible DC-Coupled transmission-interconnected Interconnection Customers, as well as grant the necessary NCIP waivers to implement such studies for the Companies to begin processing new retrofit ESS Interconnection Requests. The Companies also respectfully request that the Commission accept its Procedure for Energy Storage System Retrofit at an Existing QF

Generation Site to Establish Eligibility for Avoided Cost Rates as a reasonable and efficient procedure for Interconnection Customers proposing to retrofit an ESS at an existing generation site to enter into an amended PPA and to receive a New ESS avoided cost rate for a retrofit storage addition to an existing QF facility.

Sincerely,

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

Jack E. Jirak  
Deputy General Counsel

Enclosures

# **ATTACHMENT A**

Energy Storage System Retrofit Study Process

## **Expedited Study Process for Energy Storage System Interconnection Requests at Existing Generation Sites**

### **1. Procedure**

#### **i. ESS Retrofit Study Process Application**

Solar Interconnection Customers wishing to participate in the Duke Energy Carolinas, LLC (“DEC”) and Duke Energy Progress, LLC (“DEP” and together with DEC, “Duke Energy” or the “Companies”) Energy Storage System (“ESS”) Retrofit Study Process must submit the *ESS Retrofit Study Process Application (see Attachment A)*, following the instructions provided on the form. Solar Interconnection Customers indicating ESS Export between 9:00 AM – 5:00 PM may submit an ESS Retrofit Process Application at any time without regard to the DISIS enrollment window. Solar Interconnection Customers requesting any export outside of 9:00 AM – 5:00 PM should apply for 24-hour ESS Export and are not eligible for the ESS Retrofit Study Procedure and should utilize the Definitive Interconnection System Impact Study process.<sup>1</sup> The Interconnection Customer will be required to provide a Non-Refundable Processing Fee of \$1,000 along with their completed *ESS Retrofit Process Application*.

#### **ii. Eligibility Screening**

Upon receipt, each application will be screened for eligibility in the ESS Retrofit Study Process. Applicants must meet the following requirements:

- (1) Have received a fully executed North Carolina Interconnection Agreement (“IA”) from the Companies prior to the date on which the window opens for enrollment.
- (2) Requesting ESS Export between 9:00 AM – 5:00 PM only.
- (3) Be adding storage to an existing site and have no change of POI.
- (4) Not exceed the Maximum Physical Export Capability of the applicable IA.
- (5) Pass engineering review of transformer, inverter and site configuration.
- (6) Be DC-coupled, or AC-coupled connecting at distribution voltage level.
- (7) For transmission-connected sites, for protection and stability purposes, the proposed retrofit must retain the inverters that were originally studied.
- (8) Only charge from the existing Generating Facility specified in the IA (and not from the Utility system).
- (9) Be certified to and compliant with applicable codes such as:
  - NFPA 70, National Electric Code (2017)
  - NFPA 1, Fire Code (2018)

<sup>1</sup> See Section II Limited Waiver of DISIS Phase 2 and Facility Study Applicability to Certain Existing DC-Coupled Transmission-connected Sites for Interconnection Customers requesting 24-hour ESS Export.



- ICC IFC, International Fire Code (2018)
- NFPA 855, Standard for Installation of Energy Storage Systems (2020)
- IEEE Std 1547
- IEEE Std 1547.1
- UL 1741 – Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources
- UL 1973 – Standard for Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications
- UL 9540 – Standard for Energy Storage Systems and Equipment
- UL 9540A – Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems
- UL 1974 – Standard for Evaluation for Repurposing Batteries
- 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 the local Authority Having Jurisdiction

### iii. Study Process

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 no longer be part of the ESS Retrofit Process.

Because existing solar generation sites have already been studied based on Maximum Physical Export Capability during daylight hours (*i.e.*, between 9:00 AM and 5:00 PM), those facilities seeking to add ESS for discharge only during those daylight hours do not require further review for power flow or voltage violations. AC-coupled distribution-connected sites will require short circuit analysis and protection review to determine whether the circuit can accommodate the additional fault current contribution from the energy storage system. AC-couple sites may require a new transformer inrush study if adequate protective relaying is not identified. An additional study fee of \$2,500 will be collected to cover the cost of this review.

Once Duke Energy has reviewed the application and confirmed that all requirements have been met, Duke Energy will provide an amended IA to reflect the addition of ESS and the limitation on hours of operation of the ESS. 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. Interconnection Agreement Amendment**

A Generating Facility that completes the ESS Retrofit Study Process will be required to execute an amended IA. The amended IA will contain updates to Appendices 2 (e.g., description of Generating Facility), 3 (e.g., updated one-line diagram), and 4 (e.g., milestones for the installation of the ESS). Attachment B contains language to be inserted into Appendix 5 that indicates that the Generating Facility has completed the ESS Retrofit Study Process and has been released for daylight hours only. NC Procedures Section 5.2 Interconnection Agreement Timelines will be applicable for generating facilities participating in the ESS Retrofit process.

#### **2. Site Inspection and Commissioning**

NC Procedures Section 6.5 Commissioning and Post-Commissioning Inspections will be required for a Generating Facility seeking to re-connect after adding storage to an existing site. The Interconnection Customer shall pay the actual cost of such inspection within thirty (30) Business Days after Duke Energy provides a written invoice for such costs. The inspection and commissioning process will include the following three steps:

##### **i. Documentation Review**

The following documents will be required for review prior to inspection:

- (1) Certificate of approval from the city, county or state authorities having jurisdiction certifying the installation is in compliance with all jurisdictional codes and regulations (as applicable).
- (2) A letter from the local fire department acknowledging receipt of the safety instructions and emergency action plan for first responders, including training materials outlining the plan, provided by the Interconnection Customer.
- (3) Documentation prepared by a professional engineer or approved third party indicating that the ESS and ESS components are tested and listed in accordance with applicable safety standards (e.g., UL 9540, UL 9540A, UL 1973).
- (4) Installation, operation and safety manuals provided by the ESS manufacturer or system integrator.

##### **ii. Interconnection Inspection**

The purpose of the interconnection inspection is to ensure the ESS's medium voltage construction and interconnection equipment are installed in accordance with the following minimum requirements:

- Duke Energy's distribution construction standards
- Duke Energy's Service Requirements Manual
- The approved SLD, IR, and IA.

- IEEE 1547 and 1547.1
- National Electrical Code
- Inverter manufacturer installation requirements
- ESS manufacturer installation requirements

The scope of the interconnection inspection will also cover the AC side construction to verify continuous compliance of the interconnection project.

### iii. Commissioning Test

The scope of the commissioning test is to:

- Verify completion of the required corrections from the interconnection inspection
- Verify settings at ESS, inverters, customer-owned primary meter, customer-owned recloser and other interconnection equipment (as applicable)
- Conduct three phase and single phase cease-to-energize tests
- Conduct three phase and single phase restart/reconnect delay tests

### 3. Storage Protocols

Duke Energy has previously developed the Energy Storage Protocols that establish operational requirements for energy storage devices in order to safely and reliably integrate these new technologies into the grid. The Commission is also currently considering Duke Energy's request for approval of energy storage protocols for standard offer and negotiated QFs in Docket No. E-100, Sub 158. Duke Energy supports requiring energy storage protocols for all generation plus energy storage facilities in order to effectively integrate these facilities into the grid. Accordingly, to the extent that an existing facility were to add storage, Duke Energy would require the facility to conform to the currently applicable Energy Storage Protocols through the applicable power purchase agreement.

### 4. Reporting

Duke Energy affirms that it will file a report in Docket No. E-100, Sub 101 giving a general overview of the process, including the number of facilities that applied, the number of facilities that were eligible for the expedited review, the number of facilities that passed the review, the total capacity has been approved to be added, and a brief summary of the reasons that projects failed the review.

### **Attachment A: Exhibit 1 - ESS Retrofit Study Process Application**

Instructions: All fields are required, unless other noted. A complete application and the application fee are both required for submission. Applications can be emailed to [DERContracts@duke-energy.com](mailto:DERContracts@duke-energy.com). Payments can be submitted electronically and processed as soon as next business day through the Interconnection Portal: [duke-energy.force.com](http://duke-energy.force.com). Companies new to the portal will need to register. Companies with existing portal login credentials simply sign in and submit through the Payment section on the Home page. Facility state and project queue number will be required to submit a payment. Please confirm your project queue number by referencing the Queue Report on the Duke Energy website.

#### Project Information

Project Name:

Project Queue Number:

#### Contact

Project Contact:

Contact Email:

Contact Phone:

#### Non-Refundable Processing Fee

- For all application the fee is \$1000.

#### Retrofit Program Eligibility/Exemption Checklist

Generating Facility has Interconnection Agreement with Utility before August 20, 2021 \_\_\_\_\_  
(Y/N)

Storage system DC-coupled with Generating Facility? (Y/N)

Facility Rating (kW) unchanged from original Interconnection Agreement? (Y/N)

Any "N" response to above questions disqualifies the ESS retrofit request from the Expedited Retrofit Program. The requestor may request interconnection/retrofit of the ESS facility in accordance with NC Procedures by filing a new Interconnection Request.

One the four options below must be checked:

- 1) < 250 kW  Yes
- 2) Generating Facility being retrofitted  Non-solar
- 3) ESS exporting to grid?  No (skip question #4)
- 4) Time of ESS export (N/A if "No" in #3)  Between 9am and 5pm

Storage Facility Information

ESS Technology (Li-Ion Battery, Pumped Hydro, etc):

Rated ESS Discharging Power (MW):

Rated ESS Capacity (MWh):

Maximum Discharging Duration at Rated Power (hrs):

Reactive Capability (MVar): [provide curve if available]

Rated Life Span (cycles):

Control Narrative:

(generally describe intended operation and output characteristics used for programming the BESS controller – e.g. peak-load serving, flattening solar facility output, etc)

DC-DC converter (if used):

Inverter info:

Transformer info:

One-line diagram Enclose site electrical one-line diagram showing the configuration of all Generating Facility equipment, current and potential circuits, and protection and control schemes.

- The one-line diagram should include the project owner’s name, project name, project address, model numbers and nameplate sizes of equipment, including number and nameplate electrical size information for solar panels, inverters, wind turbines, disconnect switches, latitude and longitude of the project location, and tilt angle and orientation of the photovoltaic array for solar projects.
- The diagram should also depict the metering arrangement required whether installed on the customer side of an existing meter (“net metering/billing”) or directly connected to the grid through a new or separate delivery point requiring a separate meter.
- List of adjustable set points for the protective equipment or software should be included on the electrical one-line drawing.
- This one-line diagram must be signed and stamped by a licensed Professional Engineer if the Generating Facility is larger than 50 kW.

Is One-Line Diagram Enclosed? Yes \_\_\_ No \_\_\_

### Site Plan

- Enclose copy of any site documentation that indicates the precise physical location of the proposed Generating Facility (Latitude & Longitude Coordinates and USGS topographic map, or other diagram) and the proposed Point of Interconnection. Proposed location of protective interface equipment on property (include address if different from the Interconnection Customer's address)

\_\_\_\_\_

- Is Site Plan Enclosed? Yes \_\_\_ No \_\_\_

Equipment Specifications Include equipment specification information (product literature) for the solar panels and inverter(s) that provides technical information and certification information for the equipment to be installed with the application.

- Are Equipment Specifications Enclosed? Yes \_\_\_ No \_\_\_

### Protection and Control Schemes

- Enclose copy of any site documentation that describes and details the operation of the protection and control schemes.
- Is Available Documentation Enclosed? Yes \_\_\_ No \_\_\_
- Enclose copies of schematic drawings for all protection and control circuits, relay current circuits, relay potential circuits, and alarm/monitoring circuits (if applicable).
- Are Schematic Drawings Enclosed? Yes \_\_\_ No \_\_\_

**Attachment A: Exhibit 2 - Interconnection Agreement Amendment - Appendix 5**  
**For Generating Facilities Adding ESS for Operation During Daylight Hour Only**

Appendix 5- Additional Operating Requirements for the Utility’s System and Affected System Needed to Support the Interconnection Customer’s Needs

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15. ENERGY STORAGE RETROFIT FACILITIES: Applicable only to a storage facility added to the Generating Facility that has not been cleared by the Energy Storage System Retrofit Study Process.

- a. The storage facility has been released for grid export during the period of 9:00 AM – 5:00 PM. The storage facility may not export outside of the period of 9:00 AM – 5:00 PM. Violations may result in declaration of “Adverse Operating Effects”.
- b. The Interconnection Customer must comply with Energy Storage System Protocols listed in the storage facility’s Purchase Power Agreement with the Utility.

# **ATTACHMENT B**

Limited Waiver of Definitive Interconnection System  
Impact Study Phase 2 and Facility Study Applicability to  
Certain Existing DC-Coupled Transmission-connected  
Interconnected Customers



## **Limited Waiver of DISIS Phase 2 and Facility Study Applicability to Certain Existing DC-Coupled Transmission-Interconnected Sites**

Eligible existing Interconnection Customers of Duke Energy Carolinas, LLC (“DEC”) and Duke Energy Progress, LLC (“DEP” and together with DEC, “Duke Energy” or the “Companies”) proposing material alterations to operating qualifying facility solar generators to integrate retrofit energy storage systems (“ESS”) that would otherwise be required to complete the full DISIS study process shall be eligible for a streamlined DISIS study in a manner that departs from the Definitive Interconnection System Impact Study Process detailed in Section 4.4.7 of the North Carolina Interconnection Procedures (the “NCIP”) and the Facility Study process detailed in NCIP Section 4.5 where the Interconnection Customer meets all of the following criteria:

- (1) Interconnection Customer has previously completed the interconnection study process and is a party to a fully executed North Carolina Interconnection Agreement for a solar-only, transmission-connected Interconnection Request that only contemplated summer peak operation during system impact study;
- (2) Interconnection Customer has submitted a new DC-coupled Interconnection Request to retrofit an ESS and has requested to be studied for winter peak operation;
- (3) Interconnection Customer is retaining inverters studied under the original Interconnection Request, and no material modifications to the interconnected generating facility are proposed in the new Interconnection Request, and
- (4) Interconnection Customer’s new Interconnection Request has been determined to not cause or contribute to the need for Network Upgrades through power flow modeling during Phase 1 of DISIS.

Under this expedited study process, Interconnection Customers meeting the criteria listed above (“Existing DC-Coupled North Carolina Transmission-connected Interconnection Customers”) may exit the Definitive Interconnection Study Process after satisfying the requirements of Readiness Milestone 2 within twenty (20) calendar days of the Phase 1 Report Meeting as specified in NCIP Section 4.4.7.2 and will not be required to complete the DISIS Phase 2 Study described in NCIP Section 4.4.7.3 or the Facility Study described in NCIP Section 4.5. Existing DC-Coupled North Carolina Transmission-connected Interconnection Customers that do not satisfy the requirements of Readiness Milestone 2 (or provide additional security in lieu of the Readiness Milestone) by the required date shall be deemed withdrawn from the Queue and subject to a Withdrawal Penalty pursuant to NCIP Section 6.3.4.

Existing DC-Coupled North Carolina Transmission-connected Interconnection Customers will continue to be responsible for all costs incurred by DEC or DEP including overheads for conducting all required interconnection studies to interconnect the Interconnection’s Customer’s proposed DC-Coupled Generating Facility.

# **ATTACHMENT C**

Procedure for ESS Retrofit at an Existing QF Generation  
Site to Establish Eligibility for Avoided Cost Rates

## Procedure for Energy Storage System Retrofit at an Existing QF Generation Site to Establish Eligibility for Avoided Cost Rates

Pursuant to Ordering Paragraph 6 of the August 17, 2021 *Order Approving SISC Avoidance Requirements and Addressing Solar-Plus-Storage Qualifying Facility Installations* (“Order”), Duke Energy Carolinas, LLC (“DEC”) and Duke Energy Progress, LLC (“DEP” and together with DEC, “Duke Energy” or the “Companies”) have developed the following procedure to govern how an operating qualifying facility (“QF”) proposing to materially alter its generating facility to integrate an energy storage system (“ESS”) would establish eligibility for the avoided cost rate or methodology applicable to the output of the energy storage addition (“New ESS retrofit avoided cost rate”). The Companies have developed a process that is intended to meet the requirements of the Order and to align with the interconnection study process for ESS retrofit additions. Recognizing that approximately 560 QF solar facilities above 1 MW are selling under power purchase agreements (“PPA”) and are eligible to retrofit their QF generator to integrate ESS under the Order, the Companies’ process is also designed to be administratively efficient. Eligibility for a New ESS retrofit avoided cost rate shall be limited to existing QFs that established either a legally enforceable obligation (“LEO”) or entered into a PPA with the Companies under rates and terms approved by the Commission on or before November 15, 2016, and shall extend only for the term of the QF’s PPA, whether currently existing or executed pursuant to an existing LEO established prior to November 15, 2016.

### **I. Notice of Commitment Form**

To establish eligibility for a New ESS retrofit avoided cost rate, a QF must first complete a new Notice of Commitment Form proposing to materially alter its existing QF by adding an ESS. Prior to submitting the Notice of Commitment Form, the QF must update its Form 556 filed with the Federal Energy Regulatory Commission (“FERC”) to identify the ESS being integrated as well as provide notice of the ESS retrofit to the Commission in the docket where the QF’s initial certificate of public convenience and necessity was issued attesting to the fact that the QF still meets the requirements of a small power production facility as defined by FERC regulations. The QF will also need to meet all commercial viability requirements, including submitting a new interconnection request to enter the interconnection study process, in order to demonstrate its commitment to install the retrofit ESS and sell power to Duke Energy under an amended PPA.<sup>1</sup>

The Notice of Commitment Form will serve as a form of legally enforceable obligation for the QF Interconnection Customer proposing to retrofit an ESS at an existing generation site. The Notice of Commitment Form can be submitted to DEC or DEP before, during or after the ESS expedited interconnection process or the Definitive Interconnection Study process, as applicable, but must be received by DEC or DEP prior to execution of an amended PPA or new PPA, subject to a qualifying existing LEO, which includes a new ESS. Additionally, to receive a published New ESS retrofit avoided cost rate versus a negotiated New ESS retrofit avoided cost rate, as further discussed in Section II.a, a QF must submit a Notice of Commitment Form prior to November 1,

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<sup>1</sup> The Companies are in the process of updating their Notice of Commitment Form to address queue reform and new requirements established by Order No. 872, and will be filing that updated Notice of Commitment Form as part of the Companies’ November 1, 2021 Joint Initial Statement in Docket No. E-100, Sub 175. The Companies are also evaluating whether a more targeted Notice of Commitment Form for retrofit ESS should be developed.

2023, the time at which published New ESS retrofit avoided cost rates are no longer available for retrofit ESS QF Interconnection Customers.

## **II. New ESS Retrofit Avoided Cost Rates**

### **a. Initial Published New ESS Retrofit Avoided Cost Rates Available Until November 1, 2023**

Due to the administrative burden of a potentially large volume of existing solar QF Interconnection Customers seeking to retrofit an ESS at an existing generation site in the near future, DEC and DEP plan to publish multiple, initial New ESS Retrofit avoided cost rates for retrofit ESS QF Interconnection Customers. As part of the Companies' November 1, 2021, initial filing in Docket No. E-100, Sub 175, DEC and DEP will each publish 2, 3, 4, 5, 6, 7, 8, 9, and 10-year New ESS retrofit avoided cost rates available until November 1, 2023 for Interconnection Customers proposing to retrofit an ESS at an existing generation site. These published rates will remain available until the earlier of November 1, 2023 or when 100 MW of incremental ESS retrofit additions have submitted Notice of Commitment Forms under the new rates. After November 1, 2023 or after 100 MW of incremental ESS retrofit additions have been submitted, any further eligible ESS retrofits will be provided a negotiated rate commensurate with their LEO as further discussed in Section II.b.<sup>2</sup>

The forecast data used to calculate each published levelized New ESS Retrofit avoided cost rate will begin January 1, 2023 and span the length of time specified for the particular year term of the New ESS Retrofit avoided cost rate. For example, the 8-year published New ESS Retrofit avoided cost rate will represent levelized rates based on forecasts from January 1, 2023 through December 31, 2030. Note the January 1, 2023 date is selected in coordination with the Definitive Interconnection Study Process; because the DISIS Phase 1 interconnection process will conclude at the end of November, 2022, the earliest possible date that a retrofit ESS could come online is likely to be on or after January 1, 2023.

The published New ESS retrofit avoided cost rate available to a retrofit ESS QF Interconnection Customer will correspond to the amount of time left on the QF Interconnection Customer's generation site's current PPA as of January 1, 2023. For example, an Interconnection Customer who signed a fifteen-year PPA in 2015 and is planning to retrofit an ESS at an existing generation site will receive an 8-year published New ESS retrofit avoided cost rate. Note that in the rare case that an ESS retrofit Interconnection Customer has more than 10 years left on its existing PPA as of January 1, 2023, that Interconnection Customer will receive the 10-year published New ESS retrofit avoided cost rate but will secure the 10-year rate for the remaining life of the existing PPA. The initial, published New ESS retrofit avoided cost rates will be filed on November 1, 2021 in Docket No. E-100, Sub 175 in the DEC and DEP biennial avoided cost filing, and will be subject to adjustment if the North Carolina Utilities Commission approves avoided cost rates different than those filed November 1, 2021.

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<sup>2</sup> If the volume of negotiated New ESS avoided cost rate requests becomes administratively burdensome, DEC and DEP reserve the right to make available additional published New ESS retrofit avoided cost rates.

**b. Negotiated New ESS Retrofit Avoided Cost Rates Available After November 1, 2023**

On the earlier of November 1, 2023 or the date that 100 MW of ESS retrofit additions have submitted Notice of Commitment Forms under the published New ESS retrofit avoided cost rates, DEC and DEP will no longer make available published New ESS retrofit avoided cost rates due to the decreasing number of QF Interconnection Customers eligible to retrofit an ESS at an existing generation site as of that date. Instead, DEC and DEP will offer QF Interconnection Customers seeking to retrofit an ESS at existing generation sites after November 1, 2023 negotiated New ESS retrofit avoided cost rates consistent with the Commission-approved methodology at the time the QF commits to the ESS retrofit and obligates itself to sell the ESS' output. The methodology used to calculate these negotiated rates will be the same as negotiated rates calculated for new Interconnection Customers proposing to interconnect a new QF.

**CERTIFICATE OF SERVICE**

I hereby certify that a copy of the foregoing ESS Retrofit Compliance Filing submitted in Docket Nos. E-100, Sub 101 and E-100, Sub 158 has been delivered via U.S. mail or electronically upon all parties of record in the above-captioned dockets.

This, the 29<sup>th</sup> day of September, 2021.

*/s/E. Brett Breitschwerdt* \_\_\_\_\_

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