

NORTH CAROLINA
INTERCONNECTION PROCEDURES,
FORMS, AND AGREEMENTS
For State-Jurisdictional Generator Interconnections

Effective 5/15/2015
Docket No. E-100, Sub 101

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Section 1. General Requirements

1.1 Applicability

- 1.1.1 This Standard contains the requirements, in addition to applicable tariffs and service regulations, for the interconnection and parallel operation of Generating Facilities with Utility Systems in North Carolina. These procedures apply to Generating Facilities that are interconnecting to Utility Systems in North Carolina where the Interconnection Customer is not selling the output of its Generating Facility to an entity other than the Utility to which it is interconnecting.

Interconnection Requests for new Generating Facilities shall be submitted to the Utility for approval at the final design stage and prior to the beginning of construction.

The submission of a written request for a Section 1.2 Pre-Request Response and/or Section 1.3 Pre-Application Report is encouraged to identify potential interconnection issues unforeseen by the Interconnection Customer.

Revised Interconnection Requests for equipment or design changes should be submitted pursuant to Section 1.5.

Notification by the Interconnection Customer to the Utility of change of ownership or change in control should be submitted pursuant to Section 6.11.

- 1.1.1.1 A request to interconnect a certified inverter-based Generating Facility no larger than 20 kW shall be evaluated under the Section 2, 20 kW Inverter Process. (See Attachments 4 and 5 for certification criteria.)
- 1.1.1.2 A request to interconnect a certified Generating Facility no larger than the capacity specified in Section 3.1 shall be evaluated under the Section 3 Fast Track Process. (See Attachments 4 and 5 for certification criteria.)
- 1.1.1.3 A request to interconnect a Generating Facility larger than the capacity stated in Section 3.1, or a Generating Facility that does not qualify for or pass the Fast Track Process or qualify for the 20 kW Inverter Process, shall be evaluated under the Section 4 Study Process. Interconnection Customers that qualify for Section 2 or Section 3 may also choose to proceed directly to Section 4 if they believe Section 4 review is likely to be necessary.

1.1.2 Capitalized terms used herein shall have the meanings specified in the Glossary of Terms in Attachment 1 or the body of these procedures.

1.1.3 The 2015 revisions to the Commission's interconnection standard shall not apply to Generating Facilities already interconnected as of the effective date of the 2015 revisions to this Standard, unless the Interconnection Customer proposes a Material Modification, transfers ownership of the Generating Facility, or application of the 2015 revisions to the Commission's interconnection standard are agreed to in writing by the Utility and the Interconnection Customer. This Standard shall apply if the Interconnection Customer has not actually interconnected the Generating Facility as of the effective date of the 2015 revisions.

Commented [A1]: Note from WG2:

General note for Public Staff/Advanced Energy - This section may need to be updated for new revision

Any Interconnection Customer that has not executed an interconnection agreement with the Utility prior to the effective date of the 2015 revisions to this Standard shall have 30 Calendar Days following the later of the effective date of the Standards or the posted date of notice in writing from the Utility to demonstrate site control pursuant to Section 1.6, and to post the deposit outlined in Section 1.4.

Any Interconnection Customer that has executed an interconnection agreement with the Utility prior to the effective date of this Standard but the Utility has not actually interconnected the Generating Facility, shall have 60 Calendar Days to submit Upgrade and Interconnection Facility payments (or Financial Security acceptable to the Utility for Interconnection Facilities only) required pursuant to Section 5.2. Any amounts previously paid by the Interconnection Customer at the time deposit or payment is due under this Section shall be credited towards the deposit amount or other payment required under this Section.

GreenGo Energy US (GGE US) (WG3/4) has submitted the following paragraph in December to be added to section 1.1.3.

The 2017 revisions to the Commission's interconnection standard shall not apply to IR's submitted prior to November 15, 2016 unless either (1) the IC agrees in writing to the 2017 revisions (at the IC's sole discretion) or (2) the IC receives approval by the Utility of a material modification after the revised Standard is approved by the Commission.

Commented [A2]: GGE Comment: Regardless of the standard applicable to the IR, the benefits of queue priority, tracking and auditing should apply if adopted.

1.1.4 Prior to submitting its Interconnection Request, the Interconnection Customer may ask the Utility's interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The Utility shall respond within 10 Business Days.

1.1.5 Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. All Utilities are expected to meet basic standards

for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

- 1.1.6 References in these procedures to Interconnection Agreement are to the North Carolina Interconnection Agreement. (See Attachment 9.)

1.2 Pre-Request Response

- 1.2.1 The Utility shall designate an employee or office from which information on the application process can be obtained through informal requests from the Interconnection Customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the Utility's Internet web site.
- 1.2.2 The Interconnection Customer may request a Pre-Request Response by providing the Utility details of a potential project in writing, including site address, grid coordinates, project size and proposed Point of Interconnection.

Electric system information provided to the Interconnection Customer should include number of phases and voltage of closest circuit, distance to existing source, distance to substation, and other information and/or materials useful to an understanding of an interconnection at a particular point on the Utility's System, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The Utility shall ~~comply provide with reasonable requests for~~ such information ~~in a timely manner, not to exceed~~ within ten (10) Business Days. The Pre-Request Response produced by the Utility is non-binding and does not confer any rights. The Interconnection Customer must still meet the Section 1.4 requirements to apply to interconnect to the Utility's system and to obtain a Queue Number. Any one developer shall have no more than five (5) requests for Pre-Request Responses in the Pre-Request Response queue at one time.

Commented [A3]: NCSEA change (WG1)

Commented [A4]: December Comment from Dominion Energy: Dominion Energy recommends existing language referencing reasonable requests be retained. Unclear as to the need for the requested change in language.

1.3 Pre-Application Report

- 1.3.1 In addition to, or instead of, requesting an informal Pre-Request Response, an Interconnection Customer may submit a formal written Pre-Application Report request form (see Attachment 3) along with a non-refundable fee of ~~\$300-500~~ for a Pre-Application Report on a proposed project at a specific site. The Utility shall provide the Pre-Application data described in Section 1.3.2 to the Interconnection Customer within ten (10) Business Days of receipt of the completed request form and payment of the ~~\$300-500~~ fee. The Pre-Application Report produced by the Utility is non-binding, does not confer any rights, and the Interconnection Customer must still successfully apply to interconnect to the Utility's system and to obtain a Queue Number. The written Pre-Application Report request form shall include the information in Sections 1.3.1.1 through 1.3.1.8 below to clearly and sufficiently identify the location of the proposed Point of Interconnection. Any one developer shall have no more than five (5) requests for Pre-Application Reports in the Pre-Application Report queue at one time.

Commented [A5]: December proposal by Duke Energy, which was not discussed by the working group during markup of this document. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC.

Commented [A6]: December proposal by Duke Energy, which was not discussed by the working group during markup of this document. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC.

1.3.1.1 Project contact information, including name, address, phone number, and email address.

1.3.1.2 Project location (street address, location map with nearby cross streets and town, etc.).

1.3.1.3 Meter number, pole number, location map or other equivalent information identifying proposed Point of Interconnection, if available.

1.3.1.4 Generator or Storage Type (e.g., solar, wind, combined heat and power, battery, etc.).

1.3.1.5 Size (alternating current kW or kWh).

1.3.1.5 Size (alternating current kW and, for storage, kWh).

1.3.1.6 Single or three phase generator configuration.

1.3.1.7 Stand-alone generator (no onsite load, not including station service – Yes or No?)

1.3.1.8 Is new service requested? Yes or No? If there is existing service, include the customer account number, site minimum and maximum current or proposed electric loads in kW (if available) and specify if the load is expected to change.

1.3.2. Using the information provided by the Interconnection Customer in the Pre-Application Report request form in Section 1.3.1, the Utility shall identify the substation/area bus, bank or circuit likely to serve the proposed Point of Interconnection. This selection by the Utility does not necessarily indicate, after application of the screens and/or study, that this would be the circuit the project ultimately connects to. The information provided by the Utility in this section shall be made publicly available. The Interconnection Customer must request additional Pre-Application Reports if information about multiple Points of Interconnection is requested. Subject to Section 1.3.3, the Pre-Application Report shall include the following information:

1.3.2.1 Total capacity (in MW) of substation/area bus, bank or circuit based on normal or operating ratings likely to serve the proposed Point of Interconnection.

1.3.2.2 Existing aggregate generation capacity (in MW) interconnected to

Commented [A7]: Changes proposed by QF Solutions (WG2)

Commented [A8R7]: Duke Energy is in agreement with these changes

Commented [A9]: Comment from Dominion Energy (WG2):

I noticed that "Storage" was added to the sub-section 1.3.1.4 as being possibly submitted for review in a Pre-Application Report. Storage is typically combined with a generation source such as Solar or Wind, and is rarely - not to say never – used as a stand-alone application. Is this insertion designed to enable a Pre-application Report for a combined Storage-DG system? Ten (10) business days is not adequate for that kind of evaluation and therefore, I would suggest inserting the requirement that it (the storage) be stand-alone to be eligible for 10 days response time for a Pre-application Report.

Commented [A10]: Change proposed by QF Solutions (WG2)

Commented [A11]: Duke proposes alternative wording (replace "or" with "and")

Commented [A12]: NCSEA change (WG1)

Commented [A13]: December Comment from Dominion Energy: Dominion Energy: The Pre-application Report is not designed for public consumption. Pre-application report is request-specific and could be considered business confidential by the Requestor. Additionally, info is based on readily-available info at the time of the request and is subject to change. The data responses also contain utility infrastructure specific info relating to capacity that is considered sensitive and confidential.

- a substation/area bus, bank or circuit (i.e., amount of generation online) likely to serve the proposed Point of Interconnection.
- 1.3.2.3 Aggregate queued generation capacity (in MW) for a substation/area bus, bank or circuit (i.e., amount of generation in the queue) likely to serve the proposed Point of Interconnection.
- 1.3.2.4 Substation nominal distribution voltage and/or transmission nominal voltage if applicable.
- 1.3.2.5 Nominal distribution circuit voltage at the proposed Point of Interconnection.
- 1.3.2.6 Approximate circuit distance between the proposed Point of Interconnection and the substation.
- 1.3.2.7 Relevant line section(s) actual or estimated peak load and minimum load data, including daytime minimum load and absolute minimum load, when available.
- 1.3.2.8 Number and rating of protective devices and number and type (standard, bi-directional) of voltage regulating devices between the proposed Point of Interconnection and the substation/area. Identify whether the substation has a load tap changer.
- 1.3.2.9 Number of phases available at the proposed Point of Interconnection. If a single phase, distance from the three-phase circuit.
- 1.3.2.10 Limiting conductor ratings from the proposed Point of Interconnection to the distribution substation.
- 1.3.2.11 Whether the Point of Interconnection is located on a spot network, grid network, or radial supply.
- 1.3.2.12 Based on the proposed Point of Interconnection, existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks.
- 1.3.2.13 Other information regarding an Affected System the Utility deems relevant to the Interconnection Customer.

1.3.3 The Pre-Application Report need only include existing data. A Pre-Application Report request does not obligate the Utility to conduct a study or other analysis of the proposed generator in the event that data is not readily available. If the Utility cannot complete all or some of the Pre-Application Report due to lack of available data, the Utility shall provide the Interconnection Customer with a Pre-Application Report within ten (10) Business Days that includes the data that is readily available. Notwithstanding any of the provisions of this section, the Utility shall, in good faith, include data in accordance with Good Utility Practice in the Pre-Application Report that represents the best available information at the time of reporting. Further, the total capacity provided in Section 1.3.2.1 does not indicate that an interconnection of aggregate generation up to this level may be completed without impacts since there are many variables studied as part of the interconnection review process, and data provided in the Pre-Application Report may become outdated at the time of the submission of the complete Interconnection Request.

Commented [A14]: NCSEA change (WG1)

Commented [A15]: December Comment from Dominion Energy: Dominion Energy: Remove Ten (10) day reference here as time frame is referenced in Section 1.3.1.

Commented [A16]: NCSEA change (WG1)

IREC (WG1) has submitted the following sections to be added to the document. If changes are accepted, subsequent sections of the document will need to be renumbered as appropriate.

Commented [A17]: December Comment from IREC: IREC notes that the proposed language included as subsection 1.4 [Hosting Capacity Map] should be refined if included in the final interconnection standard, or may be better suited as a separate, proposed order.

1.4 Hosting Capacity Map

The lines and substations could be color-coded to show areas with available capacity (green), those approaching limits (yellow), and those at or exceeding capacity limits (red). The maps should be easily accessible via utility websites, though a simple log-in process can be used for security purposes. These maps should evolve overtime to include additional information and ultimately actual hosting capacity modeling, but for the first iteration we suggest the following items be included:

Commented [A18]: December Comment from Dominion Energy: Dominion Energy: Time frame and cost responsibility for development of web-based services is a concern. Do not recommend that web-based services be part of the regulations at this time as a requirement; perhaps as a topic for utilities to consider further.

Substation:

- Name
- Voltage
- Installed and Queued DG (MW) (aggregated)
- Total DG (MW) (aggregated)
- Projected Load
- Current Penetration level (%)
- Max remaining generation capacity
- Currently scheduled upgrades?

- Notes: (Space to include any other relevant information that can be manually recorded to help guide interconnection applicants, including electrical restrictions, known constraints, etc.)

Feeder:

- Name of substation line connects to
- Line voltage
- Number of phases
- Total capacity
- Currently connected capacity
- Currently queued capacity
- Projected Load
- Current penetration level (%)
- Currently scheduled upgrades?
- Notes: (Space to include any other relevant information that can be manually recorded to help guide interconnection applicants, including electrical restrictions, known constraints (i.e. voltage issues), etc.)

1.5 Public Interconnection Queue Reports

Each utility shall maintain a public interconnection queue, available in a sortable spreadsheet format on its web site, which it shall update on at least a monthly basis. The date of the most recent update shall be clearly indicated.

The public queue should include, at a minimum, the following information about each interconnection application.

1. Application or queue number
2. Facility capacity (kW)
3. Primary fuel type (e.g., solar, wind, bio-gas, etc.)
4. Secondary fuel type (if applicable)
5. Exporting or Non-Exporting
6. City
7. Zip code
8. Substation
9. Feeder
10. Status (active, withdrawn, interconnected, etc.)

Commented [A19]: December Comment from Dominion Energy: Dominion Energy: Increased frequency and information proposed for reporting increases administrative burden on the utilities, costs for which recovery from Interconnection Customers is not defined, and the potential to negatively impact the processing of interconnection requests as resources are utilized for reporting rather than processing. Development of the reports is a time-intensive and manual process. Recommend that the Stakeholders discuss how the existing reports are being utilized before increasing frequency and information for reporting.

11. Date application deemed complete

12. Date of notification of Fast Track screen results (including 20 kW Inverter Process projects) (if applicable)

13. Fast Track Screen Results (pass or fail, and if fail, identify the screens failed)

14. Date of notification of Supplemental Review results (if applicable)

15. Supplemental Review Results (pass or fail, and if fail, identify the screens failed)

16. Date of notification of Impact Study results (if applicable)

17. Date of notification of Facilities Study results and/or construction estimates (if applicable)

18. Date final interconnection agreement is provided to customer

19. Date agreement is signed by both parties

20. Date of grant of permission to operate

21. Final interconnection cost paid to utility

Strata Solar (WG1) has submitted the following sections to be added to the document. If changes are accepted, subsequent sections of the document will need to be renumbered as appropriate.

1.6 Information to be Included in Monthly Reports

The report, to be published on a monthly basis, first is to provide a snapshot of the interconnection queue and shall be filed in Microsoft Excel spreadsheet form listing in separate columns:

1.6.1.1 each interconnection request identified by Queue Number and fuel type;

1.6.1.2 date of issuance of Queue Number;

1.6.1.3 the capacity of the transformer to which the project will be interconnected;

1.6.1.4 the substation to which the project will be interconnected;

1.6.1. if the project is to connect to the distribution system, the feeder/circuit to which the project will be interconnected;

1.6.1.6 if the project is to connect to the transmission system, the name and size of the line to which the project will be interconnected;

1.6.1.7 whether the project will connect to the distribution or transmission system;

1.6.1.8 the then current study status for each project; and

1.6.1.9 all interconnection requests that have been denied or withdrawn. In the second report, to be published quarterly, the Utilities shall report on queue performance in moving the interconnection requests through the study process to a final interconnection agreement and construction of any upgrades.

The Utilities shall track interconnection requests from:

1.6.2.1 the date a queue number is assigned to the date an interconnection agreement is sent by the Utility to the IC for execution; and

1.6.2.2 from the date the IC returns the executed interconnection agreement (along with payment to construct Upgrades and Interconnection Facilities) to the date the Interconnection Facilities (along with any required Upgrades) are completed and available for operation by the IC. The Utilities shall only track the Project As and Project Bs for this report. The first deadline for the first reports shall be on _____; and it shall be published monthly on the 1st of each month, and the first deadline for the second report shall be on _____; and it shall be filed quarterly thereafter on or before November 1, February 1, and May 1 annually.

IREC (WG1) has submitted the following sections to be added to the document. If changes are accepted, subsequent sections of the document will need to be renumbered as appropriate.

1.7 Information to be Included in Quarterly/Bi-Annual/Annual Reports

The following list contains minimum reporting requirements that utilities shall file with the Commission and post publicly on the utility website on a quarterly/bi-annual/annual basis. These reports are intended to provide a high-level analysis of the public queue data described above, plus provide additional detail about the operation of the pre-application process.

Reports should include, at a minimum, the following information:

1. Compiled public queue through the end of that year or reporting period, including all of the information listed above, plus total installed cost without incentives for each project (may be redacted in any publicly available versions)
2. Pre-Application Reports
 - a. Total number of reports requested
 - b. Total number of reports in process

- c. Total number of reports issued
- d. Total number of requests withdrawn
- e. Maximum, mean, and median processing times from receipt of request to issuance of report.
- f. Number of reports processed in more than 20 Business Days

3. Interconnection Applications:

- a. Total number received, broken down by:
 - i. Primary fuel type (e.g., solar, wind, bio-gas, etc.)
 - ii. System size (e.g., <20 kW, <1 MW, <5MW, >5MW)
- b. 20 kW Inverter Process
 - i. Total number of applications processed
 - ii. Maximum, mean and median processing times from receipt of complete Application to issuance of Interconnection Agreement
- c. Fast Track Process
 - i. Total number of applications that passed
 - ii. Total number of applications that failed
 - iii. Maximum, mean and median processing times from receipt of complete Application to issuance of Interconnection Agreement
- d. Supplemental Review
 - i. Total number of applications that passed
 - ii. Total number of applications that failed
 - iii. Maximum, mean and median processing times from receipt of complete Application to issuance of Interconnection Agreement
- e. Study Process
 - i. System Impact Studies
 - 1. Total number of System Impact Studies completed
 - 2. Maximum, mean, and median processing times from receipt of signed System Impact Study agreement to provision of study results.
 - ii. Facilities Studies
 - 1. Total number of Facilities Studies completed
 - 2. Maximum, mean, and median processing times from receipt of signed Facility Study agreement to provision of study results.
 - iii. Maximum, mean, and median processing times for projects undergoing the study process from receipt of complete Application to issuance of Interconnection Agreement

f. Construction: Number of projects where final construction milestone was not reached by time specified in the Interconnection Agreement.

g. Number of Projects that achieved Commercial Operation, by:

i. Primary fuel type (e.g., solar, wind, bio-gas, etc.)

ii. System size (e.g., <20 kW, <1 MW, <5MW, >5MW)

NCSEA (WG1) has submitted the following sections to be added to the document. If changes are accepted, subsequent sections of the document will need to be renumbered as appropriate.

4. Utilities shall file reports with the NCUC outlining (1) the sections of the NCIP that require they meet a deadline, (2) their average response time, (3) the number of times that they have failed to meet the deadline, and (4) what "reasonable efforts" they are taking to improve their performance

1.4 Interconnection Request

1.4.1 The Interconnection Customer shall submit its Interconnection Request to the Utility, and the Utility shall notify the Interconnection Customer confirming receipt of the Interconnection Request within three (3) Business Days of receiving the Interconnection Request.

The Interconnection Request Application Form shall be date- and time-stamped upon receipt of the following:

1.4.1.1 A substantially complete Interconnection Request Application Form contained in Attachment 2 submitted by a valid legal entity registered with the North Carolina Secretary of State, and signed by the Interconnection Customer.

1.4.1.2 The applicable fee or Interconnection Request Deposit. The applicable fee is specified in the Interconnection Request Application Form and applies to a certified inverter-based Generating Facility no larger than 20 kW reviewed under Section 2 and to any certified Generating Facility no larger than the capacity specified in Section 3.1 to be evaluated under the Section 3 Fast Track Process.

For all Generating Facilities that do not qualify for the 20 kW Inverter Process or the Fast Track Process, fail the Fast Track and Supplemental Review Process under Section 3.0 and are to be evaluated under the Section 4 Study Process, an Interconnection Request Deposit is required. The Interconnection

Request Deposit shall equal \$20,000 plus one dollar (\$1.00) per kWac of capacity specified in the Interconnection Request Application Form, not to exceed an aggregate Interconnection Request Deposit of \$100,000. The Interconnection Request Deposit is intended to cover the Utility's reasonably anticipated costs including overheads for conducting the System Impact Study and the Facilities Study. Such deposit shall, however, be applicable towards the cost of all studies, Upgrades and Interconnection Facilities including overheads.

Commented [A20]: December proposal by Duke Energy which was not discussed by the working group during markup of this document. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC.

Commented [A21]: December proposal by Duke Energy which was not discussed by the working group during markup of this document. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC.

- 1.4.1.3 A Site Control Verification letter (sample included within Attachment 2).
- 1.4.1.4 A site plan indicating the location of the project, the property lines and the desired Point of Interconnection.
- 1.4.1.5 An electrical one-line diagram for the Generating Facility.
- 1.4.1.6 Inverter specification sheets for the Interconnection Customer's equipment that will be utilized.
- 1.4.2 The original date- and time-stamp applied to the Interconnection Request Application Form shall be accepted as the qualifying date- and time-stamp for the purposes of establishing Queue Position and any timetable in these procedures.
- 1.4.3 The Utility shall notify the Interconnection Customer within ten (10) Business Days of the receipt of the Interconnection Request Application Form as to whether the Form and initial supporting documentation specified in Sections 1.4.1.1 through 1.4.1.6 are complete or incomplete. An Interconnection Request will be deemed complete upon submission of the listed information in Section 1.4.1 to the Utility.
- 1.4.4 If the Interconnection Request Application Form and/or the initial supporting documentation is incomplete, the Utility shall provide, along with notice that the information is incomplete, a written list detailing all information that must be provided. The Interconnection Customer will have ten (10) Business Days after receipt of the notice to submit the listed information. If the Interconnection Customer does not provide the listed information or a request for an extension of time, not to exceed ten (10) additional Business Days, within the deadline, the Interconnection Request will be deemed withdrawn.

Dominion/WG2 has submitted the following sections to be added to the document. If changes are accepted, subsequent sections of the document will need to be renumbered as appropriate.

1.5 Modification of the Interconnection Request

"Material Modification" means a modification to machine data or equipment configuration or to the interconnection site of the Generating Facility that has a material impact on the cost, timing or design of any Interconnection Facilities or Upgrades or that may adversely impact other Interdependent Interconnection Requests with higher Queue Numbers. Material Modifications include certain project revisions as defined in Section 1.5.1.

1.5.1 (a) Indicia of a Material Modification ~~before the System Impact Study has begun~~ include only:

1.5.1.1 A change in Point of Interconnection (POI) to a new location, unless the change in a POI is on the same circuit less than two (2) poles away from the original location, and the new POI is within the same protection zone as the original location;

1.5.1.2 A change or replacement of generating equipment such as generator(s), inverter(s), transformers, relaying, controls, etc. that is not a like-kind substitution in size, ratings, impedances, efficiencies or capabilities of the equipment specified in the original or preceding Interconnection Request;

1.5.1.3 A change from certified to non-certified devices ("certified" means certified by an OSHA recognized Nationally Recognized Test Laboratory (NRTL), to relevant UL and IEEE standards, authorized to perform tests to such standards);

1.5.1.4 A change of transformer connection(s) or grounding from that originally proposed;

1.5.1.5 A change to certified inverters with different specifications or different inverter control specifications or set-up than originally proposed;

1.5.1.6 An increase of the Maximum Generating Capacity of a Generating Facility; or

1.5.1.6 A change reducing the AC output of the generating facility by more than 10%.

1.5.1 (b) Indicia of a Material Modification after the System Impact Study has begun, include, but are not limited to:

1.5.1.1 A change in Point of Interconnection (POI) to a new location, unless the change in a POI is on the same circuit less than two (2) poles away from the original location, and the new POI is within the same protection zone as the original location;

1.5.1.2 A change or replacement of generating equipment such as

Commented [A22]: Dominion (WG2): start of system impact study may be vague, may need better milestone.

Agreement on final language TBD

Commented [A23]: Dominion (WG2): Would like to move to requiring only certified devices generally for interconnection.

Because Dominion's issue is generally outside the scope of the working group and proposed revisions, there was not clarity or agreement amongst the group on this point.

IREC's position is that there should be a path for non-certified devices to interconnection through the study process.

generator(s), inverter(s), transformers, relaying, controls, etc. that is not a like-kind substitution in size, ratings, impedances, efficiencies or capabilities of the equipment specified in the original or preceding Interconnection Request;

1.5.1.3 A change from certified to non-certified devices ("certified" means certified by an OSHA recognized Nationally Recognized Test Laboratory (NRTL), to relevant UL and IEEE standards, authorized to perform tests to such standards);

1.5.1.4 A change of transformer connection(s) or grounding from that originally proposed;

1.5.1.5 A change to certified inverters with different specifications or different inverter control specifications or set-up than originally proposed;

1.5.1.6 An increase of the Maximum Generating Capacity of a Generating Facility; or

1.5.1.6 A change reducing the Maximum Generating Capacity of the generating facility by more than 10%.

Commented [A24]: Dominion (WG2) proposes to delete this requirement because it's understanding is that all project devices must be certified. IREC disagrees with this interpretation and suggested revision.

We may not be able to reach consensus on this change.

Duke Energy has submitted the following alternative proposal for sections 1.5 and 1.5.1.

1.5 Modification of the Interconnection Request

"Material Modification" means a modification to machine data or equipment configuration or to the interconnection site of the Generating Facility that has a material impact on the cost, timing or design of any Interconnection Facilities or Upgrades or that may adversely impact other Interdependent Interconnection Requests with higher Queue Numbers, which includes any required study revisions resulting from the modification. The Utility shall allow for modifications submitted before the execution of a System Impact Study Agreement which do not change the nature of the interconnection request, as determined by the Utility. Material Modifications include certain project revisions as defined in Section 1.5.1.

1.5.1 Indicia of a Material Modification, include, but are not limited to:

1.5.1.1 A change in Point of Interconnection (POI) to a new location, unless the change in a POI is on the same circuit less than two (2) structures away from the original location, on the same side of any prior connections to the circuit, and the new POI is within the same protection zone as the original location;

1.5.1.2 A change or replacement of generating equipment such as generator(s), inverter(s), transformers, relaying, controls, etc.

that is not a like-kind substitution in size, ratings, impedances, efficiencies or capabilities of the equipment specified in the original or preceding Interconnection Request;

1.5.1.3 A change from certified to non-certified devices ("certified" means certified by an OSHA recognized Nationally Recognized Test Laboratory (NRTL), to relevant UL and IEEE standards, authorized to perform tests to such standards);

1.5.1.4 A change of transformer connection(s) or grounding from that originally proposed;

1.5.1.5 A change to certified inverters with different specifications or different inverter control specifications or set-up than originally proposed;

1.5.1.6 An increase of the Maximum Generating Capacity of a Generating Facility; or

1.5.1.6 A change reducing the Maximum Generating Capacity of a Generating Facility by more than 10%.

1.5 Modification of the Interconnection Request

"Material Modification" means a modification to machine data or equipment configuration or to the interconnection site of the Generating Facility that has a material impact on the cost, timing or design of any Interconnection Facilities or Upgrades. Material Modifications include project revisions proposed at any time after receiving notification by the Utility of a complete Interconnection Request pursuant to Section 1.4.3 that 1) alters the size or output characteristics of the Generating Facility from its Utility-approved Interconnection Request submission; or 2) may adversely impact other Interdependent Interconnection Requests with higher Queue Numbers.

1.5.1 Indicia of a Material Modification, include, but are not limited to:

1.5.1.1 After ten (10) business days from completion of the scoping meeting, A change in Point of Interconnection (POI) to a new location, unless the change in a POI is on the same circuit less than two (2) poles away from the original location, and the new POI is within the same protection zone as the original location;

Upon Commission's approval of any/all new technical parameters, studies, etc., the IC shall be allowed to change its POI as it relates to identification and selection of an alternate POI in response to the Commission approved change.

1.5.1.2 A change or replacement of generating equipment such as

Commented [A25]: December Addition from GGE US

Comment (for this addition and below): The scoping meeting is crucial in establishing mutual alignment on the preferred POI from which the future studies will be modeled based upon the known studies and technical parameters utilized by the Utility at the time. An interconnection customer should have the right to change the POI prior to or within 10 business days after completion of the scoping meeting as the utility would not incur rework, given the studies would not have been initiated prior to the scoping meeting. The IC would therefore be able to make a decision after discussion with the utility's engineers at the scoping meeting to make a more educated decision on where the final POI should be selected.

Commented [A26]: December Addition from GGE US

generator(s), inverter(s), transformers, relaying, controls, etc. that is not a like-kind substitution in size, ratings, impedances, efficiencies or capabilities of the equipment specified in the original or preceding Interconnection Request;

1.5.1.3 A change from certified to non-certified devices ("certified" means certified by an OSHA recognized Nationally Recognized Test Laboratory (NRTL), to relevant UL and IEEE standards, authorized to perform tests to such standards);

1.5.1.4 A change of transformer connection(s) or grounding from that originally proposed;

1.5.1.5 A change to certified inverters with different specifications or different inverter control specifications or set-up than originally proposed;

1.5.1.6 An increase of the AC output of a Generating Facility; or

1.5.1.6 A change reducing the AC output of the generating facility by more than 10%.

1.5.2 The following are not indicia of a Material Modification at any time:

1.5.2.1 A change in ownership of a Generating Facility; the new owner, however, will be required to execute a new Interconnection Agreement and Study agreement(s) for any Study which has not been completed and the Report issued by the Utility.

1.5.2.2 A change or replacement of generating equipment such as generator(s), inverter(s), solar panel(s), transformers, relaying, controls, etc. that is a like-kind substitution in size, ratings, impedances, efficiencies or capabilities of the equipment specified in the original or preceding Interconnection Request;

1.5.2.3 An increase in the DC/AC ratio that does not increase the maximum AC output capability of the generating facility;

1.5.2.4 A decrease in the DC/AC ratio that does not reduce the AC output capability of the generating facility by more than 10%.

1.5.2.5 A change in the DC system configuration to include additional equipment that does not impact the Maximum Generating Capacity or the proposed AC configuration of the Generating Facility including: DC optimizers, DC-DC converters, DC charge controllers, static VAR compensators, power plant controllers, and energy storage devices such that the output is delivered during the same periods considered during the System Impact Study.

Commented [A27]: December Change from GGE US: GGE US suggests deleting 1.5.1.2 and 1.5.1.5 and replacing with a new 1.5.1.2 as follows:

"Any change or replacement to the equipment on the AC side of the generating equipment such as generators, transformers, relays, controls, etc. that is not a like-kind substitution in size, ratings, impedances, or capabilities of the equipment specified in the original or preceding interconnection request;"

Commented [A28]: December Change from GGE US: GGE US suggests deleting 1.5.1.2 and 1.5.1.5 and replacing with a new 1.5.1.2 as follows:

"Any change or replacement to the equipment on the AC side of the generating equipment such as generators, transformers, relays, controls, etc. that is not a like-kind substitution in size, ratings, impedances, or capabilities of the equipment specified in the original or preceding interconnection request;"

Commented [A29]: Dominion change (WG2)

Commented [A30]: December Change from GGE US: Insert prior to 1.5.2.1 the following, "A change in the DC side of the generating equipment; for example change in panels, inverters, cables, racking, or racking type."

Commented [A31]: Comment from Dominion Energy (WG2) referring to "static VAR compensators":

A static VAR compensator is an AC component that does changes the AC configuration of the facility. I assume the Interconnection Customer would want to use it for power factor control or voltage regulation. In my opinion, this will require extra review by the utility to make sure there is no interaction with other control systems. I would think this will be a material modification but it is currently listed as a non-material modification.

Commented [A32]: Duke Energy proposes cutting "static VAR compensators".

Comment: Static var compensators are not part of the DC system configuration.

Commented [A33]: Change proposed adding "static VAR compensators, power plant controllers," by QF Solutions (WG2)

Commented [A34]: Duke (Gajda) – (Section 1.5.2.5) Duke is evaluating the impacts of these changes to the production profile of the generating facility and system impact study procedures.

Industry groups and developers support this proposal.

(WG2)

Commented [A35]: Comment from Duke Energy (WG2):

Duke supports this version of 1.5.2.5, but only if the modification of the Interconnection Request to include 24 hours import/export production profile information is included.

1.5.2.6 A change in transformer impedance or kVA base rating that does not change either impedance or kVA rating by more than 10%.

Commented [A36]: Duke & Dominion were opposed to the addition of 1.5.2.6 due to issues with studying the effects. (WG2)

- 1.5.3 To the extent Interconnection Customer proposes to modify any information provided in the Interconnection Request deemed complete by the Utility, the Interconnection Customer shall submit any such modifications to the Utility in writing. If the Utility determines that the proposed modification(s) constitutes a Material Modification, the Utility shall notify the Interconnection Customer in writing within ten (10) Business Days that the modification is a Material Modification and the Interconnection Request shall be withdrawn from the Queue unless the Interconnection Customer withdraws the proposed Material Modification within 15 Calendar Days of receipt of the Utility's written notification. If the modification is determined by the Utility not to be a Material Modification, then the Utility shall notify the Interconnection Customer in writing that the modification has been accepted and that the Interconnection Customer shall retain its Queue Number. Any dispute as to the Utility's determination that a modification constitutes a Material Modification shall proceed in accordance with Section 6.2 below.

Commented [A37]: December Change from GGE US. Delete "...provided in the IR deemed complete by the utility" and replace with "...as aligned ten (10) business days after the scoping meeting..."

1.5.4 Modification Inquiry

- 1.5.4.1 Prior to making any modification, the Interconnection Customer may first submit an informal modification inquiry in writing that requests the Utility to evaluate whether such modification to the original or most recent Interconnection Request is a Material Modification. The Interconnection Customer shall provide specific details on all changes that are to be considered by the Utility.
- 1.5.4.2 In response to Interconnection Customer's informal request, if the Utility evaluates the proposed modification(s) and determines that the changes are not Material Modifications, the Utility shall inform the Interconnection Customer in writing within ten (10) Business Days. If the Interconnection Customer wishes to proceed with the proposed modification(s), the Interconnection Customer shall submit a revised Interconnection Request Application Form that reflects the approved modifications.

GGE US (WG3/4) has submitted the following additional paragraph in December.

- 1.5.4.3 Non-response by the Utility within ten (10) business days from receipt of the written modification request shall be deemed Approved.

1.6 Site Control

Documentation of site control shall be submitted to the utility with the Interconnection Request using the sample site control verification form included in the Interconnection Request in Attachment 3.

Site control may be demonstrated through:

1. Ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the Generating Facility;
2. An option to purchase or acquire a leasehold site for such purpose; or
3. An exclusivity or other business relationship between the Interconnection Customer and the entity having the right to sell, lease, or grant the Interconnection Customer the right to possess or occupy a site for such purpose.

Should Interconnection Customer's site control lapse at any point in time prior to interconnection and such lapse is brought to the attention of Utility, the Utility shall notify the Interconnection Customer in writing of the alleged lapse in site control. The Interconnection Customer shall have ten (10) Business Days from the posted date on the notice from the Utility to cure and submit documentation of re-established site control, where failure to cure the lapse will result in the Interconnection Request being deemed withdrawn.

1.7 Queue Number

1.7.1 The Utility shall assign a Queue Number pursuant to Section 1.4.2. The Queue Number of each Interconnection Request shall be used to determine the cost responsibility for the Upgrades necessary to accommodate the interconnection. Subject to Section 1.8, the Queue Number of each Interconnection Request shall also determine the order in which each Interconnection Request is studied.

1.7.2 Subject to the provisions of Sections 1.4, 1.5, and 1.6, Generating Facilities shall retain the Queue Number assigned to their initial Interconnection Request throughout the review process, including where moving through the processes covered by Sections 2, 3, and 4.

1.8 Interdependent Projects

"Interdependent Customer" (or "Project"), "Project A," and "Project B," and "Project C" are defined in the glossary of terms (see Attachment 1).

1.8.1 Upon an Interconnection Customer's submission of a Section 1.4 Interconnection Request for the Section 3 Fast Track Process or Section 4 Study Process, the Utility shall review the Interconnection Request and make a preliminary determination whether any known Interdependency exists between the Interconnection Customer's proposed Generating Facility

Commented [A38]: Change proposed by the Public Staff (WG3/4)

and any other Interconnection Customer with a lower Queue Number. Any preliminary determination by the Utility that the Generating Facility does not create an Interdependency will result in the Interconnection Request being preliminarily designated as a Project A and the Utility shall proceed immediately to either the Section 3 Fast Track Process or the Section 4 Study process, as applicable. The Utility shall advise the Interconnection Customer at the Section 4.2 Scoping Meeting, if requested by the Interconnection Customer, regarding its preliminary determination of whether Interdependency would be created by the Generating Facility. A Generating Facility designated and reviewed for system impacts as a Project A may still be determined to create an Interdependency and may be designated by the Utility as an Interdependent Project during the Section

4.3 System Impact Study Process. Once the System Impact Study report is issued by the Utility designated a Generating Facility as a Project A for purposes of the Section 4.4 Facilities Study, the Interconnection Request shall retain this designation without change.

- 1.8.2 If the Utility determines that the Interconnection Customer's proposed Generating Facility is Interdependent with one (1) other Interconnection Request with a lower Queue Number, the Utility shall notify the Interconnection Customer at the Section 4.2 Scoping Meeting that the Interconnection Request is designated as a Project B.
 - 1.8.2.1 Following the Section 4.2 Scoping Meeting and execution of the System Impact Study Agreement, the Project B shall proceed to the Section 4.3 System Impact Study process. Project B shall receive a System Impact Study report that assumes the interdependent Project A Interconnect Request with the lower Queue Number completes construction and interconnection and another System Impact Study report that assumes the interdependent Project A Interconnect Request with the lower Queue Number is not constructed and is withdrawn.
 - 1.8.2.2 The Utility shall not proceed to a Project B Facilities Study until after the Project B Interconnection Customer returns a signed Facilities Study Agreement to the Utility and the Utility has issued the Section 4.4.4 Facilities Study report for the Interdependent Project A. The Project B Interconnection Customer shall then have the option of whether to proceed with a Facility Study, or wait until the Interdependent Project A executes a Final Interconnection Agreement and makes payment for any required Upgrade, Interconnection Facilities, and other charges under Section 5.2. If the Project B Interconnection Customer with a signed Facilities Study Agreement prior to Interdependent Project A committing to Section 5 construction, the Project B's Facility Study shall assume that the interdependent Project A Interconnection Request with the lower Queue Number completes construction and interconnection. If Project A is later cancelled prior to the Project A Interconnection Customer making payment for the required

Upgrade, the Utility will revise the Project B Facility Study at Project B Interconnection Customer's expense. If Project B Interconnection Customer chooses to wait to request the Project B Facility Study, Project B is not required to adhere to the timeline in Section 4.4.1 until Project A has signed an Interconnection Agreement and paid the payment charge specified in Section 5.2.4 of these Interconnection Procedures or withdrawn.

- 1.8.3 If the Utility determines that that the Interconnection Customer's proposed Generating Facility is Interdependent with more than one (1) other Interconnection Request with lower Queue Numbers, the Utility shall make a preliminary determination and notify the Interconnection Customer at the Section 4.2 Scoping Meeting, if requested by the Interconnection Customer, describing generally the number and type of Interdependencies of Interconnection Requests with lower Queue Numbers.

- 1.8.3.1 Except as provided in Section 1.8.3.3 and 1.8.3.4 below, the Utility shall not study a project if it is interdependent with more than one project, each of which has a lower Queue Number. The utility will study a project when interdependency with only one lower Queue Number project exists. The removal of interdependency with multiple projects may be the result of 1) upgrades to the Utility System which eliminate the cause of the interdependency, 2) withdrawal of interdependent project(s) with lower Queue Numbers, or 3) a lower Queue Number project signing an Interconnection Agreement and making payments required in Section 5.2.4.

- 1.8.3.2 Within five (5) Business Days of an Interconnection Request becoming a Project B Interconnection Request that is Interdependent with only one (1) other Interconnection Request with a lower Queue Number, the Utility shall schedule the Section 4.2 Scoping Meeting and provide the new Project B an executable System Impact Study Agreement. Upon being designated by the Utility as a Project B the Interconnection Customer's Queue Number will be used to determine the order in which the Interconnection Request is studied under section 4.3 ~~4.3~~ relative to all other Interconnection Requests.

Commented [A39]: December Change from Duke Energy (see below for section)

Commented [A40]: Change proposed by the Public Staff (WG3/4)

The Public Staff (WG3/4) has proposed adding section 1.8.3.3 to the document. Suggested changes from Duke Energy are indicated with comments.

Public Staff also suggests that the utilities make available a technical interconnection specialist for animal waste facility projects to help guide them through the interconnection process in the most efficient manner possible. The utilities would make contact information available for this person on their website, and also ensure that the current

Commented [A41]: Additional comment from Public Staff:

Allow animal waste facilities 2MW or less to receive expedited treatment in study queue with regard to other interdependent projects. Animal waste facilities would not move in front of projects that were already being studied (A's and B's), but would move ahead of other projects in the queue regardless of queue number. Animal waste facility operator would take on the payment obligations for any upgrades arising from its new position in the Queue.

contact information for this person is made available to the NC Pork Council and the NC Poultry Federation.

1.8.3.3 When an Interconnection Customer is proposing to interconnect a Small Animal Waste Facility and that facility is interdependent with more than one project, each of which has a lower Queue Number, the utility shall designate the Small Animal Waste Facility for expedited Section 4 study ahead of other interdependent Interconnection Customers that have not commenced the Section 4 study process pursuant to Section 1.8.3.1, as either (i) Project B, if the project with the next lowest Queue number to Project A has not completed the Section 4.2 Scoping Meeting or executed a System Impact Study Agreement; or (ii) Project C, if a Project B has already been designated by the Utility, completed the Section 4.2 Scoping Meeting, and/or executed a System Impact Study Agreement. Upon being designated by the Utility as a Project C, the Small Animal Waste Facility shall be the next facility to become a Project B, regardless of whether a project another interdependent Interconnection Request with a lower Queue Number exists for that interconnection location. Notwithstanding Section 1.7.1, a Small Animal Waste Facility will take on the payment obligations be responsible for Interconnection Facilities and any Upgrades arising from its new designated Project B or Project C position in the Queue as provided for in this Section such that if upgrades are needed, the upgrade obligations will be those of the Small Animal Waste Facility.

Commented [A42]: Addition proposed by Duke Energy

Commented [A43]: Change proposed by Duke Energy

Commented [A44]: Change proposed by Duke Energy

Commented [A45]: Deletion proposed by Duke Energy

Commented [A46]: Change proposed by Duke Energy

Commented [A47]: Change proposed by Duke Energy

Commented [A48]: Change proposed by Duke Energy

GGE US (WG3/4) has submitted the following section 1.8.3.3 in December.

1.8.3.3 The Utility's failure to notify the IC within the ten (10) business days of an IR becoming a Project B shall result in an immediate refund of 25% of the IR deposit to the IC and shall result in a defacto waiver by the Utility of any future IR deposit requests necessary to complete the studies.

Duke Energy (WG3/4) has added the following section in the second round (December) of revisions.

1.8.3.4 When an Interconnection Customer is proposing to interconnect a Standby Generation Facility with zero export requested, the Utility

shall designate the Standby Generation Facility for expedited Section 4 study as a Project A and also ahead of all other Section 4 studies currently underway in the Utility study queue, unless there are other Standby Generation Facilities currently under study, in which case such Standby Generation Facilities shall be studied in their own queue order. Notwithstanding Section 1.7.1, a Standby Generation Facility will be responsible for Interconnection Facilities and any Upgrades arising from its designated Project A position in the Queue as provided for in this section.

NCSEA (WG1) has submitted the following section to be added to the document. If changes are accepted, subsequent sections of the document will need to be renumbered as appropriate.

- 1.9 The Utility shall develop and keep updated an Interconnection Requirements document to detail and communicate Utility-specific interconnection requirements, processes and procedures. The document shall include (but not be limited to) interconnection restrictions, study scope and criteria, Facility technical requirements, expected operating requirements, commissioning and acceptance testing requirements and processes, Utility-specific interconnection policies and procedures, criteria and procedure for Material Modifications. The Utility shall gather stakeholder inputs to the development and revision of the Interconnection Requirements document through an Interconnection Technical Working Group, which shall include representatives from relevant stakeholder groups.

Commented [A49]: December Comment from Dominion Energy: Dominion Energy: The Study process is designed to identify grid modifications needed to accommodate an interconnection request. While some limited utility-specific interconnection parameters may be applicable for posting, the premise of performing a Study to identify interconnection parameters should be maintained. Additionally, the Utility is responsible for the operation of the grid under regulation and therefore, needs to retain the primary role for determining interconnection requirements. A Technical Working Group involving Stakeholders may be beneficial for communication of general parameters, but this group should be at the option of the utility, or upon request of Developers, not as part of regulation. Specific interconnection information is already communicated to individual Developers regarding specific requests which cannot be shared in a group setting due to confidentiality.

Commented [A50]: Comment from IREC: IREC supports creation of a technical working group to vet any changes to study processes, etc., proposed by the utilities. However, in addition to the proposal here, this process should allow for implementation of proposed changes only where there is party consensus. Further, any proposed changes must be approved by the Commission.

(WG1)

1.9 Interconnection Requests Submitted Prior to the Effective Date of these Procedures

Other than as set forth in Section 1.1.3, nothing in this Standard affects an Interconnection Customer's Queue Number assigned before the effective date of these procedures. Interconnection Requests which have received a System Impact Study report as of the effective date of these procedures that did not identify any interdependency with another project shall be deemed a Project A. Any Interconnection Requests for which the Utility has not completed the System Impact Study and issued a System Impact Study report to the Interconnection Customer as of the effective date of these procedures shall be reviewed for Interdependency pursuant to Section 1.8.

Should an Interconnection Customer fail to comply with Section 1.1.3 following receipt of written notice specifying how the Interconnection Customer failed to comply and the expiration of an opportunity to cure by the close of business on the

tenth (10th) Business Day following the posted date of such notice to cure, such Interconnection Customer will lose its Queue Number and such Interconnection Request shall be deemed withdrawn.

Section 2. Optional 20 kW Inverter Process for Certified Inverter-Based Generating Facilities No Larger than 20 kW

2.1 Applicability

The 20 kW Inverter Process is available to an Interconnection Customer proposing to interconnect its inverter-based Generating Facility with the Utility's System if the Generating Facility is no larger than 20 kW and if the Interconnection Customer's proposed Generating Facility meets the codes, standards, and certification requirements of Attachments 4 and 5 of these procedures, or the Utility has reviewed the design or tested the proposed Generating Facility and is satisfied that it is safe to operate.

The Utility may require the Interconnection Customer to install a manual load-break disconnect switch or safety switch as a clear visible indication of switch position between the Utility System and the Interconnection Customer. When the installation of the switch is not otherwise required (e.g. National Electric Code, state or local building code) and is deemed necessary by the Utility for certified, inverter-based generators no larger than 10 kW, the Utility shall reimburse the Interconnection Customer for the reasonable cost of installing a switch that meets the Utility's specifications (see also Section 6.16).

2.2 Interconnection Request

The Interconnection Customer shall complete the Interconnection Request Application Form for a certified inverter-based Generating Facility no larger than 20 kW in the form provided in Attachment 6 and submit it to the Utility, together with the non-refundable processing fee specified in the Interconnection Request Application Form and the documentation required pursuant to Section 1.4.1.

2.2.1 The Utility shall verify that the Generating Facility can be interconnected safely and reliably using the screens contained in the Fast Track Process. (See Section 3.2.1.) The Utility has 15 Business Days to complete this process. Unless the Utility determines and demonstrates that the Generating Facility cannot be interconnected safely and reliably, the Utility shall approve the Interconnection Request upon fulfillment of all requirements in Section 1.4 and return the Interconnection Request Application Form to the Interconnection Customer.

2.2.1.2 If the proposed interconnection passes the screens but the Utility determines that minor Utility construction is required to interconnect the Generating Facility to the Utility's system, the Interconnection Request shall be approved and the Utility will provide the Interconnection Customer a non-binding good faith estimate of the cost of interconnection along with the

Interconnection Request Application Form within 15 Business Days after the determination.

- 2.2.1.3 If the proposed interconnection passes the screens, but the costs of interconnection including System Upgrades and Interconnection Facilities cannot be determined without further study or review, the Utility will notify the Interconnection Customer that the Utility will need to complete a Facilities Study under Section 4.4 to determine the necessary costs of interconnection.
- 2.2.2 Screens failure: Despite the failure of one or more screens, the Utility, at its sole option, may approve the interconnection provided such approval is consistent with safety and reliability. If the Utility cannot determine that the Generating ~~Facility~~ ~~may~~ ~~be~~ interconnected ~~consistent with~~ ~~safety~~, reliability, and power quality standards, the Utility shall provide the Interconnection Customer with detailed information on the reasons for failure in writing within ten (10) Business Days. In addition, the Utility shall either:
- 2.2.2.1 Notify the Interconnection Customer in writing that the Utility is continuing to evaluate the Generating Facility under Section 3.4 Supplemental Review if the Utility concludes that the Supplemental Review might determine that the Generating Facility could continue to qualify for interconnection pursuant to Fast Track: or
- 2.2.2.2 Offer to continue evaluating the Interconnection Request under the Section 4 Study Process.

2.3 Certificate of Completion

- 2.3.1 After installation of the Generating Facility, the Interconnection Customer shall submit the Certificate of Completion in the form provided in Attachment 6 to the Utility. Prior to parallel operation, the Utility may inspect the Generating Facility for compliance with standards including a witness test and the scheduling of an appropriate metering replacement, if necessary.
- 2.3.2 The Utility shall notify the Interconnection Customer in writing that interconnection of the Generating Facility is authorized. If the witness test is not satisfactory, the Utility has the right to disconnect the Generating Facility. The Interconnection Customer has no right to operate in parallel with the Utility until a witness test has been performed, or previously waived on the Interconnection Request. The Utility is obligated to complete this witness test within ten (10) Business Days of the receipt of the Certificate of Completion. If the Utility does not inspect within ten (10) Business Days or by mutual agreement of the Parties, the witness test is deemed waived.

Commented [A51]: NCSEA change (WG1)

Commented [A52]: **December Comment from Dominion Energy:** Dominion Energy: Ten days inserted here appears to be in conflict with 15 business days described for response in Section 2.2.1

Commented [A53]: Comment from IREC: IREC supports providing clear timelines in the Interconnection Standard. (WG1)

2.3.3 Interconnection and parallel operation of the Generating Facility is subject to the Terms and Conditions stated in Attachment 6 of these procedures.

2.4 Contact Information

The Interconnection Customer must provide its contact information. If another entity is responsible for interfacing with the Utility, that contact information must also be provided on the Interconnection Request Application Form.

2.5 Ownership Information

The Interconnection Customer shall provide the legal name(s) of the owner(s) of the Generating Facility.

2.6 UL 1741 Listed

The Underwriters' Laboratories (UL) 1741 standard (Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources) addresses the electrical interconnection design of various forms of generating equipment. Many manufacturers submit their equipment to a nationally recognized testing laboratory that verifies compliance with UL 1741. This "listing" is then marked on the equipment and supporting documentation.

2.7 UL 1741 SA and IEEEUL 1547

If a Utility is required to accept UL 1741 SA or UL 1547 inverters on FERC - jurisdictional interconnections, the Interconnection Customer connected to that Utility shall have also have the option of using UL 1741 SA or UL 1547 inverters.

Commented [A54]: Comment from Dominion Energy (WG2):

Corrections need to be made to the title. The correct reference is IEEE 1547 not UL 1547. Additionally, there seems to be confusion about the UL-1741 SA, so I wanted to provide some background on that. As a reminder, UL-1741 is an equipment testing standard that covers inverters and their controller. As to UL 1741 SA, it is essentially an Addition of a Supplement for Grid Support Utility Inverters – which explains the term "SA". Since it is a Supplement, it is an optional test that the utility can ask the inverter manufacturer to go through. Furthermore, I should note that the rationale behind UL-1741 SA is to provide a platform for validating compliance of inverters with grid interactive functions which are not yet covered in IEEE 1547 (but will be with the new IEEE 1547 currently being balloted and stated to be published early 2018). These grid support functions may include but are not limited to voltage and frequency ride through and active and reactive power control (which cannot be activated without approval from the utility). An issue the utility community has with those "Smart functions" is that these Grid Support Functions may impact an inverters anti-islanding functionality; consequently passing the Anti-Islanding test as defined in IEEE 1547 and the current UL-1741 standard is still a requirement. The difference between UL-1741 and UL-1741 SA is that when going through UL-1741 SA certifications, Anti-islanding testing will be conducted with these functions enabled as described in the applicable sections below.

"This supplement defines the evaluation criteria for utility interactive inverters with grid support functions that are rated and specified as "Grid Support Utility Interactive Inverters". This new nomenclature is intended to differentiate these products from "utility interactive inverters" that have less functionality. The test requirements and protocols within this section are written to allow for the testing of multiple operational parameter sets of trip limits and trip times in an effort to accommodate the needs of different grid interconnection requirements. The requirements in this supplement are in addition to the other applicable requirements for utility interactive inverters and other applicable requirements within this standard."

Commented [A55]: Change proposed by QF Solutions (WG2)

Commented [A56]: December Comment from Duke Energy: Duke Energy believes it is more appropriate to delete section 2.7

Section 3. Optional Fast Track Process for Certified Generating Facilities

3.1 Applicability

The Fast Track Process is available to an Interconnection Customer proposing to interconnect its Generating Facility with the Utility's System if the Generating Facility's capacity does not exceed the size limits identified in the table below. Generating Facilities below these limits are eligible for Fast Track review. However, Fast Track eligibility is distinct from the Fast Track Process itself, and eligibility does not imply or indicate that a Generating Facility will pass the Fast Track screens in Section 3.2 below or the Supplemental Review screens in Section 3.4 below.

Fast Track eligibility is determined based upon the generator type, the size of the generator, voltage of the line and the location of and the type of line at the Point of Interconnection. All Generating Facilities connecting to lines greater or equal to 35 kilovolt (kV) are ineligible for the Fast Track Process regardless of size. For inverter-based systems, only certified inverter-based systems are eligible for the Fast Track Process and the size limit varies according to the voltage of the line at the proposed Point of Interconnection. Certified inverter-based Generating Facilities located within 2.5 electrical circuit miles of a substation and on a mainline (as defined in the table below) are eligible for the Fast Track Process under the higher thresholds set forth in the table below. In addition to the size threshold, the Interconnection Customer's proposed Generating Facility must meet the codes, standards, and certification requirements of Attachments 4 and 5 of these procedures, or the Utility has to have reviewed the design or tested the proposed Generating Facility and be satisfied that it is safe to operate.

Fast Track Eligibility for Inverter-Based Systems ¹		
Line Voltage	Fast Track Eligibility Regardless of Location	Fast Track Eligibility on a Mainline ² and ≤ 2.5 Electrical Circuit Miles from Substation ³
< 5 kV	≤ 400-500 kW	≤ 500 kW
≥ 5 kV and < 15 kV	≤ 1 MW	≤ 2 MW
≥ 15 kV and < 35 kV	≤ 2 MW	≤ 2-3 MW

¹ Must be an UL certified inverter.

² For purposes of this table, a mainline is the three-phase backbone of a circuit. It will typically constitute lines with wire sizes of 4/0 American wire gauge, 336.4 kcmil, 397.5 kcmil, 477 kcmil and 795 kcmil.

³An Interconnection Customer can determine this information about its proposed interconnection location in advance by requesting a pre-application report pursuant to section 1.2.

Commented [A57]: December Comment from Dominion Energy: Dominion Energy recommends that the existing Fast Track language be retained. The Fast Track processes should be designed to minimize risk to the Utility's grid such that additional study is not required. If additional study is needed, the request should proceed to Full Study if more than minor grid modification is required to accommodate the interconnection.

Commented [A58]: Change proposed by IREC (Fast Track WG3/4)

Commented [A59]: Change proposed by IREC (Fast Track WG3/4)

Comment:

Raising the Fast Track eligibility limit to at least 3 MW (depending on the voltage of the line and distance from the substation), in conjunction with a defined supplemental review process (see below), would allow projects that would not have adverse system impacts to interconnection expeditiously without going through the costly and time-consuming full study process. Also, as we have seen in other states like California, if a project does not pass the Fast Track and Supplemental Review screens, the developer may decide not to go forward with the project, further clearing the queue and avoiding unnecessary studies so that the utilities can focus efforts on reviewing projects that have a higher likelihood of interconnecting.

Duke Energy (WG1) has submitted the following section to be added to the

document

3.1.1 The Interconnection Customer may elect in Interconnection Request to proceed directly to the Supplemental Review and post the deposit requirement for the Supplemental Review within fifteen (15) Business Days after the Utility notifies the Interconnection Customer confirming receipt of the Interconnection Request or the Interconnection Request shall be deemed to be withdrawn.

Commented [A60]: Comment: Provides option for IC at the submission of the IR to elect to proceed to Supplemental Review without requiring intermediate decision-making step after the Fast Track screen. This option also would allow the IC to pay the supplemental review study deposit at the outset of the Fast Track process.

Based upon Duke's experience that most larger projects have failed the Fast Track screens.

Commented [A61]: December Change from Duke Energy. This is not the language Duke intended to supply for 3.1.1. Please see below for replacement language.

Duke Energy (WG1) December revised language

3.1.1 The Interconnection Customer may elect in the Interconnection Request Application Form to proceed directly to the Supplemental Review, in order to minimize overall processing time in the event of any Fast Track screen failures. This is accomplished by selecting both the Fast Track and Supplemental Review options on the Interconnection Request Application Form and paying the applicable Fast Track fee and Supplemental Review fee.

Commented [A62]: Comment: Provides option for IC at the submission of the IR to elect to proceed directly to Supplemental Review without requiring intermediate decision-making step after the Fast Track screen. This option also requires the IC to pay the supplemental review study deposit at the outset of the Fast Track process.

Based upon Duke's experience that most larger projects have failed the Fast Track screens. This will minimize overall processing time in the event of any Fast Track screen failures.

3.2 Initial Review

Within 15 Business Days after the Utility notifies the Interconnection Customer it has received a complete Interconnection Request pursuant to Section 1.4, the Utility shall perform an initial review using the screens set forth below, shall notify the Interconnection Customer of the results, and include with the notification copies of the analysis and data underlying the Utility's determinations under the screens.

3.2.1 Screens

3.2.1.1 The proposed Generating Facility's Point of Interconnection must be on a portion of the Utility's Distribution System.

3.2.1.2 For interconnection of a proposed Generating Facility to a radial distribution circuit, the aggregated generation, including the proposed Generating Facility, on the circuit shall not exceed 15% of the line section annual peak load as most recently measured at the substation. A line section is that portion of a Utility's System connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line.

IREC (Fast Track WG3/4) recommends including the following as a clarifying footnote to section 3.2.1.2.

A. If the point of common coupling is downstream of a line recloser, include those MV line sections from the recloser to the end of the feeder and the lateral to which the point of common coupling is connected.

Commented [A63]: Additional comment:

We recommend that the following language be added as a clarifying footnote to section 3.2.1.2 (the 15% of peak load screen), which will give parties better understanding of how the screen should be applied. IREC worked with EPRI to develop this language.

We believe these additions will address the issues discussed by the broader group and will help avoid unnecessary study of smaller projects that won't impact safety and reliability, thus helping to keep the queue moving.

- i) If the 15% criterion is passed for aggregate distributed generation and first upstream device, then the screen is passed – you are done.
- ii) If not, check if aggregate distributed generation is less than minimum load. This may also pass.
- B. If the point of common coupling is upstream of all line reclosers, include all distributed generation relative to peak load of the feeder measured at the substation.
 - i) If the 15% criterion is passed for the line section closest to the point of common coupling, then the screen is passed – you are done.

- 3.2.1.3 For interconnection of a proposed Generating Facility to a radial distribution circuit, the aggregated generation, including the proposed Generating Facility, on the circuit shall not exceed 90% of the circuit and/or bank minimum load at the substation.
- 3.2.1.4 All synchronous and induction machines must be connected to a distribution circuit where the local minimum load to generation ratio on the circuit line segment is larger than 3 to 1. A 3-1 load to generation ratio screen utilizes actual recorded data that is sufficient to establish the minimum threshold.
- 3.2.1.5 For interconnection of a proposed Generating Facility to the load side of spot network protectors, the proposed Generating Facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of 5% of a spot network's maximum load or 50 kW.
- 3.2.1.6 The proposed Generating Facility, in aggregation with other generation on the distribution circuit, shall not contribute more than 10% to the distribution circuit's maximum fault current at the point on the high voltage (primary) level nearest the proposed point of change of ownership.
- 3.2.1.7 The proposed Generating Facility, in aggregate with other generation on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or Interconnection Customer equipment on the system to exceed 87.5% of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5% of the short circuit interrupting capability.

- 3.2.1.8 Using the table below, determine the type of interconnection to a primary distribution line. This screen includes a review of the type of electrical service to be provided to the Interconnection Customer, including line configuration and the transformer connection for the purpose of limiting the potential for creating over-voltages on the Utility's System due to a loss of ground during the operating time of any anti-islanding function.

Primary Line Type	Distribution	Type of Interconnection to Primary Distribution Line	Result/Criteria
Three-phase, three wire		3-phase or single phase, phase-to-phase	Pass Screen
Three-phase, four wire		Effectively-grounded three-phase or single phase, line-to-neutral	Pass Screen

- 3.2.1.9 If the proposed Generating Facility is to be interconnected on a single-phase shared secondary, the aggregate Generating Facility capacity on the shared secondary, including the proposed Generating Facility, shall not exceed 65% of the transformer nameplate rating.
- 3.2.1.10 If the proposed Generating Facility is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition shall not create an imbalance between the two sides of the 240 volt service of more than 20% of the nameplate rating of the service transformer.
- 3.2.1.11 The Generating Facility, in aggregate with other generation interconnected to the transmission side of a substation transformer feeding the circuit where the Generating Facility proposes to interconnect shall not exceed 10 MW in an area where there are known, or posted, transient stability limitations to generating units located in the general electrical vicinity (e.g., three or four transmission busses from the point of interconnection).

3.2.2 Screen Results

- 3.2.2.1 If the proposed interconnection passes the screens and requires no construction by the Utility on its own System, the Interconnection Request shall be approved and the Utility will provide the Interconnection Customer an executable Interconnection Agreement within ten (10) Business Days after the determination.

- 3.2.2.2 If the proposed interconnection passes the screens and the Utility is able to determine without further study or review that only minor Utility construction is required to interconnect the Generating Facility to the Utility's system, the Interconnection Request shall be approved and the Utility will provide the Interconnection Customer a non-binding good faith estimate of the cost of interconnection along with an executable Interconnection Agreement within 15 Business Days after the determination.
- 3.2.2.3 If the proposed interconnection passes the screens, but the costs of interconnection including System Upgrades and Interconnection Facilities cannot be determined without further study or review, the Utility will notify the Interconnection Customer that the Utility will need to complete a Facilities Study under Section 4.4 to determine the necessary costs of interconnection.
- 3.2.2.4 If the proposed interconnection fails the screens, but the Utility determines that the Generating Facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, and requires no construction by the Utility on its own System, the Utility shall provide the Interconnection Customer an executable Interconnection Agreement within ten (10) Business Days after the determination.
- 3.2.2.5 If the proposed interconnection fails the screens, but the Utility determines that the Generating Facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards and the Utility is able to determine without further study or review that only minor Utility construction is required to interconnect with the Generating Facility, the Interconnection Request shall be approved and the Utility will provide the Interconnection Customer a non-binding good faith estimate of the cost of interconnection along with an executable Interconnection Agreement within 15 Business Days after the determination.
- 3.2.2.6 If the proposed interconnection fails the screens, and the Utility does not or cannot determine from the initial review that the Generating Facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the Interconnection Customer is willing to consider minor modifications or further study, the Utility shall provide the Interconnection Customer with the opportunity to attend a customer options meeting as described in Section 3.3 below.

3.3 Customer Options Meeting

If the Utility determines the Interconnection Request cannot be approved without (1) minor modifications at minimal cost, (2) a supplemental study or other additional studies or actions, or (3) incurring significant cost to address safety, reliability, or power quality problems, the Utility shall notify the Interconnection Customer of that determination within five (5) Business Days after the determination, and provide copies of all data and analyses underlying its conclusion. Within ten (10) Business Days of the Utility's determination, the Utility shall offer to convene a customer options meeting to review possible Interconnection Customer facility modifications or the screen analysis and related results, to determine what further steps are needed to permit the Generating Facility to be connected safely and reliably. At the time of notification of the Utility's determination, or at the customer options meeting, the Utility shall:

3.3.1 Offer to perform facility modifications or minor modifications to the Utility's System (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the Utility's System. The Interconnection Customer shall have ten (10) Business Days to agree to pay for the modifications to the Utility's electric system or the Interconnection Request shall be deemed to be withdrawn. If the Interconnection Customer agrees to pay for the modifications to the Utility's electric system, the Utility will provide the Interconnection Customer with an executable Interconnection Agreement within ten (10) Business Days of the Interconnections Customer's agreement to pay; or

3.3.2 Offer to perform a supplemental review ~~under in accordance with Section 3.4 if the Utility concludes that the supplemental review might determine that the Generating Facility could continue to qualify for interconnection pursuant to the Fast Track Process,~~ and provide a non-binding good faith estimate of the costs of such review. The Interconnection Customer shall have ten (10) Business Days to accept the Utility's offer to perform a Supplemental Review and post any deposit requirement for the Supplemental Review, or the Interconnection Request shall be deemed to be withdrawn; or

3.3.3 ~~Offer to continue~~ Obtain the Interconnection Customer's agreement to ~~continue~~ evaluating the Interconnection Request under the Section 4 Study Process. The Interconnection Customer shall have ten (10) Business Days to agree in writing to its Interconnection Request continuing to be evaluated under the Section 4 Study Process, and post any deposit requirement for the Study Process, or the Interconnection Request shall be deemed to be withdrawn.

Commented [A64]: Change proposed by IREC (Fast Track WG3/4)

Comment: Currently, the rules provide that the utility may offer supplemental review only if the utility concludes that supplemental review might determine that the project could interconnect without a full study. Supplemental review should be at the customer's option for Fast Track eligible projects that fail Fast Track screens, which will ensure that supplemental review is available to the widest range of eligible projects possible, avoiding unnecessary studies.

Commented [A65]: Change proposed by IREC (Fast Track WG3/4)

3.4 Supplemental Review

If the Interconnection Customer agrees to a supplemental review, the Interconnection Customer shall agree in writing within ~~15~~ **ten (10)** Business Days of the offer, and submit a deposit for the estimated costs or the request shall be deemed to be withdrawn. The Interconnection Customer shall be responsible for the Utility's actual costs for conducting the supplemental review. The Interconnection Customer must pay any review costs that exceed the deposit within 20 Business Days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the Utility will return such excess within 20 Business Days of the invoice without interest.

3.4.1 Within ten (10) Business Days following receipt of the deposit for a supplemental review, the Utility will determine if the Generating Facility can be interconnected safely and reliably.

3.4.1.1 If so, the Utility shall forward an executable Interconnection Agreement to the Interconnection Customer within ten (10) Business Days.

3.4.1.2 If so, and Interconnection Customer facility modifications are required to allow the Generating Facility to be interconnected consistent with safety, reliability, and power quality standards under these procedures, the Utility shall forward an executable Interconnection Agreement to the Interconnection Customer within 15 Business Days after confirmation that the Interconnection Customer has agreed to make the necessary modifications at the Interconnection Customer's cost.

3.4.1.3 If so, and minor modifications to the Utility's System are required to allow the Generating Facility to be interconnected consistent with safety, reliability, and power quality standards under these procedures, the Utility shall forward an executable Interconnection Agreement to the Interconnection Customer within ten (10) Business Days that requires the Interconnection Customer to pay the costs of such System modifications prior to interconnection.

If not, the Interconnection Request will continue to be evaluated under the Section 4 Study Process, provided the Interconnection Customer indicates it wants to proceed and submits the required deposit within 15 Business Days.

Commented [A66]: Duke Energy (WG1) proposed change.

Comment: Timeline in 3.4 for Interconnection Customer response changed to 10 business days.

To correct timeline inconsistency between Sections 3.3.2 and 3.4.

Commented [A67]: Additional Comment:

IREC supports a robust, structured, and transparent supplemental review process that relies on defined screens. Supplemental review would include three screens: (1) 100% minimum load, (2) voltage and power quality screen, and (3) safety and reliability screen. If the project passes these screens, the utility will proceed with the application under the Fast Track process; otherwise, the application proceeds to full study under Section 4. This process would replace the existing procedure, which does not define how the utility will determine if the project can be interconnected safely and reliably, leaving customers in the dark regarding whether to elect to proceed with the cost of supplemental review and preventing assurance that supplemental review will be applied in a way that prevents unnecessary study. This process is likely to become more important if the size of the standard offer contract changes.

The procedure IREC proposes has been adopted by FERC, Ohio, Iowa, Illinois, California, Massachusetts, and Hawaii. Many of these states, like North Carolina, experience high penetration and have found supplemental review to be an effective tool at screening projects for further review and preventing queue backlogs.

IREC (Fast Track WG3/4) has submitted the following revision to section 3.4.

3.4 Supplemental Review

3.4.1 If the Interconnection Customer agrees to a supplemental review, the Interconnection Customer shall agree in writing within 15 Business Days of the offer, and submit a deposit for the estimated costs or the request shall be deemed to be withdrawn. The Interconnection Customer shall be responsible for the Utility's actual costs for conducting the supplemental review. The Interconnection Customer must pay any review costs that exceed the deposit within 20 Business Days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the Utility will return such excess within 20 Business Days of the invoice without interest.

3.4.2 The Interconnection Customer may specify the order in which the Utility will complete the screens in Section 3.4.4.

3.4.3 Within thirty Business Days following receipt of the deposit for a supplemental review, the Utility shall (1) perform a supplemental review using the screens set forth below; (2) notify in writing the Interconnection Customer of the results; and (3) include with the notification copies of the analysis and data underlying the Utility's determinations under the screens. Unless the Interconnection Customer provided instructions for how to respond to the failure of any of the supplemental review screens below at the time the Interconnection Customer accepted the offer of supplemental review, the Utility shall notify the Interconnection Customer following the failure of any of the screens, or if it is unable to perform the screen in Section 3.4.3.1, within two Business Days of making such determination to obtain the Interconnection Customer's permission to: (1) continue evaluating the proposed interconnection under this Section 3.4.3; (2) terminate the supplemental review and continue evaluating the Generating Facility under Section 4; or (3) terminate the supplemental review upon withdrawal of the Interconnection Request by the Interconnection Customer.

3.4.3.1 Minimum Load Screen: Where 12 months of line section minimum load data (including onsite load but not station service load served by the proposed Generating Facility) are available, can be calculated, can be estimated from existing data, or determined from a power flow model, the aggregate Generating Facility capacity on the line section is less than 100% of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed Generating Facility. If minimum load data is not available, or cannot be calculated, estimated or determined, the Utility shall include the reason(s) that it is unable to calculate, estimate or determine minimum load in its supplemental review results notification under Section 3.4.3.

3.4.3.1.1 The type of generation used by the proposed

Generating Facility will be taken into account when calculating, estimating, or determining circuit or line section minimum load relevant for the application of screen 3.4.3.1. Solar photovoltaic (PV) generation systems with no battery storage use daytime minimum load (i.e. 10 a.m. to 4 p.m. for fixed panel systems and 8 a.m. to 6 p.m. for PV systems utilizing tracking systems), while all other generation uses absolute minimum load.

3.4.3.1.2 When this screen is being applied to a Generating Facility that serves some station service load, only the net injection into the Utility's electric system will be considered as part of the aggregate generation.

3.4.3.1.3 Utility will not consider as part of the aggregate generation for purposes of this screen generating facility capacity known to be already reflected in the minimum load data.

3.4.3.2 Voltage and Power Quality Screen: In aggregate with existing generation on the line section: (1) the voltage regulation on the line section can be maintained in compliance with relevant requirements under all system conditions; (2) the voltage fluctuation is within acceptable limits as defined by Institute of Electrical and Electronics Engineers (IEEE) Standard 1453, or utility practice similar to IEEE Standard 1453; and (3) the harmonic levels meet IEEE Standard 519 limits.

3.4.3.3

Safety and Reliability Screen: The location of the proposed Generating Facility and the aggregate generation capacity on the line section do not create impacts to safety or reliability that cannot be adequately addressed without application of the Study Process. The Utility shall give due consideration to the following and other factors in determining potential impacts to safety and reliability in applying this screen.

3.4.3.3.1 Whether the line section has significant minimum loading levels dominated by a small number of

customers (e.g., several large commercial customers).

3.4.3.3.2 Whether the loading along the line section uniform or even.

3.4.3.3.3 Whether the proposed Generating Facility is located in close proximity to the substation (i.e., less than 2.5 electrical circuit miles), and whether the line section from the substation to the Point of Interconnection is a Mainline rated for normal and emergency ampacity.

3.4.3.3.4 Whether the proposed Generating Facility incorporates a time delay function to prevent reconnection of the generator to the system until system voltage and frequency are within normal limits for a prescribed time.

3.4.3.3.5 Whether operational flexibility is reduced by the proposed Generating Facility, such that transfer of the line section(s) of the Generating Facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues.

3.4.3.3.6 Whether the proposed Generating Facility employs equipment or systems certified by a recognized standards organization to address technical issues such as, but not limited to, islanding, reverse power flow, or voltage quality.

3.4.4 If the proposed interconnection passes the supplemental screens in Sections 3.4.3.1, 3.4.3.2, and 3.4.3.3 above, the Interconnection Request shall be approved and the Utility will provide the Interconnection Customer with an executable interconnection agreement within the timeframes established in Sections 3.4.4.1 and 3.4.4.2 below. If the proposed interconnection fails any of the supplemental review screens and the Interconnection Customer does not withdraw its Interconnection Request, it shall continue to be evaluated under the Section 4 Study Process consistent with Section 3.4.4.3 below.

3.4.4.1 If the proposed interconnection passes the supplemental

screens in Sections 3.4.3.1, 3.4.3.2, and 3.4.3.3 above and does not require construction of facilities by the Utility on its own system, the interconnection agreement shall be provided within ten Business Days after the notification of the supplemental review results.

3.4.4.2 If Interconnection Facilities or Minor System Modifications to the Utility's system are required for the proposed interconnection to pass the supplemental screens in Sections 3.4.3.1, 3.4.3.2, and 3.4.3.3 above, and the Interconnection Customer agrees to pay for the modifications to the Utility's electric system, the interconnection agreement, along with a non-binding good faith estimate for the Interconnection Facilities and/or Minor System Modifications, shall be provided to the Interconnection Customer within 15 Business Days after receiving written notification of the supplemental review results.

3.4.4.3 If the proposed interconnection would require more than Interconnection Facilities or Minor System Modifications to the Utility's system to pass the supplemental screens in Sections 3.4.3.1, 3.4.3.2, and 3.4.3.3 above, the Utility shall notify the Interconnection Customer, at the same time it notifies the Interconnection Customer with the supplemental review results, that the Interconnection Request shall be evaluated under the Section 4 Study Process unless the Interconnection Customer withdraws its Generating Facility.

Section 4. Study Process

4.1 Applicability

The Study Process shall be used by an Interconnection Customer proposing to interconnect its Generating Facility with the Utility's System if the Generating Facility exceeds the size limits for the Section 3 Fast Track Process, is not certified, or is certified but did not pass the Fast Track Process or the 20 kW Inverter Process. The Interconnection Customer may be required to submit additional documentation, as may be requested by the Utility in writing, during the Study Process.

Commented [A68]: December Comment from GGE US: GGE US is in favor of discussing the addition of adding the option of a cluster study in lieu of the Project A/B process

Commented [A69]: Dominion proposes to delete this requirement because it's understanding is that all project devices must be certified. IREC disagrees with this interpretation and suggested revision.

We may not be able to reach consensus on this change.

(WG2)

GGE US (WG3/4) has submitted the following additional paragraphs in December.

Any changes to the study process desired by a Utility shall first be approved by the Commission before its implementation. In the interim period, the Utility shall continue to effectuate the studies without delay.

Furthermore, any changes in the Utility's application of "good utility practice" and/or technical parameters shall also first be approved by the Commission before its implementation. In the interim period, the Utility shall continue to use the existing "good utility practice" guidelines consistent with previous practice without delay.

Commented [A70]: December Comment from GGE US: We believe fact based decision making (technical and economic) to introduction of new technical parameters and/or good utility practices should both be discussed and aligned with broad stakeholder input. EX. DSDR LVR policy as it relates to degradation and economic benefits to ratepayers.

Duke Energy (WG1) proposed rewriting section 4.1 as follows

4.1 Applicability

The Study Process shall be used by an Interconnection Customer proposing to interconnect its Generating Facility with the Utility's System if the Generating Facility exceeds the size limits for the Section 3 Fast Track Process, is not certified, or is certified but did not pass the Fast Track Process or the 20 kW Inverter Process. The Interconnection Customer may be required to submit additional information or documentation, as may be requested by the Utility in writing, during the Study Process. If the information requested by the Utility is not provided by the Interconnection Customer within a reasonable timeframe to be identified by the Utility in writing, the Utility shall provide the Interconnection Customer written notice providing an opportunity to cure such failure by the close of business on the tenth (10th) Business Day following the posted date of such notice, where failure to provide the information requested within this period shall result in the Section 4 study process being terminated and the Interconnection Request being deemed withdrawn. The period of time for the Utility to complete the System Impact Study and Facility Study shall be tolled during any period that the Utility has requested information in writing from the Interconnection Customer necessary to complete the Study and such request is outstanding.

Commented [A71]: Comment: Requires an IC to provide information or to establish binding response times during the study process. Reasonable timeframes for ICs to produce information requested by the utility along with an opportunity to request an extension/cure. Tolling the study timelines.

There is not currently a clear procedure for the utility to require an IC to provide information or to establish binding response times during the study process, which have been increasingly necessary as new study standards have resulted in customer decision points within SIS as well as additional requests for project details and data to complete more

4.2 Scoping Meeting

GGE US (WG3/4) has submitted the following paragraph in December to be added prior to 4.2 **1**

The scoping meeting is a crucial step in ensuring alignment of the IR specifics and system parameters between the IC and the Utility. Therefore, the Utility shall ensure appropriate resources, including its system engineers shall participate actively in and during the meeting.”

4.2.1 A scoping meeting will be held within ~~ten-thirty (309)(40)~~ Business Days after the Interconnection Request is deemed complete, or as otherwise mutually agreed to by the Parties. The Utility and the Interconnection Customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting. The scoping meeting may be omitted by mutual agreement.

4.2.2 The purpose of the scoping meeting is to discuss the Interconnection Request and review existing studies relevant to the Interconnection Request. The Parties shall further discuss whether the Utility should perform a System Impact Study, a Facilities Study, or proceed directly to an Interconnection Agreement.

4.2.3 If the Utility, after consultation with the Interconnection Customer, determines that the project should proceed to a System Impact Study or Facilities Study, the Utility shall provide the Interconnection Customer, no later than ten (10) Business Days after the scoping meeting, either a System Impact Study Agreement (Attachment 7) or a Facilities Study Agreement (Attachment 8), as appropriate, including an outline of the scope of the study or studies and a nonbinding good faith estimate of the cost to perform the study or studies, which cost shall be subtracted from the deposit outlined in Section 1.4.1.2.

4.2.4 If the Parties agree not to perform a System Impact Study or Facilities Study, but to proceed directly to an Interconnection Agreement, the Parties shall proceed to the Construction Planning Meeting as called for in Section 5.

4.3 System Impact Study

4.3.1 In order to retain its Queue Position, the Interconnection Customer must return a System Impact Study Agreement signed by the Interconnection Customer within 15 Business Days of receiving an executable System Impact Study Agreement as provided for in Section 4.2.3.

4.3.2 The scope of and cost responsibilities for a System Impact Study are described in the System Impact Study Agreement. The time allotted for completion of the System Impact Study shall be as set forth in the System Impact Study Agreement.

4.3.3 The System Impact Study shall identify and detail the electric system impacts

Commented [A72]: December comment from GGE US: System engineers are not attending the scoping meetings as of late and the account managers provide limited technical information during the meeting. The Utility's rationale is that the Account Manager, who attends the meeting, provides the technical information prepared by a System Engineer in lieu of their participation. We have observed occasions where distribution engineers selected a more congested circuit than others available (example two circuit on the same poles), as well as, alternates that could increase the project's likelihood of success without interdependencies. (Ex. Alternative substation closer to the POI)

Commented [A73]: December Change: Typo fixed

Commented [A74]: Proposed change from Duke Energy (WG1).

Comment: Increase the number of business days that Duke is allowed to conduct a Scoping Meeting from 10 business days to 30 business days.

Change will facilitate Duke's ability to provide the following benefits: (1) Early notification of constraints to allow business decisions to be made sooner; (2) Enables early removal from the queue of projects that are not feasible; and (3) Expanded Scoping Meeting would be available to all projects regardless of the interdependency designation.

that would result if the proposed Generating Facility were interconnected without project modifications or electric system modifications, or to study potential impacts, including, but not limited to, those identified in the scoping meeting. The System Impact Study shall evaluate the impact of the proposed interconnection on the reliability of the electric system, including the distribution and transmission systems, if required. The Utility shall provide all underlying analysis used to reach the conclusions set forth in the System Impact Study report.

4.3.4 The System Impact Study report will provide the Preliminary Estimated Upgrade Charge, which is a preliminary indication of the cost and length of time that would be necessary to correct any System problems identified in those analyses and implement the interconnection.

4.3.5 The System Impact Study report will provide the Preliminary Estimated Interconnection Facilities Charge, which is a preliminary non-binding indication of the cost and length of time that would be necessary to provide the Interconnection Facilities.

4.3.6 If the Utility has determined that an Interdependency exists and the Project is designated as a Project B, the Project B Interconnection Request shall receive a System Impact Study report, addressing a scenario assuming Project A is constructed and a second scenario assuming Project A is not constructed.

4.3.7 After receipt of the complete System Impact Study report(s), including the underlying analysis that led to the results of the System Impact Study, the Interconnection Customer shall inform the Utility in writing if it wishes to withdraw the Interconnection Request and to request an accounting of any remaining deposit amount pursuant to Section 6.3.

~~4.3.8 If requested by the Interconnection Customer following delivery of the System Impact Study report, the Utility shall provide the Interconnection Customer an executable Interim Interconnection Agreement within ten (10) Business Days. The Interim Interconnection Agreement shall be identical in form and content to the Final Interconnection Agreement, but will not include Detailed Estimated Upgrade Charges, Detailed Estimated Interconnection Facility Charge, Appendix 4 (Construction Milestone schedule listing tasks, dates and the party responsible for completing each task), and other information that otherwise would be determined in Section 5.~~

4.3.9 At the time the System Impact Study Report is provided to the Interconnection Customer, the Utility shall also deliver an executable Facilities Study Agreement to the Interconnection Customer. After receipt of the System Impact Study report and Facilities Study Agreement, when the Interconnection Customer is ready to proceed with the design and construction of the Upgrades and Interconnection Facilities, the

Commented [A75]: December Suggestion from Dominion Energy: Dominion Energy: Incorporate "as reasonable" in the provision of analysis as model-specific info can be proprietary, for example.

Commented [A76]: Strata Solar change (WG1)

Comment from IREC: IREC supports requiring utilities to fully disclose the results of system impact studies.

Commented [A77]: NCSEA change (WG1)

Commented [A78]: December Suggestion from Dominion Energy: Dominion Energy: Incorporate "as reasonable" in the provision of analysis as model-specific info can be proprietary, for example.

Commented [A79]: NCSEA change (WG1)

Strata Solar wanted this change also

Comment from IREC: IREC also supports this change.

Commented [A80]: Duke Energy (WG1) proposed change.

Comment: Section deleted. Interim IA is non-binding, causes confusion and in certain cases has led to false expectations regarding system upgrade costs required for the interconnection. It does not have inherent value and Duke Energy is not countersigning the document

Interconnection Customer shall return the signed Facilities Study Agreement to the Utility in accordance with Section 4.4 below.

4.4 Facilities Study

- 4.4.1 A solar Interconnection Customer must request a Facilities Study by returning the signed Facilities Study Agreement within 60 Calendar Days of the date the Facilities Study Agreement was provided. Any other Interconnection Customer must request a Facility Study by returning the signed Facilities Study Agreement within 180 Calendar Days of the date the Facilities Study Agreement was provided. Failure to return the signed Facilities Study Agreement within the foregoing applicable time period will result in the Interconnection Request being deemed withdrawn.
- 4.4.2 When an Interdependent Project A exists, a Project B Interconnection Request will not be required to comply with Section 4.4.1 until Project A has signed the Final Interconnection Agreement, and made payments and provided Financial Security as specified in Section 5.2 or withdrawn. If Project B has not provided written notice of its intent to proceed to a Facilities Study under Section 1.8.2.2, upon the Project A fulfilling the requirements in Section 5.2 or withdrawing the Interconnection Request, the Utility shall notify the Project B Interconnection Customer that it has the time specified in Section 4.4.1 to return the signed Facilities Study Agreement or the Interconnection Request shall be deemed withdrawn.
- 4.4.3 The scope of and cost responsibilities for the Facilities Study are described in the Facilities Study Agreement. The time allotted for completion of the Facilities Study is described in the Facilities Study Agreement.
- 4.4.4 The Facilities Study report shall specify and estimate the cost of the equipment, engineering, procurement and construction work (including overheads) needed to implement the System Impact Studies and to allow the Generating Facility to be interconnected and operated safely and reliably.
- 4.4.5 The Utility shall design any required Interconnection Facilities and/or Upgrades under the Facilities Study Agreement. The Utility may contract with consultants to perform activities required under the Facilities Study Agreement. The Interconnection Customer and the Utility may agree to allow the Interconnection Customer to separately arrange for the design of some of the Interconnection Facilities. In such cases, facilities design will be reviewed and/or modified prior to acceptance by the Utility, under the provisions of the Facilities Study Agreement. If the Parties agree to separately arrange for design and construction, and provided that critical infrastructure security and confidentiality requirements can be met, the Utility shall make sufficient information available to the Interconnection Customer in accordance with confidentiality and critical infrastructure requirements to permit the Interconnection Customer to obtain an

independent design and cost estimate for any necessary facilities.

GGE US (WG3/4) has submitted the following new section 4.5 to be added:

- 4.5 The Utility shall prepare an executive summary of the monthly changes in the progression of the queue studies for each stagegate, including scoping meetings, on a monthly basis simultaneously with its queue posting and update requirements.

GGE US (WG3/4) has recommended adding a new section 4.6, with the following comment:

We recommend that an independent auditor evaluate, investigate and test the Utility's progress and compliance with the NCUC interconnection procedures on a quarterly basis until such time that over 90% of the Utility's queue is managed according to the study timelines set forth in the interconnection procedure.

GGE US (WG3/4) has recommended adding a new section 4.7, with the following comment:

If the current energy bill becomes law, we recommend that the interconnection requests for all projects that qualify under Sub 140 rate schedules be separated and prioritized (or earlier).

Commented [A81]: December Comment from GGE US:

Furthermore, if the current energy bill becomes law, the queue should be separated between those projects with established LEO's under Sub 140 and earlier vs. those under future rate schedules.

Commented [A82]: December Comment from GGE US: We feel the cost of the auditor should be borne by the Utility and not the IC or ratepayers given its intended purpose is ensuring the Utility's compliance with the Commission's regulations.

Commented [A83]: December Comment from GGE US:

Helps to streamline the reduction and interconnection backlog to those projects that have the highest likelihood of success in the near term vs. those that will have to wait for the new RFP model paradigm to be developed and initiated. Additional benefits include: increased market certainty (present and future) and reduction in likely disputes and/or formal complaints in obtaining open access

Section 5. Interconnection Agreement and Scheduling

5.1. Construction Planning Meeting

- 5.1.1. Within ten (10) Business Days of receipt of the Facility Study report, the Interconnection Customer shall request a Construction Planning Meeting, where failure to comply shall result in the Interconnection Request being deemed withdrawn. The Construction Planning Meeting request shall be in writing and shall include the Interconnection Customer's reasonably requested date for completion of the construction of the Upgrades and Interconnection Facilities.
- 5.1.2. The Construction Planning Meeting shall be scheduled within ten (10) Business Days of the Section 5.1.1 request from the Interconnection Customer, or as otherwise mutually agreed to by the parties.
- 5.1.3. The purpose of the Construction Planning Meeting is to identify the tasks for each party and discuss and determine the milestones for the construction of the Upgrades and Interconnection Facilities. Agreed upon milestones shall be specific as to scope of action, responsible party, and date of deliverable and shall be recorded in the Final Interconnection Agreement

(see Appendix 4 to Attachment 9) to be provided to Interconnection Customer pursuant to Section 5.2.1 below.

- 5.1.4. If the Utility cannot complete the installation of the required Upgrades and Interconnection Facilities within two (2) months of the Interconnection Customer's reasonably requested In-Service Date, the Interconnection Customer shall have the option of payment for work outside of normal business hours or hiring a Utility-approved subcontractor to perform the distribution Upgrades. Any Utility-approved subcontractor performance remains subject to Utility oversight during construction. The Utility shall make a list of Utility-approved subcontractors available to the Interconnection Customer promptly upon request.

5.2. Final Interconnection Agreement

- 5.2.1. Within fifteen (15) Business Days of the Construction Planning Meeting, the Utility shall provide an executable Final Interconnection Agreement containing the Detailed Estimated Upgrade Charges, Detailed Estimated Interconnection Facility Charge, Appendix 4 (Construction Milestone and payment schedule listing tasks, dates and the party responsible for completing each task), and other appropriate information, requirements, and charges. The Final Interconnection Agreement will replace any Interim Interconnection Agreement, which shall terminate upon execution of the Final Interconnection Agreement by the Interconnection Customer and the Utility.

- 5.2.2. Within ~~ten—thirty (30)(40)~~ Business Days of receiving the Final Interconnection Agreement, the Interconnection Customer must execute and return the Final Interconnection Agreement, where failure to comply results in the Interconnection Request being deemed withdrawn.

Commented [A84]: Dominion change (WG1)

- 5.2.3. After the Parties execute the Final Interconnection Agreement, the Utility shall return a copy of the Final Interconnection Agreement to the Interconnection Customer and interconnection of the Generating Facility shall proceed under the provisions of the Final Interconnection Agreement.

- 5.2.4. The Final Interconnection Agreement shall specify milestones for payment for Upgrades and Interconnection facilities and/or, provision of Financial Security for Interconnection facilities, if acceptable to the Utility, that are required prior to the start of design and construction of Upgrades and Interconnection Facilities. Payment and Financial Security must be received by close of business ~~sixty—thirty (3060)~~ BusinessCalendar Days after the date the Interconnection Agreement is delivered to the Interconnection Customer for signature, where failure to comply results in the Interconnection Request being deemed withdrawn.

Commented [A85]: Dominion change (WG1)

5.3 Interconnection Construction

Construction of the Upgrades and Interconnection Facilities will proceed as called for in the Final Interconnection Agreement and Appendices.

Section 6. Provisions that Apply to All Interconnection Requests

6.1 Reasonable Efforts

The Utility shall make ~~reasonable best~~ efforts to meet all time frames provided in these procedures unless the Utility and the Interconnection Customer agree to a different schedule. If the Utility cannot meet a deadline provided herein, it shall at its earliest opportunity notify the Interconnection Customer, explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.

Commented [A86]: NCSEA change (WG1)

Commented [A87]: December Comment from Dominion Energy: Dominion Energy: Reasonable efforts is a more appropriate terminology. Best efforts is more unclear as to interpretation and determination.

6.2 Disputes

6.2.1 The Parties agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this section. Where an Interconnection Customer seeks to resolve a dispute involving its Queue Number according to the provisions of this section, any disputed loss of Queue Number shall not be final until Interconnection Customer abandons the process set out in this section or a final Commission order is entered.

6.2.2 In the event of a dispute, either Party shall provide the other Party with a written Notice of Dispute. Such Notice shall describe in detail the nature of the dispute.

6.2.3 If the dispute has not been resolved within ten (10) Business Days after receipt of the Notice, either Party may contact the Public Staff for assistance in informally resolving the dispute. If the Parties are unable to informally resolve the dispute, either Party may then file a formal complaint with the Commission.

6.2.4 Each Party agrees to conduct all negotiations in good faith.

IREC (WG1) has submitted the following rewrite of section 6.2

6.2 Disputes

6.2.1 The Parties agree to attempt to resolve all disputes arising out of the interconnection process and associated study and interconnection agreements according to the provisions of this article.

6.2.2 In the event of a dispute, the disputing Party shall provide the other Party a written Notice of Dispute containing the relevant known facts pertaining to the dispute, the specific dispute and the relief sought, and express notice by the disputing Party that it is invoking the procedures under this article. The notice shall be sent to the non-disputing Party's email address and physical address set forth in the interconnection agreement or Interconnection Application, if there is no interconnection agreement. A copy of the notice shall also be sent to Interconnection Ombudsperson.

Commented [A88]: December Comment from Dominion Energy: Dominion Energy: Retain existing Dispute language. Development of an Interconnection Ombudsperson appears inconsistent with treatment of disputes for retail customers. Also reference to additional remedies under law beyond NCUC appears inappropriate for interconnection procedures designed to address the interconnection of DG to the electric grid that is under the jurisdiction of the NCUC.

The non-disputing Party shall acknowledge the notice within three Business Days of its receipt and identify a representative with the authority to make decisions for the non-disputing Party with respect to the dispute.

6.2.3 If the dispute is principally related to one or both Parties' compliance with timelines specified in the Interconnection Standard or associated agreements, the Parties shall seek assistance from Interconnection Ombudsperson if the Parties cannot mutually resolve the dispute within eight (8) Business Days.

6.2.4 If the dispute is not principally about one or both Parties' compliance with a timeline, then the non-disputing Party shall provide the disputing Party with all relevant regulatory and/or technical details and analysis regarding any Utility interconnection requirements under dispute within ten (10) Business Days of the date of the notice of dispute. Within twenty (20) Business Days of the date of the notice of dispute, the Parties' authorized representatives will be required to meet and confer to try to resolve the dispute. Parties shall operate in good faith and use best efforts to resolve the dispute.

6.2.5 If a resolution is not reached in thirty (30) Business Days from the date of the notice, either (1) a Party may request to continue negotiations for an additional twenty (20) Business Days or (2) the Parties may by mutual agreement make a written request for mediation to the Interconnection Ombudsperson. Alternatively, both Parties by mutual agreement may request mediation from an outside third-party mediator with costs to be shared equally between the Parties.

6.2.6 If the results of the mediation are not accepted by one or more Parties and there is still disagreement, the dispute shall proceed to the Commission's formal complaint process.

6.2.7 At any time, either Party may file a complaint before the Commission pursuant to Commission rules.

6.2.8 If neither Party elects to seek assistance from the Commission, or if the attempted dispute resolution fails, then either Party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of these procedures.

6.3 Withdrawal of An Interconnection Request

6.3.1 An Interconnection Customer may withdraw an Interconnection Request at any time prior to executing a Final Interconnection Agreement by providing the Utility with a written request for withdrawal.

6.3.2 An Interconnection Request shall be deemed withdrawn if the Interconnection Customer fails to meet its obligations specified in the Interconnection Procedures, System Impact Study Agreement or Facility Study Agreement or to take advantage of any express opportunity to cure.

6.3.3 Within 90 Calendar Days of any voluntary or deemed withdrawal of the Interconnection Procedures

Interconnection Request, the Utility will provide the Interconnection Customer with a final accounting report of any difference between (1) the Interconnection Customer's cost responsibility for the actual cost of such work performed, and (2) the Interconnection Customer's previous aggregate Interconnection Facility Request Deposit payments to the Utility for such work. If the Interconnection Customer's cost responsibility exceeds its previous aggregate payments, the Utility shall invoice the Interconnection Customer for the amount due within ten (10) Business Days and the Interconnection Customer shall make payment to the Utility within 30 Calendar Days. If the Interconnection Customer's previous aggregate payments exceed its cost responsibility under this Agreement, the Utility shall refund to the Interconnection Customer an amount equal to the difference within 30-ten (10) BusinessCalendar Days of the final accounting report.

Commented [A89]: NCSEA change (WG1)

Comment from IREC: IREC supports clear timelines in the Interconnection Standard.

Commented [A90]: December Comment from Dominion Energy: Dominion Energy: Suggest that Final Accounting be consistent with Final Accounting procedures in the IA. Interest should not be applicable for refunds.

Commented [A91]: NCSEA change (WG1)

Strata Solar (WG1) suggests adding the following text to the end of section 6.3.3, after "accounting report"

and in the event the Utility fails to so refund the Interconnection Customer by such date, then interest at the rate of ten percent (10%) per month shall accrue thereon from the end of such 30 Calendar Day period until such refund is paid in full.

6.4 Interconnection Metering

Any metering necessitated by the use of the Generating Facility shall be installed at the Interconnection Customer's expense in accordance with all applicable regulatory requirements or the Utility's specifications.

6.5 Commissioning

Commissioning tests of the Interconnection Customer's installed equipment shall be performed pursuant to applicable codes and standards. If the Interconnection Customer is not proceeding under Section 2.3.2, the Utility must be given at least ten (10) Business Days written notice, or as otherwise mutually agreed to by the Parties, of the tests and may be present to witness the commissioning tests.

6.6 Confidentiality

6.6.1 Confidential Information shall mean any confidential and/or proprietary information provided by one Party to the other Party that is clearly marked or otherwise designated "Confidential." For purposes of these procedures all design, operating specifications, and metering data provided by the Interconnection Customer shall be deemed Confidential Information regardless of whether it is clearly marked or otherwise designated as such.

6.6.2 Confidential Information does not include information previously in the public domain, required to be publicly submitted or divulged by Governmental Authorities (after notice to the other Party and after exhausting any opportunity to oppose such publication or release), or

necessary to be divulged in an action to enforce these procedures. Each Party receiving Confidential Information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the Party providing that information, except to fulfill obligations under these procedures, or to fulfill legal or regulatory requirements.

6.6.2.1 Each Party shall employ at least the same standard of care to protect Confidential Information obtained from the other Party as it employs to protect its own Confidential Information.

6.6.2.2 Each Party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of Confidential Information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.

6.6.3 If information is requested by the Commission from one of the Parties that is otherwise required to be maintained in confidence pursuant to these procedures, the Party shall provide the requested information to the Commission within the time provided for in the request for information. In providing the information to the Commission, the Party may request that the information be treated as confidential and non-public in accordance with North Carolina law and that the information be withheld from public disclosure.

6.6.4 All information pertaining to a project will be provided to the new owner in the case of a change of control of the existing legal entity or a change of ownership to a new legal entity.

6.7 Comparability

The Utility shall receive, process, and analyze all Interconnection Requests received under these procedures in a timely manner, as set forth in these procedures. The Utility shall use the same reasonable efforts in processing and analyzing Interconnection Requests from all Interconnection Customers, whether the Generating Facility is owned or operated by the Utility, its subsidiaries or affiliates, or others.

6.8 Record Retention

The Utility shall maintain for three (3) years records, subject to audit, of all Interconnection Requests received under these procedures, the times required to complete Interconnection Request approvals and disapprovals, and justification for the actions taken on the Interconnection Requests.

6.9 Coordination with Affected Systems

The Utility shall coordinate the conduct of any studies required to determine the impact of the Interconnection Request on Affected Systems with Affected System operators and, if possible, include those results (if available) in its applicable

studies within the time frame specified in these procedures. The Utility will include such Affected System operators in all meetings held with the Interconnection Customer as required by these procedures. The Interconnection Customer will cooperate with the Utility in all matters related to the conduct of studies and the determination of modifications to Affected Systems. A Utility which may be an Affected System shall cooperate with the Utility with whom interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to Affected Systems.

NCEMC and Dominion Energy (WG1) have submitted the following rewrite of section 6.9:

6.9 Coordination with Affected Systems

The Utility shall develop Affected System communication protocol with potential Affected Systems, upon request by the Affected System, such that reciprocal notification of Interconnection Requests, as applicable per the specified communication protocol, between the Utility and the Affected System can be addressed and implemented.

The Utility shall coordinate the conduct of any studies required to determine the impact of the Interconnection Request on Affected Systems with Affected System operators and, if possible, include those results (if available) in its applicable studies within the time frame specified in these procedures. The Utility will include such Affected System operators in all meetings held with the Interconnection Customer as required by these procedures. The Interconnection Customer will cooperate with the Utility in all matters related to the conduct of studies and the determination of modifications to Affected Systems. A Utility which may be an Affected System shall cooperate with the Utility with whom interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to Affected Systems.

Commented [A92]: December Comment from Duke Energy: Duke Energy agrees with the proposed change for 6.9

6.10 Capacity of the Generating Facility

6.10.1 If the Interconnection Request is for a Generating Facility that includes multiple energy production devices at a site for which the Interconnection Customer seeks a single Point of Interconnection, the Interconnection Request shall be evaluated on the basis of the aggregate capacity of the multiple devices, unless otherwise agreed to by the Utility and the Interconnection Customer.

6.10.2 The Interconnection Request shall be evaluated using the maximum rated capacity of the Generating Facility, unless otherwise agreed to by the Utility and the Interconnection Customer.

WG2 submitted the following rewrite for section 6.10.2:

6.10.2 For the purposes of this Standard, the capacity of the Generating Facility shall be considered the maximum rated capacity of the Generating

Facility, except where the gross generating capacity of the Generating Facility is limited (e.g., through the use of a control system, power relay(s), or other similar device settings or adjustments as mutually agreed upon by the Utility and Interconnection customer), the Generating Facility's capacity shall be considered the Maximum Generating Capacity specified by the Interconnection Customer in the Interconnection Request. The Maximum Generating Capacity specified by the Interconnection Customer in the Interconnection Request will subsequently be included as a limitation in the Interconnection Agreement.

Commented [A93]: Duke & Dominion: The method of limiting output to be mutually agreed upon. This change was added to the proposed redline here.

IREC: Opposes explicitly limiting control devices to those approved by the utilities if it is completely left to the utilities discretion, which is what this revision regarding "mutual agreement" would do. Specifically, the utilities expressed concern with allowing software-based control, and this revision could effectively limit facilities to physical control devices, which is unnecessarily restrictive with today's technology. IREC believes there should be more discussion of what sorts of control devices would be acceptable for utilities to require and include some definition of such in the rule.

Duke Energy is in agreement with 6.10.2 with the proposed changes.

Commented [A94]: Duke Energy: Should this section reference Point of Interconnection?

This section references Maximum Generating Capacity, which is defined in the glossary to be considered at the Point of Interconnection.

Duke Energy submitted a slightly revised version of section 6.10.2

6.10.2 For the purposes of this Standard, the capacity of the Generating Facility shall be considered the maximum rated capacity of the Generating Facility, except where the gross generating capacity of the Generating Facility is limited (e.g., through the use of a control system, power relay(s), or other similar device settings or adjustments as mutually agreed upon by the Utility and Interconnection customer). The Generating Facility's capacity shall be considered the Maximum Generating Capacity specified by the Interconnection Customer in the Interconnection Request. The Maximum Generating Capacity approved in the study process will subsequently be included as a limitation in the Interconnection Agreement.

6.11 Sale of a Generation Facility

6.11.1 The Interconnection Customer shall notify the Utility of the pending sale of a proposed Generation Facility in writing. The Interconnection Customer shall provide the Utility with information regarding whether the sale is a change of ownership of the Generation Facility to a new legal entity, or a change of control of the existing legal entity.

The Interconnection Customer shall promptly notify the Utility of the final date of sale and transfer date of ownership in writing. The purchaser of the Generation Facility shall confirm to the Utility the final date of sale and transfer date of ownership in writing, and submit an Interconnection Request requesting transfer control or change of ownership together with the change of ownership fee listed in Attachment 2.

6.11.2 Existing Interconnection Agreements are non-transferable. If the Generation Facility is sold to a new legal entity, a new Interconnection Agreement must be executed by the new legal entity prior to the interconnection or for the continued interconnection of the Generating Facility to the Utility's system. The Utility shall not withhold or delay the execution of an Interconnection Agreement with the new owner provided the Generation facility or proposed Generation facility complies with requirements of 6.11.

6.11.3 The technical requirements in the Interconnection Agreement shall be grandfathered for subsequent owners as long as (1) the Generating Facility's maximum rated capacity has not been changed; (2) the

Generating Facility has not been modified so as to change its electrical characteristics; and (3) the interconnection system has not been modified.

6.12 Isolating or Disconnecting the Generating Facility

- 6.12.1 The Utility may isolate the Interconnection Customer's premises and/or Generating Facility from the Utility's System when necessary in order to construct, install, repair, replace, remove, investigate or inspect any of the Utility's equipment or part of Utility's System; or if the Utility determines that isolation of the Interconnection Customer's premises and/or Generating Facility from the Utility's System is necessary because of emergencies, forced outages, force majeure or compliance with prudent electrical practices.
- 6.12.2 Whenever feasible, the Utility shall give the Interconnection Customer reasonable notice of the isolation of the Interconnection Customer's premises and/or Generating Facility from the Utility's System.
- 6.12.3 Notwithstanding any other provision of this Standard, if at any time the Utility determines that the continued operation of the Generating Facility may endanger either (1) the Utility's personnel or other persons or property or (2) the integrity or safety of the Utility's System, or otherwise cause unacceptable power quality problems for other electric consumers, the Utility shall have the right to isolate the Interconnection Customer's premises and/or Generating Facility from the Utility's System.
- 6.12.4 The Utility may disconnect from the Utility's System any Generating Facility determined to be malfunctioning, or not in compliance with this Standard. The Interconnection Customer must provide proof of compliance with this Standard before the Generating Facility will be reconnected.

6.13 Limitation of Liability

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission hereunder, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, incidental, consequential, or punitive damages of any kind.

6.14 Indemnification

The Parties shall at all times indemnify, defend and save the other Party harmless from any and all damages, losses, claims, including claims and actions relating to injury or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney's fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's action or inaction of its obligations hereunder on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

6.15 Insurance

The Interconnection Customer shall obtain and retain, for as long as the Generating Facility is interconnected with the Utility's System, liability insurance which protects the Interconnection Customer from claims for bodily injury and/or property damage. The amount of such insurance shall be sufficient to insure against all reasonably foreseeable direct liabilities given the size and nature of the generating equipment being interconnected, the interconnection itself, and the characteristics of the system to which the interconnection is made. This insurance shall be primary for all purposes. The Interconnection Customer shall provide certificates evidencing this coverage as required by the Utility. Such insurance shall be obtained from an insurance provider authorized to do business in North Carolina. The Utility reserves the right to refuse to establish or continue the interconnection of the Generating Facility with the Utility's System, if such insurance is not in effect.

6.15.1 For an Interconnection Customer that is a residential customer of the Utility proposing to interconnect a Generating Facility no larger than 250 kW, the required coverage shall be a standard homeowner's insurance policy with liability coverage in the amount of at least \$100,000 per occurrence.

6.15.2 For an Interconnection Customer that is a non-residential customer of the Utility proposing to interconnect a Generating Facility no larger than 250 kW, the required coverage shall be comprehensive general liability insurance with coverage in the amount of at least \$300,000 per occurrence.

6.15.3 For an Interconnection Customer that is a non-residential customer of the Utility proposing to interconnect a Generating Facility greater than 250 kW, the required coverage shall be comprehensive general liability insurance with coverage in the amount of at least \$1,000,000 per occurrence.

6.15.4 An Interconnection Customer of sufficient credit-worthiness may propose to provide this insurance via a self-insurance program if it has a self-insurance program established in accordance with commercially acceptable risk management practices, and such a proposal shall not be unreasonably rejected.

6.16 Disconnect Switch

The Utility may require the interconnection Customer to install a manual load-break disconnect switch or safety switch as a clear visible indication of switch position between the Utility System and the interconnection Customer. The switch must have padlock provisions for locking in the open position. The switch must be visible to, and accessible to Utility personnel. The switch must be in close proximity to, and on the Interconnection Customer's side of the point of electrical interconnection with the Utility's system. The switch must be labeled "Generator

Disconnect Switch." The switch may isolate the Interconnection Customer and its associated load from the Utility's System or disconnect only the Generator from the Utility's System and shall be accessible to the Utility at all times. The Utility, in its sole discretion, determines if the switch is suitable and necessary. When the installation of the switch is not otherwise required (e.g. National Electric Code, state or local building code, and is deemed necessary by the Utility for certified, inverter-based generators no larger than 10 kW, the Utility shall reimburse the Interconnection Customer for the reasonable cost of installing a switch that meets the Utility's specifications.

Strata Solar (WG1) has submitted the following sections to be added to the document. If changes are accepted, subsequent sections of the document will need to be renumbered as appropriate.

6.17 Late Responses

Any late responses from the Utility beyond the allowable time limits set forth in this document shall be accurately tracked via the online platform described in Section above and a detailed report of such late responses shall be generated and provided to the Commission on a monthly basis.

6.18 Online Portal

The Utility shall create and maintain an online platform that tracks Interconnection Request status. Including but not limited to:

1. Study status
2. Interconnection Deposit spend to date
3. Upgrade payment spend to date
4. Upcoming deadlines (both project and utility). Maintain a record of missed deadlines that can be provided to the industry and the NCUC.
5. Provides for document control via online submittals
6. Real time queue status
7. Replaces email communication with portal communication

6.17 Certification Codes and Standards

Attachment 4 specifies codes and standards the Generating Facility must comply with.

6.18 Certification of Generator Equipment Packages

Attachment 5 specifies the certification requirements for the Generating Facility.

Commented [A95]: Comment from IREC: IREC supports provisions, such as this one, that provide transparency and help ensure the utilities are held accountable to timelines.

(WG1)

Commented [A96]: December Comment from Dominion Energy: Dominion Energy: Communication between Developers and utilities for specific interconnection request status already exist under Reasonable Efforts language. Communication is two-way – utility updates Developer, but Developer can also request update of utility. Dispute process exists for failure of either Party to respond to the other. Additional and increased reporting requirements places additional administrative burden on the utilities which can slow the interconnection process rather than improve it. Recommend that discussion occur among Stakeholders as to how existing quarterly filed reports are being utilized.

ATTACHMENT 1

Glossary of Terms

20 kW Inverter Process - The procedure for evaluating an Interconnection Request for a certified inverter-based Generating Facility no larger than 20 kW that uses the Section 3 screens. The application process uses an all-in-one document that includes a simplified Interconnection Request Application Form, simplified procedures, and a brief set of Terms and Conditions. (See Attachment 6.)

Affected System - An electric system other than the Utility's System that may be affected by the proposed interconnection. The owner of an Affected System might be a Party to the Interconnection Agreement or other study agreements needed to interconnect the Generating Facility.

NCCEMC and Dominion Energy (WG1) have submitted the following rewrite of Affected System.

Affected System – A Utility other than the interconnecting Utility's System that may be affected by the proposed interconnection. The owner of an Affected System might be a Party to the Interconnection Agreement or other study agreements needed to interconnect the Generating Facility.

Applicable Laws and Regulations - All duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority.

Auxiliary Load – The term “Auxiliary Load” shall mean power used to operate auxiliary equipment in the facility necessary for power generation (such as pumps, blowers, fuel preparation machinery, exciters, etc.)

Business Day - Monday through Friday, excluding State Holidays. **Calendar Days** – Sunday through Saturday, including all holidays. **Commission** - The North Carolina Utilities Commission.

Default - The failure of a breaching Party to cure its breach under the Interconnection Agreement.

Detailed Estimated Interconnection Facilities Charge - The estimated charge for Interconnection Facilities that is based on field visits and/or detailed engineering cost calculations and is presented in the Facility Study report and Final Interconnection Agreement. This charge is not final.

Commented [A97]: December Comment from Duke Energy: Duke Energy agrees with the proposed definition of Affected System.

Detailed Estimated Upgrade Charge - The estimated charge for Upgrades that is based on field visits and/or detailed engineering cost calculations and is presented in the Facility Study report and Final Interconnection Agreement.

Distribution System - The Utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which Distribution Systems operate differ among areas.

Distribution Upgrades - The additions, modifications, and upgrades to the Utility's Distribution System at or beyond the Point of Interconnection to facilitate interconnection of the Generating Facility and render the service necessary to allow the Generating Facility to operate in parallel with the Utility and to inject electricity onto the Utility's System. Distribution Upgrades do not include Interconnection Facilities.

Fast Track Process - The procedure for evaluating an Interconnection Request for a certified Generating Facility no larger than 2 MW that meets the eligibility requirements of Section 3.1, customer options meeting, and optional supplemental review.

Final Interconnection Agreement – The Interconnection Agreement that specifies the Detailed Estimated Upgrade Charge, Detailed Interconnection Facility Charge, mutually agreed upon Milestones, etc. and terminates and replaces the Interim Interconnection Agreement.

Financial Security – A letter of credit or other financial arrangement that is reasonably acceptable to the Utility and is consistent with the Uniform Commercial Code of North Carolina that is sufficient to cover the costs for constructing, designing, procuring, and installing the applicable portion of the Utility's Interconnection Facilities. Where appropriate, the Utility may deem Financial Security to exist where its credit policies show that the financial risks involved are de minimus, or where the Utility's policies allow the acceptance of an alternative showing of credit-worthiness from the Interconnection Customer.

Generating Facility - The Interconnection Customer's device for the production and/or storage for later injection of electricity identified in the Interconnection Request, but shall not include the Interconnection Customer's Interconnection Facilities.

Good Utility Practice - Any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

Governmental Authority - Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include the Interconnection Customer, the Utility, or any affiliate thereof.

In-Service Date – The date upon which the construction of the Utility's facilities is completed and the facilities are capable of being placed into service.

Interconnection Customer - Any valid legal entity, including the Utility, that proposes to interconnect its Generating Facility with the Utility's System.

Interconnection Facilities – Collectively, the Utility's Interconnection Facilities and the Interconnection Customer's Interconnection Facilities. Collectively, Interconnection Facilities include all facilities and equipment between the Generating Facility and the Point of Interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the Generating Facility to the Utility's System. Interconnection Facilities are sole use facilities and shall not include Upgrades.

Interconnection Facilities Delivery Date – The Interconnection Facilities Delivery Date shall be the date upon which the Utility's Interconnection Facilities are first made operational for the purposes of receiving power from the Interconnection Customer.

Interconnection Request - The Interconnection Customer's request, in accordance with these procedures, to interconnect a new Generating Facility, or to change the capacity of, or make a Material Modification to, an existing Generating Facility that is interconnected with the Utility's System.

Interdependent Customer (or Interdependent Project) means an Interconnection Customer (or Project) whose Upgrade or Interconnection Facilities requirements are impacted by another Generating Facility, as determined by the Utility.

Interim Interconnection Agreement – The Interconnection Agreement that specifies the Preliminary Estimated Interconnection Facilities Charge, Preliminary Estimated Upgrade Charge, excludes Milestones, and must be cancelled and replaced with a Final Interconnection Agreement.

IREC (Fast Track WG3/4) has submitted the following addition to the Glossary.

Line section – A portion of a distribution circuit between two automatic sectionalizing devices or an automatic sectionalizing device and the end of the distribution line. When applying this to the 15% of peak load screen described in Section 3.2.1.2, the smallest line section to be evaluated should begin at the first line recloser or circuit breaker upstream of the Point of Interconnection.

|

“Material Modification” means a modification to machine data or equipment configuration or to the interconnection site of the Generating Facility that has a material impact on the cost, timing or design of any Interconnection Facilities or Upgrades. Material Modifications include project revisions proposed at any time after receiving notification by the Utility of a complete Interconnection Request pursuant to Section 1.4.3 that 1) alters the size or output characteristics of the Generating Facility from its Utility-approved Interconnection Request submission; or 2) may adversely impact other Interdependent Interconnection Requests with higher Queue Numbers.

Indicia of a Material Modification, include, but are not limited to:

- A change in Point of Interconnection (POI) to a new location, unless the change in a POI is on the same circuit less than two (2) poles away from the original location, and the new POI is within the same protection zone as the original location;
- A change or replacement of generating equipment such as generator(s), inverter(s), transformers, relaying, controls, etc. that is not a like-kind substitution in size, ratings, impedances, efficiencies or capabilities of the equipment specified in the original or preceding Interconnection Request;
- A change from certified to non-certified devices (“certified” means certified by an OSHA recognized Nationally Recognized Test Laboratory (NRTL), to relevant UL and IEEE standards, authorized to perform tests to such standards);
- A change of transformer connection(s) or grounding from that originally proposed;
- A change to certified inverters with different specifications or different inverter control specifications or set-up than originally proposed;
- An increase of the AC output of a Generating Facility; or
- A change reducing the AC output of the generating facility by more than 10%.

The following are not indicia of a Material Modification:

- A change in ownership of a Generating Facility; the new owner, however, will be required to execute a new Interconnection Agreement and Study agreement(s) for any Study which has not been completed and the Report issued by the Utility.

- A change or replacement of generating equipment such as generator(s), inverter(s), solar panel(s), transformers, relaying, controls, etc. that is a like-kind substitution in size, ratings, impedances, efficiencies or capabilities of the equipment specified in the original or preceding Interconnection Request;
- An increase in the DC/AC ratio that does not increase the maximum AC output capability of the generating facility;
- A decrease in the DC/AC ratio that does not reduce the AC output capability of the generating facility by more than 10%.

WG2 has submitted the following revision for Material Modification. Duke Energy has proposed a modified version as well, which is below.

Material Modification means a modification to machine data or equipment configuration or to the interconnection site of the Generating Facility that has a material impact on the cost, timing or design of any Interconnection Facilities or Upgrades or that may adversely impact other Interdependent Interconnection Requests with higher Queue Numbers. Material Modifications include certain project revisions as defined in Section 1.5.1.

Commented [A98]: WG2: This change is largely a clean-up to remove the definition from multiple areas in the standard.

Material Modification means a modification to machine data or equipment configuration or to the interconnection site of the Generating Facility that has a material impact on the cost, timing or design of any Interconnection Facilities or Upgrades or that may adversely impact other Interdependent Interconnection Requests with higher Queue Numbers, which includes any required study revisions resulting from the modification. Material Modifications include certain project revisions as defined in Section 1.5.1.

Commented [A99]: Duke has proposed a modified version.

Maximum Physical Export Capability Requested - The term shall mean the maximum continuous electrical output of the Generating Facility at any time at a power factor of approximately unity as measured at the Point of Interconnection and the maximum kW delivered to the Utility during any metering period.

Commented [A100]: Submitted by WG2

WG2 has submitted the following revision for Maximum Physical Export Capability Requested.

Maximum Generating Capacity - The term shall mean the maximum continuous electrical output of the Generating Facility at any time as measured at the Point of Interconnection and the maximum kW delivered to the Utility during any metering period. Requested Maximum Generating Capacity will be specified by the Interconnection

Commented [A101]: WG2: Power Factor requirements are clarified in Section 1.8 of the IA.

Customer in the Interconnection Request and an approved Maximum Generating capacity will subsequently be included as a limitation in the Interconnection Agreement.

Month – The term “Month” means the period intervening between readings for the purpose of routine billing, such readings usually being taken once per month.

Nameplate Capacity – The term “Nameplate Capacity” shall mean the manufacturer’s nameplate rated output capability of the generator. For multi-unit generator facilities, the “Nameplate Capacity” of the facility shall be the sum of the individual manufacturer’s nameplate rated output capabilities of the generators.

Net Capacity – The term “Net Capacity” shall mean the Nameplate Capacity of the Customer’s generating facilities, less the portion of that capacity needed to serve the Generating Facility’s Auxiliary Load.

Net Power - The term "Net Power" shall mean the total amount of electric power produced by the Customer's Generating Facility less the portion of that power used to supply the Generating Facility's Auxiliary Load.

Network Upgrades - Additions, modifications, and upgrades to the Utility's Transmission System required to accommodate the interconnection of the Generating Facility to the Utility's System. Network Upgrades do not include Distribution Upgrades.

North Carolina Interconnection Procedures – The term “North Carolina Interconnection Procedures” shall refer to the North Carolina Interconnection Procedures, Forms, and Agreements for State-Jurisdictional Generator Interconnections as approved by the North Carolina Utilities Commission.

Operating Requirements - Any operating and technical requirements that may be applicable due to Regional Reliability Organization, Independent System Operator, control area, or the Utility's requirements, including those set forth in the Interconnection Agreement.

Party or Parties - The Utility, Interconnection Customer, and possibly the owner of an Affected System, or any combination of the above.

Point of Interconnection - The point where the Interconnection Facilities connect with the Utility's System.

Preliminary Estimated Interconnection Facilities Charge - The estimated charge for Interconnection Facilities that is developed using unit-cost-high level estimates, including overheads and is presented in the System Impact Study report and Interim Interconnection Agreement. This charge is not based on field visits and/or detailed engineering cost calculations.

Preliminary Estimated Upgrade Charge - The estimated charge for Upgrades that is developed using unit-cost-high level estimates including overheads and is presented in

Commented [A102]: There is consensus on this revision. (WG2)

Commented [A103R102]: Duke Energy is in agreement with this revision.

Commented [A104]: December proposal by Duke, which was not discussed by the working group during markup of this document. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC.

the System Impact Study report ~~and Interim Interconnection Agreement~~. This charge is not based on field visits and/or detailed engineering cost calculations.

Project A - An Interconnection Customer that has a lower Queue Number than Interdependent Project B.

Project B - An Interconnection Customer that has a higher Queue Number than Interdependent Project A.

Project C – An Interconnection Customer that has a higher Queue Number than Interdependent Project B.

Public Staff - The Public Staff of the North Carolina Utilities Commission.

Queue Number – The number assigned by the Utility that establishes a Customer's Interconnection Request's position in the study queue relative to all other valid Interconnection Requests. A lower Queue Number will be studied prior to a higher Queue Number, except in the case of Interdependent Projects. The Queue Number of each Interconnection Request shall be used to determine the cost responsibility for the Upgrades necessary to accommodate the interconnection.

Queue Position - The order of a valid Interconnection Request, relative to all other pending valid Interconnection Requests, based on Queue Number.

Reasonable Efforts - With respect to an action required to be attempted or taken by a Party under the Interconnection Agreement, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.

(WG3/4) Public Staff has submitted the following addition for Small Animal Waste Energy Facility:

Small Animal Waste to Energy Facility – An electric generating facility 2 MW or less in capacity that uses swine or poultry waste as its energy source, and is eligible for an expedited ~~review~~ study process pursuant to G.S. 62-133.8(i)(4).

Standby Generation Facility – An electric generating facility primarily designed for standby or backup power in the event of a loss of power supply from the Utility. Such facilities may operate in parallel with the Utility for a brief period of time when transferring load back to the Utility after an outage, or when testing the operation of the Facility and transferring load from and back to the Utility.

Standard - The interconnection procedures, forms and agreements approved by the Commission for interconnection of Generating Facilities to Utility Systems in North Carolina.

Commented [A105]: December proposal by Duke, which was not discussed by the working group during markup of this document. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Solar Solutions and IREC.

Commented [A106]: Addition proposed by the Public Staff (WG3/4)

Formatted: Highlight

Commented [A107]: Change proposed by Duke Energy

Commented [A108]: December Addition from Duke Energy (WG3/4)

Study Process - The procedure for evaluating an Interconnection Request that includes the Section 4 scoping meeting, system impact study, and facilities study.

System - The facilities owned, controlled or operated by the Utility that are used to provide electric service in North Carolina.

Utility - The entity that owns, controls, or operates facilities used for providing electric service in North Carolina.

Transmission System - The facilities owned, controlled or operated by the Utility that are used to transmit electricity in North Carolina.

Upgrades - The required additions and modifications to the Utility's System at or beyond the Point of Interconnection. Upgrades may be Network Upgrades or Distribution Upgrades. Upgrades do not include Interconnection Facilities.

ATTACHMENT 2

**NORTH CAROLINA
INTERCONNECTION REQUEST APPLICATION FORM**

Utility: _____

Designated Utility Contact: _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Telephone Number: _____

Fax: _____

An Interconnection Request Application Form is considered complete when it provides all applicable and correct information required below.

Preamble and Instructions

An Interconnection Customer who requests a North Carolina Utilities Commission jurisdictional interconnection must submit this Interconnection Request Application Form by hand delivery, mail, e-mail, or fax to the Utility.

Request for: Fast Track Process _____ **Supplemental Review****Study Process**

(Refer to Section 3 of the Interconnection Standards for guidance in selecting Fast Track Review options. All Generating Facilities larger than 2 MW must use the Section 4 Study Process.)

Processing Fee or Deposit**Fast Track Process – Non-Refundable Processing Fees**

- If the Generating Facility is 20 kW or smaller, the fee is \$100.
- If the Generating Facility is larger than 20 kW but not larger than 100 kW, the fee is \$250.
- If the Generating Facility is larger than 100 kW but not larger than 2 MW, the fee is \$500.

Duke Energy has submitted the following alternate proposal for Fast Track Processing Fees:

Commented [A109]: December proposal by Duke Energy, which was not discussed by the working group during markup of this document. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC

Commented [A110]: December comment by Duke Energy, which was not discussed by the working group during markup of this document. This amount should be adjusted to be consistent with the <20kW fee proposed in Appendix 6. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC

Commented [A111]: December comment by Duke Energy, which was not discussed by the working group during markup of this document. This amount should be adjusted to be consistent with the \$500 fee proposed for facilities >20kW and < 100kW. Similarly, the fee for facilities > 100kW and < 2MW should be adjusted to \$1000. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC

Commented [A112]: December Comment from Dominion Energy: Dominion Energy: Suggest increasing fee to \$1000 for Fast Track requests greater than 100 kW. These requests require fairly significant review time by engineering staff to review screens, as well as follow-up with Interconnection Customers to explain screen results. The increase to \$1000 likely does not recover review costs but is submitted to represent a reasonable increase magnitude at this time.

Commented [A113]: December proposal by Duke Energy, which was not discussed by the working group during markup of this document. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC.

Fast Track Process (inverter-based only) – Non-Refundable Processing Fee.

- If the Generating Facility is larger than 20 kW but not larger than 100 kW, the fee is \$750.
- If the Generating Facility is larger than 100 kW but not larger than 2 MW, the fee is \$1,000.

Supplemental Review - Deposit

- If the Generating Facility is larger than 20 kW but not larger than 100 kW, the fee is \$750.
- If the Generating Facility is larger than 100 kW but not larger than 2 MW, the fee is \$1,000.

Study Process – Deposit

If the Interconnection Request is submitted under the Study Process, whether a new submission or an Interconnection Request that did not pass the Fast Track Process, the Interconnection Customer shall submit to the Utility an Interconnection Facilities Deposit Charge of \$20,000 plus \$1.00 per kW_{AC}.

Standby Generation Process – Deposit

- If the Facility is less than 1 MW, deposit is \$2,500.
- If the Facility is equal to or greater than 1 MW the deposit is \$5,000.

Change in Ownership – Non-Refundable Processing Fee

If the Interconnection Request is submitted solely due to a transfer of ownership or change of control of the Generating Facility, the fee is \$~~50~~500.

Commented [A114]: December proposal by Duke Energy, which was not discussed by the working group during markup of this document. Duke Energy is also considering replacing the word "deposit" with the word "fee" for both sub-items, to provide consistency with the heading of "Deposit". The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC.

Commented [A115]: December Addition from Duke Energy [WG4]

Commented [A116]: December proposal by Duke Energy, which was not discussed by the working group during markup of this document. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC.

Interconnection Customer Information

Legal Name of the Interconnection Customer (or, if an individual, individual's name)

Name: _____

Primary Contact Name: _____

Title: _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Commented [A117]: Duke Energy (WG1) proposed change**Secondary Contact Name:** _____**Title:** _____**E-Mail Address:** _____**Mailing Address:** _____**City:** _____ **State:** _____ **Zip:** _____**County:** _____**Telephone (Day):** _____ **(Evening):** _____**Fax:** _____**Commented [A118]:** Duke Energy (WG1) proposed change.

Comment: Addition of secondary contact and contact information for the signatory to both IR forms.

To ensure timely processing of IRs and continuity of coordination between the utility and the IC.

Facility Location (if different from above):

Project Name: _____

Address: _____

City: _____ State: _____ Zip: _____

County: _____

Alternative Contact Information (if different from the Interconnection Customer)

Contact Name: _____

Title: _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Telephone (Day) _____ (Evening) _____

Fax: _____

Application is for: _____ New Generating Facility

_____ Capacity Change to a Proposed or Existing Generating Facility

_____ Change of Ownership of a Proposed or Existing Generating Facility to a new legal entity

_____ Change of Control of a Proposed or Existing Generating Facility of the existing legal entity.

If capacity addition to existing Generating Facility, please describe:

Will the Generating Facility be used for any of the following?

Standby power for utility outage only?

Yes ☐ No ☐

Net Metering? Yes ☐ No ☐

To Supply Power to the Interconnection Customer? Yes ☐ No ☐

To Supply Power to the Utility? Yes ☐ No ☐

To Supply Power to Others? Yes ☐ No ☐

(If yes, discuss with the Utility whether the interconnection is covered by the NC Interconnection Standard.)

Requested Point of Interconnection: _____

Requested In-Service Date: _____

For installations at locations with existing electric service to which the proposed Generating Facility will interconnect, provide:

Local Electric Service Provider*: _____

Existing Account Number : _____

To be provided by the Interconnection Customer if the local electric service provider is different from the Utility

Contact Name: _____

Title: _____

Commented [A119]: December Addition from Duke Energy
[WG4]

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

(WG1) Duke Energy proposes replace the Generating Facility Information section below with the following table.

Generating Facility Information

Data applies only to the Generating Facility, not the Interconnection Facilities.

Prime Mover Information (Refer to U.S. EIA Form 860 Instructions, Table 2 Prime Mover Codes and Descriptions at https://www.eia.gov/survey/form/eia_860/instructions.pdf)

Prime Mover Code _____

Prime Mover Description _____

Energy Source Information (Refer to U.S. EIA Form 860 Instructions, Table 28 Energy Source Codes and Heat Content at https://www.eia.gov/survey/form/eia_860/instructions.pdf)

Fuel Type	Energy Source Code	Energy Source Description

Generating Facility Information

Data applies only to the Generating Facility, not the Interconnection Facilities.

Prime Mover: Photovoltaic (PV) ____ Fuel Cell ____ Reciprocating Engine ____

Gas Turbine ____ Steam Turbine ____ Micro-turbine ____

Battery ____ Other ____

Commented [A120]: Comment: Duke proposes to alter the requested generating facility Prime Mover and Energy Source classification to align with current U.S. EIA (Energy Information Administration) reporting in EIA Form 860.

To facilitate consistent terminology in Salesforce across all Duke regulated jurisdictions.

Commented [A121]: Change proposed by QF Solutions (WG2)

Energy Source:

Renewable

- ☐ Solar – Photovoltaic
☐ Solar – thermal
☐ Biomass – landfill gas
☐ Biomass – manure digester gas
☐ Biomass – directed biogas
☐ Biomass – solid waste
☐ Biomass – sewage digester gas
☐ Biomass – wood
☐ Biomass – other (specify below)
☐ Hydro power – run of river
☐ Hydro power – storage
☐ Hydro power – tidal
☐ Hydro power – wave
☐ Wind
☐ Geothermal
☐ Battery

Non-Renewable

- ☐ Fossil Fuel - Diesel
☐ Fossil Fuel - Natural Gas (not waste)
☐ Fossil Fuel - Oil
☐ Fossil Fuel – Coal
☐ Fossil Fuel – Other (specify below)
☐ Battery
☐ Other (specify below)

Commented [A123]: Change proposed by QF Solutions (WG2)

Commented [A122]: Change proposed by QF Solutions (WG2)

☐ Other (specify below)

Type of Generator: Synchronous ____ Induction ____ Inverter ____

Total Generator Nameplate RatingCapacity: _____ kW_{AC} (Typical) _____ kVAR

Interconnection Customer or Customer-Site Load: _____ kW_{AC} (if none, so state)

Interconnection Customer Generator Auxiliary Load: _____ kW_{AC}

Typical Reactive Load (if known): _____ kVAR

Maximum Physical Export Capability & Generating Capacity requested: _____ kW_{AC}

(The maximum continuous electrical output of the Generating Facility at any time at a power factor of approximately unity as measured at the Point of Interconnection and the maximum kW delivered to the Utility during any metering period)

Commented [A124]: WG2: Proposed clean up change to bring language in line with glossary ("Nameplate Capacity" is defined as "the manufacturer's nameplate rated output capability of the generator. For multi-unit generator facilities, the "Nameplate Capacity" of the facility shall be the sum of the individual manufacturer's nameplate rated output capabilities of the generators."

Commented [A125]: Change proposed by WG2

Duke Energy proposes a modified version of the above information.

Type of Generator: Synchronous ____ Induction ____ Inverter ____

Total Generator/Storage Nameplate Capacity: _____ kW_{AC} (Typical) _____ kVAR

Storage Nameplate Energy: _____ kWh

Interconnection Customer or Customer-Site Load: _____ kW_{AC} (if none, so state)

Interconnection Customer Generator Auxiliary Load: _____ kW_{AC}

Typical Reactive Load (if known): _____ kVAR

Maximum Generating Capacity requested: _____ kW_{AC}

(The maximum continuous electrical output of the Generating Facility at any time at a power factor of approximately unity as measured at the Point of Interconnection and the maximum kW delivered to the Utility during any metering period)

Production profile: provide below the maximum import and export levels (as a percentage of the Maximum Physical Export Capability Requested) for each hour of the day, as measured at the Point Of Interconnection. Power flow in excess of these levels during the corresponding hour shall be considered an Adverse Operating Effect per section 3.4.4. of the Interconnection Agreement.

Maximum import and export, hour ending:

0100 imp: _____ exp: _____ %	0200 imp: _____ exp: _____ %	0300 imp: _____ exp: _____ %
0400 imp: _____ exp: _____ %	0500 imp: _____ exp: _____ %	0600 imp: _____ exp: _____ %
0700 imp: _____ exp: _____ %	0800 imp: _____ exp: _____ %	0900 imp: _____ exp: _____ %
1000 imp: _____ exp: _____ %	1100 imp: _____ exp: _____ %	1200 imp: _____ exp: _____ %
1300 imp: _____ exp: _____ %	1400 imp: _____ exp: _____ %	1500 imp: _____ exp: _____ %
1600 imp: _____ exp: _____ %	1700 imp: _____ exp: _____ %	1800 imp: _____ exp: _____ %
1900 imp: _____ exp: _____ %	2000 imp: _____ exp: _____ %	2100 imp: _____ exp: _____ %
2200 imp: _____ exp: _____ %	2300 imp: _____ exp: _____ %	2400 imp: _____ exp: _____ %

Commented [A126]: December Comment from Duke Energy: Format of the production profile table was incorrect. It has been revised.

Please provide any additional pertinent information regarding the daily operating characteristics of the facility here or attached as noted. Also note information about intended reactive flows:

List components of the Generating Facility equipment package that are currently certified:

Number	Equipment Type	Certifying Entity
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

Generator (or solar panel information)

Manufacturer, Model & Quantity:

Nameplate Output Power Rating in kW_{AC}: Summer _____ Winter _____

Nameplate Output Power Rating in kVA: Summer _____ Winter _____

Individual Generator Rated Power Factor: _____ Leading _____ Lagging

Total Number of Generators in wind farm to be interconnected pursuant to this Interconnection Request (if applicable): _____ Elevation: _____

Inverter Manufacturer, Model & Quantity: _____

For solar projects provide the following information:

Latitude: _____ Degrees _____ Minutes North

Longitude: _____ Degrees _____ Minutes West

Orientation: _____ Degrees (Due South=180°)

☐ Fixed Tilt Array ☐ Single Axis Tracking Array ☐ Double Axis Tracking Array

Fixed Tilt Angle: _____ Degrees

Impedance Diagram - If interconnecting to the Utility System at a voltage of 44-kV or greater, provide an Impedance Diagram. An Impedance Diagram may be required by the Utility for proposed interconnections at lower interconnection voltages. The Impedance Diagram shall provide, or be accompanied by a list that shall provide, the collector system impedance of the generation plant. The collector system impedance data shall include equivalent impedances for all components, starting with the inverter transformer(s) up to the utility level Generator Step-Up transformer.

Load Flow Data Sheet - If interconnecting to the Utility System at a voltage of 44-kV or greater, provide a completed Power Systems Load Flow data sheet. A Load Flow data sheet may be required by the Utility for proposed interconnections at lower interconnection voltages.

Excitation and Governor System Data for Synchronous Generators - If interconnecting to the Utility System at a voltage of 44-kV or greater, provide appropriate IEEE model block diagram of excitation system, governor system and power system stabilizer (PSS) in accordance with the regional reliability council criteria. A PSS may be required at lower interconnection voltages. A copy of the manufacturer's block diagram may not be substituted.

Generating Facility Characteristic Data (for inverter-based machines)

Max design fault contribution current: _____ Instantaneous _____ or RMS _____

Harmonics Characteristics: _____

Start-up requirements: _____

Inverter Short-Circuit Model Data

Model and parameter data required for short-circuit analysis is specific to each PV inverter make and model. All data to be provided in per-unit ohms, on the equivalent inverter MVA base.

Inverter Equivalent MVA Base: _____ MVA

Values below are valid for initial 2 to 6 cycles:

Short-Circuit Equivalent Pos. Seq. Resistance (R1): _____ p.u.

Short-Circuit Equivalent Pos. Seq. Reactance (XL1): _____ p.u.

Short-Circuit Equivalent Neg. Seq. Resistance (R2): _____ p.u.

Short-Circuit Equivalent Neg. Seq. Reactance (XL2): _____ p.u.

Short-Circuit Equivalent Zero Seq. Resistance (R0): _____ p.u.

Short-Circuit Equivalent Zero Seq. Reactance (XL0): _____ p.u.

Special notes regarding short-circuit modeling assumptions:

Generating Facility Characteristic Data (for rotating machines)

RPM Frequency: _____

(*) Neutral Grounding Resistor (if applicable): _____

Synchronous Generators:Direct Axis Synchronous Reactance, X_d : _____ P.U.Direct Axis Transient Reactance, X'_d : _____ P.U.Direct Axis Subtransient Reactance, X''_d : _____ P.U.Negative Sequence Reactance, X_2 : _____ P.U.Zero Sequence Reactance, X_0 : _____ P.U.

KVA Base: _____

Field Volts: _____

Field Amperes: _____

Induction Generators:

Motoring Power (kW): _____

I_2^2t or K (Heating Time Constant): _____

Rotor Resistance, R_r : _____

Stator Resistance, R_s : _____

Stator Reactance, X_s : _____

Rotor Reactance, X_r : _____

Magnetizing Reactance, X_m : _____

Short Circuit Reactance, X_d'' : _____

Exciting Current: _____

Temperature Rise: _____

Frame Size: _____

Design Letter: _____

Reactive Power Required In Vars (No Load): _____

Reactive Power Required In Vars (Full Load): _____

Total Rotating Inertia, H: _____ Per Unit on kVA Base

Note: Please contact the Utility prior to submitting the Interconnection Request to determine if the specified information above is required.

Interconnection Facilities Information

Will more than one transformer be used between the generator and the point of common coupling?

Yes ____ No ____ (If yes, copy this section and provide the information for each transformer used. This information must match the single-line drawing and transformer specification sheets.)

Will the transformer be provided by the Interconnection Customer? Yes ____ No ____

Transformer Data (if applicable, for Interconnection Customer-owned transformer):

Is the transformer: Single phase ____ Three phase ____ Size: ____ kVA

Transformer Impedance: ____ % on ____ kVA Base

If Three Phase:

Transformer Primary Winding ____ Volts,

☐ Delta ☐ WYE, grounded neutral ☐ WYE, ungrounded neutral

Primary Wiring Connection

☐ 3-wire ☐ 4-wire, grounded neutral

Transformer Secondary Winding ____ Volts,

☐ Delta ☐ WYE, grounded neutral ☐ WYE, ungrounded neutral

Secondary Wiring Connection

☐ 3-wire ☐ 4-wire, grounded neutral

Transformer Tertiary Winding ____ Volts,

☐ Delta ☐ WYE, grounded neutral ☐ WYE, ungrounded neutral

Transformer Fuse Data (if applicable, for Interconnection Customer-owned fuse):

(Attach copy of fuse manufacturer's Minimum Melt and Total Clearing Time-Current Curves)

Manufacturer: ____ Type: ____ Size: ____ Speed: ____

Interconnecting Circuit Breaker (if applicable):

Manufacturer: ____ Type: ____

Load Rating (Amps): ____ Interrupting Rating (Amps): ____

Trip Speed (Cycles): ____

Interconnection Protective Relays (if applicable):**If Microprocessor-Controlled:**

List of Functions and Adjustable Setpoints for the protective equipment or software:

	Setpoint Function	Minimum	Maximum
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____

If Discrete Components:

(Enclose Copy of any Proposed Time-Overcurrent Coordination Curves)

Manufacturer	Type:	Style/Catalog No.	Proposed Setting
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Current Transformer Data (if applicable):

(Enclose Copy of Manufacturer's Excitation and Ratio Correction Curves)

Manufacturer: _____ Type: _____

Accuracy Class: _____ Proposed Ratio Connection: _____

Manufacturer: _____ Type: _____

Accuracy Class: _____ Proposed Ratio Connection: _____

Potential Transformer Data (if applicable):

Manufacturer: _____ Type: _____

Accuracy Class: _____ Proposed Ratio Connection: _____

Manufacturer: _____ Type: _____

Accuracy Class: _____ Proposed Ratio Connection: _____

General Information

1. **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 ___

2. **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 ___

3. **Is Site Control Verification Form Enclosed?** Yes ___ No ___

4. **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 ___

5. **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 ___

6. **Register with North Carolina Secretary of State** (if not an individual)

Applicant Signature

I hereby certify that, to the best of my knowledge, all the information provided in this Interconnection Request Application Form is true and correct.

For Interconnection Customer:

Signature _____ Date: _____
(Authorized Agent of the Legal Entity)

Print Name _____

Print Full Name _____

Company Name _____

Title With Company _____

E-Mail Address _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Commented [A127]: Duke Energy (WG1) proposed change

In the Matter of the Application of)
 [Developer Name] for an)
 Interconnection Agreement)
 with [Utility Name])

SITE CONTROL VERIFICATION

I, [Authorized Signatory Name], [Title] of [Developer Name], under penalty of perjury, hereby certify that, [Developer Name] or its affiliate has executed a written contract with the landowner(s) noted below, concerning the property described below. I further certify that our written contract with the landowner(s) specifies the agreed rental rate or purchase price for the property, as applicable, and allows [Developer Name] or its affiliates to construct and operate a renewable energy power generation facility on the property described below.

This verification is provided to [Utility Name] in support of our application for an Interconnection Agreement.

Landowner Name(s): _____

Land Owner Contact information (Phone or e-mail): _____

Parcel or PIN Number: _____

County: _____

Site Address: _____

Number of Acres under Contract (state range, if applicable): _____

Date Contract was executed _____

Term of Contract _____

_____ [signature] _____

[Authorized Signatory Name]

[Authorized Signatory Name], being first duly sworn, says that [he/she] has read the foregoing verification, and knows the contents thereof to be true to [his/her] actual knowledge.

Sworn and subscribed to before me this _____ day of _____, 201____.

_____ [signature] _____

[Authorized Signatory Name]

[Title], [Developer Name]

_____ [Signature of Notary Public] _____

Notary Public

 Name of Notary Public [typewritten or printed]

My Commission expires _____

ATTACHMENT 3

Generating Facility Pre-Application Report Form

Preamble and Instructions

An Interconnection Customer who requests a Pre-Application Report must submit this Pre-Application Report Request by hand delivery, mail, e-mail, or fax to the Utility along with the non-refundable fee of \$~~300~~500.

DISCLAIMER: Be aware that this Pre-Application Report is simply a snapshot in time and is non-binding. System conditions can and do change frequently.

☐ Check here if payment is enclosed. Fee is required for application to be considered complete.

Date: _____

Interconnecting Customer Name (print): _____

Contact Person: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____

E-Mail Address: _____

Alternative Contact Information (e.g., system installation contractor or coordinating company) Name (print): _

Role: _

Contact Person: _

Mailing Address: _

Commented [A128]: December proposal by Duke Energy which was not discussed by the working group during markup of this document. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC.

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____

E-Mail Address: _____

Facility Information:

1) Proposed Facility Location

Address (or cross-roads): _

City: _____ State: _____ Zip Code: _____

☐ Site Map provided (Google, MapQuest, etc.)

☐ Grid Coordinates - Latitude: _____ Longitude: _____

☐ Pole or Tower number if available: _____

(WG1) Duke Energy proposes replace the section below with the following table.

Generating Facility Information

Data applies only to the Generating Facility, not the Interconnection Facilities.

Prime Mover Information (Refer to U.S. EIA Form 860 Instructions, Table 2 Prime Mover Codes and Descriptions at

https://www.eia.gov/survey/form/eia_860/instructions.pdf)

Prime Mover Code _____

Prime Mover Description _____

Energy Source Information (Refer to U.S. EIA Form 860 Instructions, Table 28 Energy Source Codes and Heat Content at

https://www.eia.gov/survey/form/eia_860/instructions.pdf)

<u>Fuel Type</u>	<u>Energy Source Code</u>	<u>Energy Source Description</u>

Commented [A129]: Comment: Duke proposes to alter the requested generating facility Prime Mover and Energy Source classification to align with current U.S. EIA (Energy Information Administration) reporting in EIA Form 860.

To facilitate consistent terminology in Salesforce across all Duke regulated jurisdictions.

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2) Primary Energy Source

Choose one:

Renewable	Non-Renewable
<input type="checkbox"/> 1. Solar – Photovoltaic	<input type="checkbox"/> 17. Fossil Fuel - Diesel
<input type="checkbox"/> 2. Solar – thermal	<input type="checkbox"/> 18. Fossil Fuel - Natural Gas (not waste)
<input type="checkbox"/> 3. Biomass – landfill gas	<input type="checkbox"/> 19. Fossil Fuel - Oil
<input type="checkbox"/> 4. Biomass – manure digester gas	<input type="checkbox"/> 20. Fossil Fuel – Coal
<input type="checkbox"/> 5. Biomass – directed biogas	<input type="checkbox"/> 21. Fossil Fuel – Other (specify below)
<input type="checkbox"/> 6. Biomass – solid waste	<input type="checkbox"/> 22. Battery
<input type="checkbox"/> 7. Biomass – sewage digester gas	<input type="checkbox"/> 22. Other (specify below)
<input type="checkbox"/> 8. Biomass – wood	
<input type="checkbox"/> 9. Biomass – other (specify below)	
<input type="checkbox"/> 10. Hydro power – run of river	
<input type="checkbox"/> 11. Hydro power - storage	
<input type="checkbox"/> 12. Hydro power – tidal	
<input type="checkbox"/> 13. Hydro power – wave	
<input type="checkbox"/> 14. Wind	
<input type="checkbox"/> 15. Geothermal	
<input type="checkbox"/> 16. Battery	
<input type="checkbox"/> 16. Other (specify below)	

Commented [A131]: Change proposed by QF Solutions (WG2)

Commented [A130]: Change proposed by QF Solutions (WG2)

3) Prime Mover

Choose one:

1. <input type="checkbox"/> Photovoltaic (PV)	5. <input type="checkbox"/> Steam Turbine
2. <input type="checkbox"/> Fuel Cell	6. <input type="checkbox"/> Micro-turbine
3. <input type="checkbox"/> Reciprocating Engine	7. <input type="checkbox"/> Battery
4. <input type="checkbox"/> Gas Turbine	7. <input type="checkbox"/> Other, including Combined Heat and Power (specify below)

Commented [A132]: Change proposed by QF Solutions (WG2)

4) Type of Generator

Choose one:

1. <input type="checkbox"/> Inverter-based Machine	
2. <input type="checkbox"/> Rotating Machine	
3. <input type="checkbox"/> Rotating Machine with Inverters	

5) SizeNameplate Capacity: kW_{AC}Maximum Generating Capacity requested: kW_{AC}

Commented [A133]: Change proposed by WG2

5) Generator/Storage Nameplate Capacity: kW

Maximum Generating Capacity requested: kW_{AC}

Storage Nameplate Energy: kWh

Commented [A134]: Change proposed by Duke Energy

6) Generator Configuration:

☐ Single-phase

☐ Three Phase

7) Interconnection Configuration

☐ New Generation☐ Stand-alone☐ Addition to existing commercial or industrial customer's delivery

Customer's Electric Utility account number: _____

Customer's Electric meter number: _____

Is Customer's kW load going to increase or decrease?

☐ No☐ Yes, Details _____

Proposed Point of Interconnection on Customer-side of Utility meter

OR

☐ Addition to existing generation☐ Stand-alone☐ Addition to existing commercial or industrial customer's delivery

Customer's Electric Utility account number: _____

Customer's Electric meter number: _____

Is Customer's kW load going to increase or decrease?

☐ No☐ Yes, Details _____

Type of Existing Generation: _____

Size of Existing Generation: _____ kW_{AC}

Proposed Point of Interconnection on Customer-side of Utility meter

Additional Comments

ATTACHMENT 4

Certification Codes and Standards

ANSI C84.1-1995 Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)

IEEE 1547, Standard for Interconnecting Distributed Resources with Electric Power Systems (including use of IEEE 1547.1 testing protocols to establish conformity)

IEEE Std 100-2000, IEEE Standard Dictionary of Electrical and Electronic Terms

IEEE Std 519-1992, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

IEEE Std C37.108-1989 (R2002), IEEE Guide for the Protection of Network Transformers

IEEE Std C37.90.1-1989 (R1994), IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems

IEEE Std C37.90.2 (1995), IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

IEEE Std C57.12.44-2000, IEEE Standard Requirements for Secondary Network Protectors

IEEE Std C62.41.2-2002, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits

IEEE Std C62.45-1992 (R2002), IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits

NEMA MG 1-1998, Motors and Small Resources, Revision 3

NEMA MG 1-2003 (Rev 2004), Motors and Generators, Revision 1

NFPA 70 (2002), National Electrical Code

UL 1741, Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources

ATTACHMENT 5

Certification of Generator Equipment Packages

1.0 Generating Facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if (1) it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in Attachment 4 of the North Carolina Interconnection Procedures, (2) it has been labeled and is publicly listed by such NRTL at the time of the Interconnection Request, and (3) such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.

2.0 The Interconnection Customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.

3.0 Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the Parties to the interconnection nor follow-up production testing by the NRTL.

4.0 If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.

5.0 Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the Interconnection Customer's side of the point of common coupling shall be required to meet the requirements of the North Carolina Interconnection Procedures.

6.0 An equipment package does not include equipment provided by the Utility.

ATTACHMENT 6

**Interconnection Request Application Form
for Interconnecting a Certified Inverter-
Based Generating Facility No Larger than
20 kW**

This Interconnection Request Application Form is considered complete when it provides all applicable and correct information required below. Additional information to evaluate the Interconnection Request may be required.

Processing Fee

A non-refundable processing fee of \$~~400~~ ~~350~~ must accompany this Interconnection Request Application Form.

If the Interconnection Request is submitted solely due to a transfer of ownership of the Generating Facility, the fee is \$~~50~~ ~~500~~.

(WG1) Duke Energy has revised the following sections:

Interconnection Customer Information

Legal Name of the Interconnection Customer (or, if an individual, individual's name)

Name: _____

Primary Contact Name: _____

Title: _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Secondary Contact Name: _____

Title: _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Commented [A135]: December proposal by Duke Energy, which was not discussed by the working group during markup of this document. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC.

Commented [A136]: December proposal by Duke Energy, which was not discussed by the working group during markup of this document. The Utilities Commission will need to provide parties with an opportunity to express their concerns or positions on this proposed revision. Please also refer to the end of Attachment 6 for related comments submitted by Yes Solar Solutions and IREC.

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Facility Location (if different from above):

Project Name: _____

Address: _____

City: _____ State: _____ Zip: _____

County: _____

Alternative Contact Information (if different from the Interconnection Customer)

Contact Name: _____

Title: _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Telephone (Day) _____ (Evening) _____

Fax: _____

Interconnection Customer

Name: _____

Contact Person: _____

E-Mail Address: _____

Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Contact (if different than Interconnection Customer)

Name: _____

E-Mail Address: _____

Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Owner(s) of the Generating Facility: _____

Generating Facility Information

Facility Location (if different from above):

Address: _____

City: _____ State: _____ Zip: _____

County: _____

Utility: _____

Account Number: _____

Inverter Manufacturer: _____ Model: _____

Nameplate Rating (each inverter): _____ kW_(AC) (each inverter)

_____ kVA_(AC) (each inverter)

_____ Volts (AC) (each inverter)

Single Phase: _____ Three Phase: _____

System Design Capacity¹: _____ kW_(AC) (system total)

kVA_(AC) (system total)

For photovoltaic sources only:

Total panel capacity: _____ kW_(DC) (system total)

Maximum Physical Export Capability Generating Capacity Requested:²

Commented [A137]: Change proposed by WG2

¹ Total inverter capacity.

² At the Point of Interconnection, this is the maximum possible export power that could flow back to the utility. Unless special circumstances apply, load should not be subtracted from the System Design Capacity.

(calculated)³ kW (AC)

For other sources:

Maximum ~~Physical Export Capability~~ Generating Capacity Requested:²
kW (AC)

Commented [A138]: Change proposed by Duke Energy

(WG1) Duke Energy proposes to replace the Generating Facility Information section below with the following table.

Commented [A139]: Comment: Duke proposes to alter the requested generating facility Prime Mover and Energy Source classification to align with current U.S. EIA (Energy Information Administration) reporting in EIA Form 860.

Generating Facility Information

Data applies only to the Generating Facility, not the Interconnection Facilities.

Prime Mover Information (Refer to U.S. EIA Form 860 Instructions, Table 2 Prime Mover Codes and Descriptions at https://www.eia.gov/survey/form/eia_860/instructions.pdf)

Prime Mover Code _____

Prime Mover Description _____

Energy Source Information (Refer to U.S. EIA Form 860 Instructions, Table 28 Energy Source Codes and Heat Content at https://www.eia.gov/survey/form/eia_860/instructions.pdf)

Fuel Type	Energy Source Code	Energy Source Description

Prime Mover: Photovoltaic ☐ Reciprocating Engine ☐
 Fuel Cell ☐ Turbine ☐ Other ☐

³ For a photovoltaic installation, the utility will calculate this value as the lesser of (1) the total kW inverter capacity and (2) the total kW panel capacity (no DC to AC losses included, for simplicity).

ENERGY SOURCE TABLE

Renewable	Non-Renewable
H-1. Solar – Photovoltaic	H-17. Fossil Fuel - Diesel
H-2. Solar – thermal	H-18. Fossil Fuel - Natural Gas (not waste)
H-3. Biomass – landfill gas	H-19. Fossil Fuel - Oil
H-4. Biomass – manure digester gas	H-20. Fossil Fuel – Coal
H-5. Biomass – directed biogas	H-21. Fossil Fuel – Other (specify below)
H-6. Biomass – solid waste	H-22. Other (specify below)
H-7. Biomass – sewage digester gas	
H-8. Biomass – wood	
H-9. Biomass – other (specify below)	
H-10. Hydro power – run of river	
H-11. Hydro power - storage	
H-12. Hydro power – tidal	
H-13. Hydro power – wave	
H-14. Wind	
H-15. Geothermal	
H-16. Other (specify below)	

Energy Source: _____ (choose from list above)

Is the equipment UL 1741 Listed? Yes ____ No ____

If Yes, attach manufacturer's cut-sheet showing UL 1741 listing

Estimated Installation Date: _____ Estimated In-Service Date: _____

The 20 kW Inverter Process is available only for inverter-based Generating Facilities no larger than 20 kW that meet the codes, standards, and certification requirements of Attachments 3 and 4 of the North Carolina Interconnection Procedures, or the Utility has reviewed the design or tested the proposed Generating Facility and is satisfied that it is safe to operate.

List components of the Generating Facility equipment package that are currently certified:

Number	Equipment Type	Certifying Entity
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

Interconnection Customer Signature

I hereby certify that, to the best of my knowledge, the information provided in this Interconnection Request Application Form is true. I agree to abide by the Terms and Conditions for Interconnecting a Certified Inverter-Based Generating Facility No Larger than 20 kW and return the Certificate of Completion when the Generating Facility has been installed.

Signed: _____

Title: _____ Date: _____

Print Full Name _____

Company Name _____

Title With Company _____

E-Mail Address _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Commented [A140]: Duke Energy (WG1) proposed change

Contingent Approval to Interconnect the Generating Facility (For Utility use only)

Interconnection of the Generating Facility is approved contingent upon the Terms

and Conditions for Interconnecting a Certified Inverter-Based Generating Facility
No Larger than 20 kW and return of the Certificate of Completion.

Utility Signature: _____

Title: _____ Date: _____

Interconnection Request ID number: _____

Utility waives inspection/witness test? Yes ____ No ____

**Certificate of Completion
for Interconnecting a Certified Inverter-Based
Generating Facility No Larger than 20 kW**

Is the Generating Facility owner-installed? Yes _____ No _____

Interconnection Customer

Name: _____

Contact Person: _____

E-Mail Address: _____

Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Location of the Generating Facility (if different from above)

Address: _____

City: _____ State: _____ Zip: _____

Electrician

Name: _____

Company: _____

E-Mail Address: _____

Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

License Number: _____

Date Approval to Install Generating Facility granted by the Utility: _____

Interconnection Request ID Number: _____

Inspection:

The Generating Facility has been installed and inspected in compliance with the local building/electrical code of _____

Signed (Local electrical wiring inspector, or attach signed electrical inspection):

Signature: _____

Print Name: _____ Date: _____

As a condition of interconnection, you are required to send/ email/ fax a copy of this form along with a copy of the signed electrical permit to (insert Utility information below):

Utility Name: _____

Attention: _____

E-Mail Address: _____

Address: _____

City: _____ State: _____ Zip: _____

Fax: _____

Approval to Energize the Generating Facility (For Utility use only)

Energizing the Generating Facility is approved contingent upon the Terms and Conditions for Interconnecting a Certified Inverter-Based Generating Facility No Larger than 20 kW.

Utility Signature: _____

Title: _____ Date: _____

**Terms and Conditions
for Interconnecting a Certified Inverter-Based
Generating Facility No Larger than 20 kW**

1.0 Construction of the Facility

The Interconnection Customer (Customer) may proceed to construct (including operational testing not to exceed two hours) the Generating Facility when the Utility approves the Interconnection Request and returns it to the Customer.

2.0 Interconnection and Operation

The Customer may interconnect the Generating Facility with the Utility's System and operate in parallel with the Utility's System once all of the following have occurred:

2.1 Upon completing construction, the Customer will cause the Generating Facility to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction, and

2.2 The Customer returns the Certificate of Completion to the Utility, and

2.3 The Utility has either:

2.3.1 Completed its inspection of the Generating Facility to ensure that all equipment has been appropriately installed and that all electrical connections have been made in accordance with applicable codes. All inspections must be conducted by the Utility, at its own expense, within ten Business Days after receipt of the Certificate of Completion and shall take place at a time agreeable to the Parties. Within ten (10) Business Days, the Utility shall provide a written statement that the Generating Facility has passed inspection or shall notify the Customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place; or

2.3.2 If the Utility does not schedule an inspection of the Generating Facility within ten Business Days after receiving the Certificate of Completion, the witness test is deemed waived (unless the Parties agree otherwise); or

2.3.3 The Utility waives the right to inspect the Generating Facility.

Commented [A141]: NCSEA change (WG1)

Comment from IREC: IREC supports clear timelines in the Interconnection Standard.

Commented [A142]: December Comment from Dominion Energy: Within ten (10) days of what reference? Does this conflict with 15 business days listed in Section 2.2.1 of the Interconnection Procedures?

2.4 The Utility has the right to disconnect the Generating Facility in the event of improper installation or failure to return the Certificate of Completion.

2.5 Revenue quality metering equipment must be installed and tested in accordance with applicable American National Standards Institute (ANSI) standards and all applicable regulatory requirements.

3.0 Safe Operations and Maintenance

The Customer shall be fully responsible to operate, maintain, and repair the Generating Facility as required to ensure that it complies at all times with the interconnection standards to which it has been certified.

The Customer shall not operate the Generating Facility in such a way that the Generating Facility would exceed the Maximum Generating Capacity.

Commented [A143]: Addition proposed by Duke Energy

4.0 Access

The Utility shall have access to the disconnect switch (if a disconnect switch is required) and metering equipment of the Generating Facility at all times. The Utility shall provide reasonable notice to the Customer, when possible, prior to using its right of access.

5.0 Disconnection

The Utility may temporarily disconnect the Generating Facility upon the following conditions:

5.1 For scheduled outages upon reasonable notice.

5.2 For unscheduled outages or emergency conditions.

5.3 If the Generating Facility does not operate in a manner consistent with these Terms and Conditions.

5.4 The Utility shall inform the Customer in advance of any scheduled disconnection, or as soon as is reasonable after an unscheduled disconnection.

6.0 Indemnification

The Parties shall at all times indemnify, defend, and save the other Party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property,

demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's action or inactions of its obligations hereunder on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

7.0 Insurance

All insurance policies must be maintained with insurers authorized to do business in North Carolina. The Parties agree to the following insurance requirements:

- 7.1 If the Customer is a residential customer of the Utility, the required coverage shall be a standard homeowner's insurance policy with liability coverage in the amount of at least \$100,000 per occurrence.
- 7.2 For an Interconnection Customer that is a non-residential customer of the Utility proposing to interconnect a Generating Facility no larger than 250 kW, the required coverage shall be comprehensive general liability insurance with coverage in the amount of at least \$300,000 per occurrence.
- 7.3 The Customer may provide this insurance via a self-insurance program if it has a self-insurance program established in accordance with commercially acceptable risk management practices.

8.0 Limitation of Liability

Each Party's liability to the other Party for any loss, cost, claim, injury, or expense, including reasonable attorney's fees, relating to or arising from any act or omission hereunder, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, incidental, consequential, or punitive damages of any kind.

9.0 Termination

The agreement to interconnect and operate in parallel may be terminated under the following conditions:

9.1 By the Customer

By providing written notice to the Utility and physically and permanently disconnecting the Generating Facility.

9.2 By the Utility

If the Generating Facility fails to operate for any consecutive 12-month period or the Customer fails to remedy a violation of these Terms and Conditions.

9.3 Permanent Disconnection

In the event this Agreement is terminated, the Utility shall have the right to disconnect its facilities or direct the Customer to disconnect its Generating Facility.

9.4 Survival Rights

This Agreement shall continue in effect after termination to the extent necessary to allow or require either Party to fulfill rights or obligations that arose under the Agreement.

10.0 Assignment/Transfer of Ownership of the Facility

10.1 This Agreement shall not survive the transfer of ownership of the Generating Facility to a new owner.

10.2 The new owner must complete and submit a new Interconnection Request agreeing to abide by these Terms and Conditions for interconnection and parallel operations within 20 Business Days of the transfer of ownership. The Utility shall acknowledge receipt and return a signed copy of the Interconnection Request Application Form within ten Business Days.

10.3 The Utility shall not study or inspect the Generating Facility unless the new owner's Interconnection Request Application Form indicates that a Material Modification has occurred or is proposed.

The following comment was submitted by Bethany Theede of Yes Solar Solutions, in response to Duke Energy's December proposal of revisions to interconnection fees.

I'd like to submit the following comments regarding the proposed fee changes, from a small developer perspective. I'm specifically concerned as to why the under 20kW fee needs to increase 250%. The Utilities Commission started charging \$50 this year for ROPCs, so combined with the proposed Duke fee, a homeowner in North Carolina will go from paying \$100 to \$400 for their home solar system to connect to the grid. What I question the most is the reasoning provided, that Duke needs to recover the administrative fees associated with the interconnection due to the high number of applications/solar penetration in NC.

It's no secret I am a champion for PowerClerk and have been impressed with the processing time of interconnection applications since its inception. As a residential solar installer, we have submitted hundreds and hundreds of under 20kW applications. Before Powerclerk, it could take months to get an application approved. Multiple phone calls, email follow ups, paperwork going missing, checks not getting to the right department, lack of transparency, etc were a major contributor to delays. With Powerclerk, an application can be approved in a matter of hours. I don't understand how the administrative costs to the under 20kW group have gone up 250% with the roll out of Powerclerk. If anything, it would be intuitive to assume it has *decreased* administrative costs. The company that produces the online Powerclerk application has some basic information to support this.

<https://www.cleanpower.com/2017/epayments-speed-duke-payment-processing/>

<https://www.cleanpower.com/wp-content/uploads/CS-PADEP-A041112-web.pdf>

<https://www.utilitydive.com/news/interconnection-delays-can-be-costly-but-some-utilities-have-found-ways-to/429351/>

Furthermore, as we have discussed in other working groups, there is a lot of potential for Duke to cut down on their internal Supplemental Review costs by modifying the way they apply the fast track screens. We suspect that the majority of our 20kW-100kW projects could pass through fast track if the screens were modified to mirror how other utilities across the country use them, thus eliminating the need for Supplemental and helping to unclog the queue. Reducing the number of applications going into Supplemental seems like an efficient way to reduce the administrative costs associated with it, rather than increase the fee by 200%. We are opposed to proposed fee increases.

The following comment was submitted by Laura Beaton on December 8th on behalf of IREC, in response to Duke Energy's December proposal of revisions to interconnection fees.

I'm writing to provide IREC's comments, at this point, on Duke's proposal regarding interconnection fees. IREC supports interconnection fees that compensate utilities for time efficiently spent processing interconnection applications. However, we can't support Duke's proposal at this time, until some additional information is provided in support of its proposal. The responses to the questions and information requests I outline here should allow the parties to evaluate Duke's proposal and ideally find a way to consensus.

- Please provide the underlying analysis that demonstrates the additional costs Duke found for each category of costs, and what sorts of activities they were attributable to.
- The California utilities track in detail of the interconnection costs for NEM projects (i.e. projects up to 1 MW) and have consistently found that the interconnection costs (which include application processing, administrative costs, distribution engineering costs and metering installation and inspection and commissioning costs) are substantially lower than the costs proposed by Duke. Please provide a comparison between Duke's costs and those tracked by the California utilities and, if possible, explain any reasons why Duke's costs should be significantly higher. I'm attaching the latest reports from California utilities to help with this.
- On slide 6 of the provided presentation, Duke suggests that North Carolina has higher volume and complexity of interconnection requests than other states. Please provide additional information on this conclusion. To IREC's knowledge, North Carolina does not have either higher volume or complexity when it comes to the categories where fees are being raised, so we would like to better understand that conclusion.
- Please describe what measures Duke has taken to adopt an efficient process for providing pre-application report information.
- Duke is not proposing to raise the study deposits but has indicated it will charge "overhead related costs to deposits." Please explain how these costs will vary from the previous method of assessing study costs, so that stakeholders can understand how the final costs for studies may change (if at all).
- Finally, it is not clear if this proposal is intended to apply just to Duke or to all utilities in the state. If Dominion is proposing to raise fees in its territory, IREC would like to see similar information provided regarding Dominion's costs.

The comment above submitted by Laura Beaton (on behalf of IREC), included three PDF documents as supporting references. Those three documents are appended to the end of this document for the reader's reference, with these filenames:

SDG&E AL 3131-E on NEM interconnection costs

PGE_s Advice Letter 5143-E on NEM Interconnection costs 9-19-17

SCE_s Advice Letter 3658-E on NEM Interconnection costs 9-19-17

ATTACHMENT 7

System Impact Study Agreement

THIS AGREEMENT ("Agreement") is made and entered into this ____ day of

_____, 20____, by _____ and _____ between

_____, a
_____, organized and existing under the laws of the
State of _____, ("Interconnection
Customer,") and _____, a
_____, existing under the laws of the State of
_____, ("Utility"). The Interconnection
Customer and the Utility each may be referred to as a "Party," or collectively as the
"Parties."

RECITALS

WHEREAS, the Interconnection Customer is proposing to develop a Generating Facility or generating capacity addition to an existing Generating Facility consistent with the Interconnection Request completed by the Interconnection Customer, Dated _____ and received by the Utility on _____; and

WHEREAS, the Interconnection Customer desires to interconnect the Generating Facility with the Utility's System; and

WHEREAS, the Interconnection Customer has requested the Utility to perform a system impact study to assess the impact of interconnecting the Generating Facility with the Utility's System, and of any Affected Systems;

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein the Parties agree as follows:

1. When used in this Agreement, with initial capitalization, the terms specified shall have the meanings indicated or the meanings specified in the North Carolina Interconnection Procedures.
2. The Interconnection Customer elects and the Utility shall cause to be performed a system impact study consistent with the North Carolina Interconnection Procedures.
3. The scope of the system impact study shall be subject to the assumptions set forth in Appendix A to this Agreement.

4. A system impact study will be based upon the technical information provided by Interconnection Customer in the Interconnection Request. The Utility reserves the right to request additional technical information from the Interconnection Customer as may reasonably become necessary consistent with Good Utility Practice during the course of the system impact study. If the information requested by the Utility is not provided by the Interconnection Customer within a reasonable timeframe to be identified by the Utility in writing, the Utility shall provide the Interconnection Customer written notice providing an opportunity to cure such failure by the close of business on the tenth (10th) Business Day following the posted date of such notice, where failure to provide the information requested within this period shall result in the study being terminated and the Interconnection Request being deemed withdrawn. The period of time for the Utility to complete the System Impact Study shall be tolled during any period that the Utility has requested information in writing from the Interconnection Customer necessary to complete the Study and such request is outstanding.
5. In performing the study, the Utility shall rely, to the extent reasonably practicable, on existing studies of recent vintage. The Interconnection Customer shall not be charged for such existing studies; however, the Interconnection Customer shall be responsible for charges associated with any new study or modifications to existing studies that are reasonably necessary to perform the feasibility study.
6. The System Impact Study Report shall provide the following analyses for the purpose of identifying any potential adverse system impacts that would result from the interconnection of the Generating Facility as proposed:
 - 6.1. Initial identification of any circuit breaker short circuit capability limits exceeded as a result of the interconnection, considering the Nameplate Capacity of the Generating Facility;

Commented [A144]: Duke Energy (WG1) proposed change.

Comment: Requires an IC to provide information or to establish binding response times during the study process. Reasonable timeframes for ICs to produce information requested by the utility along with an opportunity to request an extension/cure. Tolling the study timelines.

There is not currently a clear procedure for the utility to require an IC to provide information or to establish binding response times during the study process, which have been increasingly necessary as new study standards have resulted in customer decision points within SIS as well as additional requests for project details and data to complete more

Commented [A145]: Change proposed by Duke Energy

(WG2) SMA and QF Solutions propose rewriting section 6.2. as shown below. They provided the following rationale:

- In the past, some utilities wanted the inverters to deliver reactive power only when there is "space" from active power load. Thus, reactive power was delivered in case of partial load only. This is no longer state of the art.
- In present standards, especially IEEE 1547 (release scheduled spring 2018), grid support required for inverters is clearly defined. SMA inverters fulfill present standards and will comply with the new release of IEEE 1547.
- Of course an inverter (like every other technical mean) is not 100 % available. SMA inverters in the US are available far beyond 99% of the operation time. Due

to the huge number of inverters, the drawback of a single fault is less severe than a fault in a coal fired power plant.

- SMA inverters can support the grid with reactive power even during the night 24/7.
- Ancillary services can be provided by inverters regarding the requirement of the present standards. Current state of the art inverters are able to deliver all services with high reliability.
- The huge advancement in inverter and control design makes inverters suitable to control grids without any conventional power plants. Such solutions do exist for small island grids and are under development for large scale utility grids.
- Utility setpoint control in large solar plants is standard. This includes VAr control to meet POI pF requirements. Voltage control is also used to meet POI voltage tolerances in some plants. For smaller units, it will be standard in the future.

6.2. Initial identification of any thermal overload or voltage limit violations resulting from the interconnection, considering the Maximum Generating Capacity and voltage control functions of the proposed inverter(s):

(WG2) Dominion and Duke Energy provided an alternative change to this section, shortening the above addition (i.e., leaving out "and voltage control functions of the proposed inverter(s)").

6.2. Initial identification of any thermal overload or voltage limit violations resulting from the interconnection, considering the Maximum Generating Capacity;

6.3. Initial review of grounding requirements and electric system protection

7. The System Impact Study shall model the impact of the Generating Facility regardless of purpose in order to avoid the further expense and interruption of operation for reexamination of feasibility and impacts if the Interconnection Customer later changes the purpose for which the Generating Facility is being installed.
8. The study shall include the feasibility of any interconnection at a proposed project site where there could be multiple potential Points of Interconnection, as requested by the Interconnection Customer and at the Interconnection Customer's cost.
9. A System Impact Study shall consist of a short circuit analysis, a

Commented [A146]: Comment: "Consideration of voltage control functions" during System impact study was inserted. I would recommend removing this clause as it seems to indicate that the Utility consider the capability of inverters before even determining the requirements for upgrades that that are identified based on the Impact study. As a utility, we cannot rely on the inverter capabilities for day-to-day operations of our Electric Power System, knowing that the inverters are not guaranteed to be available 100 % of the time to perform those functions due to their intermittency but also the fact that we have no control over them (including how they are maintained to ensure that they perform or are ready to perform at a moment notice).

stability analysis, a power flow analysis, voltage drop and flicker studies, protection and set point coordination studies, and grounding reviews, as necessary.

10. The System Impact Study will also include an analysis of distribution and transmission impacts as may be necessary to understand the impact of the proposed Generation Facility on electric system operation.
11. A System Impact Study shall state the assumptions upon which it is based, state the results of the analyses, and provide the requirement or potential impediments to providing the requested interconnection service.
12. The System Impact Study will provide the Preliminary Estimated Upgrade Charge, which is a preliminary indication of the cost and length of time that would be necessary to correct any System problems identified in those analyses and implement the interconnection
13. The System Impact Study will provide the Preliminary Estimated Interconnection Facilities Charge, which is a preliminary indication of the cost and length of time that would be necessary to provide the Interconnection Facilities.
14. A system impact study shall provide the information outlined in Section 1.3.2 of the Interconnection Procedures.
15. A distribution System Impact Study shall incorporate a distribution load flow study, an analysis of equipment interrupting ratings, protection coordination study, voltage drop and flicker studies, protection and set point coordination studies, grounding reviews, and the impact on electric system operation, as necessary.
16. Affected Systems may participate in the preparation of a System Impact Study, with a division of costs among such entities as they may agree. All Affected Systems shall be afforded an opportunity to review and comment upon a System Impact Study that covers potential adverse system impacts on their electric systems, and the Utility has 20 additional Business Days to complete a system impact study requiring review by Affected Systems.
17. The Utility shall have an additional 15 Business Days from the time set forth in Section 19.0 the System Impact Study Agreement to complete the dual scenario System Impact Study reports for a Project B.

18. If the Utility uses a queuing procedure for sorting or prioritizing projects and their associated cost responsibilities for any required Network Upgrades, the System Impact Study shall consider all generating facilities (and with respect to paragraph 18.3 below, any identified Upgrades associated with such interconnection with a lower Queue Number) that, on the date the system impact study is commenced –

18.1. Are directly interconnected with the Utility's electric system; or

18.2. Are interconnected with Affected Systems and may have an impact on the proposed interconnection; and

18.3. Have a pending Interconnection Request to interconnect with the Utility's electric system with a lower Queue Number.

19. The System Impact Study shall be completed within a total of 65 Business Days if transmission system impacts are studied, and 50 Business Days if distribution system impacts are studied, but in any case, shall not take longer than a total of 65 Business Days unless the study involves Affected Systems per Section 16.0 or the studied Interconnection Request is a Project B per Section 17.0. The period of time for the Utility to complete the System Impact Study shall be tolled during any period that the Utility has requested information in writing from the Interconnection Customer necessary to complete the Study and such request is outstanding.

20. Any study fees shall be based on the Utility's actual costs and will be deducted from the Interconnection Facilities deposit made by the Interconnection Customer at the time of the Interconnection Request. After the study is completed, the Utility shall deliver a summary of professional time.

21. The Interconnection Customer must pay any study costs that exceed the Interconnection Request Deposit without interest within 20 Business Days of receipt of the invoice. If the deposit exceeds the invoiced fees or the Interconnection Customer's costs exceed the aggregate deposits received and the Interconnection Customer withdraws the Interconnection Request, the amount of funds equal to the difference will be settled in accordance with Section 6.3 of the NC interconnection Standard.

22. Governing Law, Regulatory Authority, and Rules

The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of North Carolina, without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise

contest any laws, orders, or regulations of a Governmental Authority.

23. Amendment

The Parties may amend this Agreement by a written instrument duly executed by both Parties.

24. No Third-Party Beneficiaries

This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.

25. Waiver

25.1. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

25.2. Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this Agreement. Termination or default of this Agreement for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Utility. Any waiver of this Agreement shall, if requested, be provided in writing.

26. Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

27. No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

28. Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

29. Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

29.1. The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall the Utility be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

29.2. The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

30. Reservation of Rights

The Utility shall have the right to make a unilateral filing with the Commission to modify this Agreement with respect to any rates, terms and conditions, charges, or classifications of service, and the Interconnection Customer shall have the right to make a unilateral filing with the Commission to modify this Agreement; provided that each Party shall have the right to protest any such filing by the other Party and to participate fully in any proceeding before the Commission in which such modifications may be considered. Nothing in this Agreement shall limit the rights of the Parties except to the extent that the Parties otherwise agree as provided herein.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

[Insert name of Utility]

[Insert name of Interconnection Customer]

Signed _____

Signed _____

Name (Printed):

Name (Printed):

Title _____

Assumptions Used in Conducting the System Impact Study

The system impact study shall be based upon the Interconnection Request, subject to any modifications in accordance with the Interconnection Procedures, and the following assumptions:

1) Designation of Point of Interconnection and configuration to be studied.

2) Designation of alternative Points of Interconnection and configuration.

1) and 2) are to be completed by the Interconnection Customer. Other assumptions (listed below) are to be provided by the Interconnection Customer and the Utility.

ATTACHMENT 8

Facilities Study Agreement

THIS AGREEMENT ("Agreement") is made and entered into this _____ day of _____ 20____ by and between _____, a _____ organized and existing under the laws of the State of _____, ("Interconnection Customer,") and, _____, a _____ existing under the laws of the State of _____, ("Utility"). The Interconnection Customer and the Utility each may be referred to as a "Party," or collectively as the "Parties."

RECITALS

WHEREAS, the Interconnection Customer is proposing to develop a Generating Facility or generating capacity in addition to an existing Generating Facility consistent with the Interconnection Request Application Form completed by the Interconnection Customer, dated _____ and received by the Utility on _____; and the single-line drawing provided by the Interconnection Customer, dated _____ and received by the Utility on _____ and

WHEREAS, the Interconnection Customer desires to interconnect the Generating Facility with the Utility's System; and

WHEREAS, the Utility has completed a System Impact Study and provided the results of said study to the Interconnection Customer (this recital to be omitted if the Parties have agreed to forego the system impact study); and

WHEREAS, the Interconnection Customer has requested the Utility to perform a Facilities Study to specify and estimate the cost of the equipment, engineering, procurement and construction work needed to implement the conclusions of the system impact study and/or any other relevant studies in accordance with Good Utility Practice to physically and electrically connect the Generating Facility with the Utility's System;

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein the Parties agree as follows:

1. When used in this Agreement, with initial capitalization, the terms specified shall have the meanings indicated or the meanings specified in the North Carolina Interconnection Procedures.
2. The Interconnection Customer elects and the Utility shall cause to be performed a facilities study consistent with the North Carolina Interconnection Procedures.
3. The scope of the facilities study shall be subject to data provided in Appendix A to this Agreement.

4. The facilities study shall specify and estimate the cost of the equipment, engineering, procurement and construction work (including overheads) needed to implement the conclusions of the system impact studies. The facilities study shall also identify (1) the electrical switching configuration of the equipment, including, without limitation, transformer, switchgear, meters, and other station equipment, (2) the nature and estimated cost of the Utility's Interconnection Facilities and Upgrades necessary to accomplish the interconnection, and (3) an estimate of the construction time required to complete the installation of such facilities.

If the study is for a Project B, the study shall assume the interdependent Project A is interconnected.

5. The Utility may propose to group facilities required for more than one Interconnection Customer in order to minimize facilities costs through economies of scale, but any Interconnection Customer may require the installation of facilities required for its own Generating Facility if it is willing to pay the costs of those facilities
6. A deposit of the good faith estimated facilities study cost is required from the Interconnection Customer. If the unexpended portion of the Interconnection Request deposit made for the Interconnection Request exceeds the estimated cost of the facilities study, no payment will be required of the Interconnection Customer.
7. In cases where Upgrades are required, the facilities study must be completed within 45 Business Days of the Utility's receipt of this Agreement, or completion of the Facilities Study for an Interdependent Project A whichever is later. In cases where no Upgrades are necessary, and the required facilities are limited to Interconnection Facilities, the facilities study must be completed within 30 Business Days. The Utility reserves the right to request additional technical information from the Interconnection Customer as may reasonably become necessary consistent with Good Utility Practice during the course of the facilities study. If the information requested by the Utility is not provided by the Interconnection Customer within a reasonable timeframe to be identified by the Utility in writing, the Utility shall provide the Interconnection Customer written notice providing an opportunity to cure such failure by the close of business on the tenth (10th) Business Day following the posted date of such notice, where failure to provide the information requested within this period shall result in the study being terminated and the Interconnection Request being deemed withdrawn. The period of time for the Utility to complete the Facilities Study shall be tolled during any period that the Utility has requested information in writing from the Interconnection Customer necessary to complete the Study and such request is outstanding.
8. Once the facilities study is completed, a facilities study report shall be prepared and transmitted to the Interconnection Customer.
9. Any study fees shall be based on the Utility's actual costs and will be deducted from the Interconnection Request deposit made by the Interconnection

Commented [A147]: Duke Energy (WG1) proposed change.

Comment: Requires an IC to provide information or to establish binding response times during the study process. Reasonable timeframes for ICs to produce information requested by the utility along with an opportunity to request an extension/cure. Tolling the study timelines.

There is not currently a clear procedure for the utility to require an IC to provide information or to establish binding response times during the study process, which have been increasingly necessary as new study standards have resulted in customer decision points within SIS as well as additional requests for project details and data to complete more

Customer at the time of the Interconnection Request. After the study is completed the Utility shall deliver a summary of professional time.

10. The Interconnection Customer must pay any study costs that exceed the Interconnection Request deposit without interest within 20 Business Days of receipt of the invoice. If the unexpended portion of the Interconnection Request deposit exceeds the invoiced fees and the Interconnection Customer withdraws the Interconnection Request, the Utility shall make refund to the Customer pursuant to Section 6.3 of the North Carolina Interconnection Procedures.

11. Governing Law, Regulatory Authority, and Rules

The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of North Carolina, without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.

12. Amendment

The Parties may amend this Agreement by a written instrument duly executed by both Parties.

13. No Third-Party Beneficiaries

This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.

14. Waiver

The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this Agreement. Termination or default of this Agreement for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Utility. Any waiver of this Agreement shall, if requested, be provided in writing.

15. Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

16. No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

17. Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

18. Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall the Utility be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

19. Reservation of Rights

The Utility shall have the right to make a unilateral filing with the Commission to modify this Agreement with respect to any rates, terms and conditions, charges, or classifications of service, and the Interconnection Customer shall

have the right to make a unilateral filing with the Commission to modify this Agreement; provided that each Party shall have the right to protest any such filing by the other Party and to participate fully in any proceeding before the Commission in which such modifications may be considered. Nothing in this Agreement shall limit the rights of the Parties except to the extent that the Parties otherwise agree as provided herein.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

For the Utility

Name: _____

Print Name: _____

Title: _____

Date _____

For the Interconnection Customer

Name: _____

Print Name: _____

Title: _____

Date _____

Facilities Study Agreement
Appendix A

**Data to Be Provided by the Interconnection Customer with the Facilities
Study Agreement**

Provide location plan and simplified one-line diagram of the plant and station facilities.
For staged projects, please indicate future generation, circuits, etc.

On the one-line diagram, indicate the ~~generation capacity~~ **Maximum Generating Capacity** attached at each metering location. (Maximum load on CT/PT)

Commented [A148]: Change proposed by Duke Energy

On the one-line diagram, indicate the location of auxiliary power. (Minimum load on CT/PT) Amps

One set of metering is required for each generation connection to the new ring bus or existing Utility station. Number of generation connections: _____

Will an alternate source of auxiliary power be available during CT/PT maintenance?

Yes _____ No _____

Will a transfer bus on the generation side of the metering require that each meter set be designed for the total plant generation? Yes _____ No _____

(Please indicate on the one-line diagram).

What type of control system or PLC will be located at the Generating Facility?

What protocol does the control system or PLC use?

Please provide a 7.5-minute quadrangle map of the site. Indicate the plant, station, distribution line, and property lines.

Physical dimensions of the proposed interconnection station:

Bus length from generation to interconnection station:

Line length from interconnection station to Utility's System.

Tower number observed in the field (Painted on tower leg)*:

Number of third party easements required for lines*:

* To be completed in coordination with Utility.

Is the Generating Facility located in Utility's service area?

Yes _____ No _____ If No, please provide name of local provider:

Please provide the following proposed schedule dates:

Begin Construction Date: _____

Generator step-up transformers
receive back feed power Date: _____

Generation Testing Date: _____

Commercial Operation Date: _____

ATTACHMENT 9

NORTH CAROLINA

[FINAL / INTERIM] INTERCONNECTION AGREEMENT**For State-Jurisdictional Generator Interconnections**

Effective May 15, 2015

Docket No. E-100, Sub 101

Between

Utility Name

And

Customer Name

"Project Name"

Commented [A149]: December Comment from Duke Energy: Consistent with Duke's proposal to eliminate Section 4.3.8, the phrase "[FINAL / INTERIM]" should be deleted.

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This Interconnection Agreement ("Agreement") is made and entered into this _____ day of _____, 20____, by _____ ("Utility"), and _____ ("Interconnection Customer") each hereinafter sometimes referred to individually as "Party" or both referred to collectively as the "Parties."

Utility Information

Utility: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Interconnection Customer Information

Name: _____

Project Name: _____

Attention: _____

E911 Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

County: _____

In consideration of the mutual covenants set forth herein, the Parties agree as follows:

Article 1. Scope and Limitations of Agreement

1.1 Applicability

This Agreement shall be used for all Interconnection Requests submitted under the North Carolina Interconnection Procedures except for those submitted under the 20 kW Inverter Process in Section 2 of the Interconnection Procedures.

1.2 Purpose

If an Interim Interconnection Agreement, this Agreement documents the Utility's ability to interconnect the Generating Facility and provides the Preliminary Estimated Interconnection Facilities Charge and the Preliminary Estimated System Upgrade Charge that was developed in the System Impact Study. Milestones have not been established and the Utility offers no estimate on when the required facilities might be installed.

If a Final Interconnection Agreement, this Agreement governs the terms and conditions under which the Interconnection Customer's Generating Facility will interconnect with, and operate in parallel with, the Utility's System.

1.3 No Agreement to Purchase or Deliver Power or RECs

This Agreement does not constitute an agreement to purchase or deliver the Interconnection Customer's power or Renewable Energy Certificates (RECs). The purchase or delivery of power, RECs that might result from the operation of the Generating Facility, and other services that the Interconnection Customer may require will be covered under separate agreements, if any. The Interconnection Customer will be responsible for separately making all necessary arrangements (including scheduling) for delivery of electricity with the applicable Utility.

1.4 Limitations

Nothing in this Agreement is intended to affect any other agreement between the Utility and the Interconnection Customer.

1.5 Responsibilities of the Parties

1.5.1 The Parties shall perform all obligations of this Agreement in accordance with all Applicable Laws and Regulations, Operating Requirements, and Good Utility Practice.

1.5.2 The Interconnection Customer shall construct, interconnect, operate and maintain its Generating Facility and construct, operate, and maintain its

Interconnection Facilities in accordance with the applicable manufacturer's recommended maintenance schedule, and in accordance with this Agreement, and with Good Utility Practice.

1.5.3 The Utility shall construct, operate, and maintain its System and Interconnection Facilities in accordance with this Agreement, and with Good Utility Practice.

1.5.4 The Interconnection Customer agrees to construct its facilities or systems in accordance with applicable specifications that meet or exceed those provided by the National Electrical Safety Code, the American National Standards Institute, IEEE, Underwriters' Laboratories, and Operating Requirements in effect at the time of construction and other applicable national and state codes and standards. The Interconnection Customer agrees to design, install, maintain, and operate its Generating Facility so as to reasonably minimize the likelihood of a disturbance adversely affecting or impairing the System or equipment of the Utility and any Affected Systems.

1.5.5 Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for the facilities that it now or subsequently may own unless otherwise specified in the Appendices to this Agreement. Each Party shall be responsible for the safe installation, maintenance, repair and condition of their respective lines and appurtenances on their respective sides of the point of change of ownership. The Utility and the Interconnection Customer, as appropriate, shall provide Interconnection Facilities that adequately protect the Utility's System, personnel, and other persons from damage and injury. The allocation of responsibility for the design, installation, operation, maintenance and ownership of Interconnection Facilities shall be delineated in the Appendices to this Agreement.

1.5.6 The Utility shall coordinate with all Affected Systems to support the interconnection.

1.5.7 The Customer shall not operate the Generating Facility in such a way that the Generating Facility would exceed the Maximum Generating Capacity.

Commented [A150]: Addition proposed by Duke Energy

1.6 Parallel Operation Obligations

Once the Generating Facility has been authorized to commence parallel operation, the Interconnection Customer shall abide by all rules and procedures pertaining to the parallel operation of the Generating Facility in the applicable control area, including, but not limited to: 1) any rules and procedures concerning the operation of generation set forth in Commission-approved tariffs or by the applicable system operator(s) for the Utility's System and; 2) the Operating

Requirements set forth in Appendix 5 of this Agreement.

1.7 Metering

The Interconnection Customer shall be responsible for the Utility's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair, and replacement of metering and data acquisition equipment specified in Appendices 2 and 3 of this Agreement. The Interconnection Customer's metering (and data acquisition, as required) equipment shall conform to applicable industry rules and Operating Requirements.

1.8 Reactive Power

1.8.1 The Interconnection Customer shall design its Generating Facility to maintain a composite power delivery at continuous rated power output at the Point of Interconnection at a power factor within the range of 0.95 leading to 0.95 lagging, unless the Utility has established different requirements that apply to all similarly situated generators in the control area on a comparable basis. The requirements of this paragraph shall not apply to wind generators.

1.8.2 The Utility is required to pay the Interconnection Customer for reactive power that the Interconnection Customer provides or absorbs from the Generating Facility when the Utility requests the Interconnection Customer to operate its Generating Facility outside the range specified in Article 1.8.1 or outside the range established by the Utility that applies to all similarly situated generators in the control area. In addition, if the Utility pays its own or affiliated generators for reactive power service within the specified range, it must also pay the Interconnection Customer.

Commented [A151]: December Comment from Dominion Energy: Dominion Energy recommends that Generating Facilities be designed with the capability to operate at a power factor of +/- 0.95, regardless of interconnection voltage, with the utility determining the power factor at which the Generating Facility is to operate.

WG2 submitted the following rewrite of section 1.8.1 and a new section 1.8.2. If accepted, subsequent sections will need renumbering (i.e., section 1.8.2 above would become 1.8.3).

1.8 Reactive Power

1.8.1 If the Generating Facility is interconnected to the Utility's Distribution System, the Interconnection Customer shall design its Generating Facility to (1) have reactive power capability as required by IEEE 1547, unless the Utility has established different requirements that apply to all similarly situated generators in the control area on a comparable basis, and (2) maintain a composite power delivery at the Point of Interconnection at approximately unity power factor, unless the Utility has specific requirements for the Generating Facility to utilize the required reactive power capability.

1.8.2 If the Generating Facility is interconnected to the Utility's Transmission

System, the Interconnection Customer shall design its Generating Facility to have the capability to operate at 0.95 leading to 0.95 lagging at the Maximum Generating Capacity at the Point of Interconnection, unless the Utility has established different requirements that apply to all similarly situated generators in the control area on a comparable basis.

Duke Energy has submitted the following alternative proposal, rewriting both sections 1.8.1 and 1.8.2.

1.8 Reactive Power

1.8.1 If the Generating Facility is interconnected to the Utility's Distribution System, the Interconnection Customer shall design its Generating Facility to (1) have reactive power capability as required by IEEE 1547 unless the Utility specifies otherwise elsewhere in the Interconnection Agreement.

1.8.2 The Utility is required to pay the Interconnection Customer for reactive power that the Interconnection Customer provides or absorbs from the Generating Facility when the Utility requests the Interconnection Customer to operate its Generating Facility outside the range specified in Article 1.8.1 or outside the range established by the Utility that applies to all similarly situated generators in the control area. In addition, if the Utility pays its own or affiliated generators for reactive power service within the specified range, it must also pay the Interconnection Customer.

1.8.23 If the Generating Facility is interconnected to the Utility's Transmission System, the Interconnection Customer shall design its Generating Facility to have the capability to operate at 0.95 leading to 0.95 lagging at the Maximum Generating Capacity at the Point of Interconnection, unless the Utility has established different requirements that apply to all similarly situated generators in the control area on a comparable basis.

1.8.34 Payments shall be in accordance with the Utility's applicable rate schedule then in effect unless the provision of such service(s) is subject to a regional transmission organization or independent system operator FERC-approved rate schedule. To the extent that no rate schedule is in effect at the time the Interconnection Customer is required to provide or absorb reactive power under this Agreement, the Parties agree to expeditiously file such rate schedule and agree to support any request for waiver of any prior notice requirement in order to compensate the Interconnection Customer from the time service commenced.

1.9 Capitalized Terms

Commented [A152]: December Comment from Duke Energy: Duke did not intend to delete the original language for 1.8.2. Please see below for revised submission related to Article 1.8.

Capitalized terms used herein shall have the meanings specified in the Glossary of Terms in Attachment 1 of the North Carolina Interconnection Procedures or the body of this Agreement.

Article 2. Inspection, Testing, Authorization, and Right of Access

2.1 Equipment Testing and Inspection

- 2.1.1 The Interconnection Customer shall test and inspect its Generating Facility and Interconnection Facilities prior to interconnection. The Interconnection Customer shall notify the Utility of such activities no fewer than ten (10) Business Days (or as may be agreed to by the Parties) prior to such testing and inspection. Testing and inspection shall occur on a Business Day, unless otherwise agreed to by the Parties. The Utility may, at its own expense, send qualified personnel to the Generating Facility site to inspect the interconnection and observe the testing. The Interconnection Customer shall provide the Utility a written test report when such testing and inspection is completed.
- 2.1.2 The Utility shall provide the Interconnection Customer written acknowledgment that it has received the Interconnection Customer's written test report. Such written acknowledgment shall not be deemed to be or construed as any representation, assurance, guarantee, or warranty by the Utility of the safety, durability, suitability, or reliability of the Generating Facility or any associated control, protective, and safety devices owned or controlled by the Interconnection Customer or the quality of power produced by the Generating Facility.

(WG1) Duke Energy has submitted the following sections to be added to the document.

- 2.1.3 In addition to the Utility's observation of the Interconnection Customer's testing and inspection of its Generating Facility and Interconnection Facilities pursuant to this Section, the Utility may also require inspection and testing of Interconnection Facilities which can impact the integrity or safety of the Utility's System or otherwise cause adverse operating effects, as described in Section 3.4.4. Such inspection and testing activities will be performed by the Utility or a third-party independent contractor approved by the Utility and at a time mutually agreed to with the Interconnection Customer and will be performed at the Interconnection Customer's expense. The scope of required inspection and testing will be consistent across similar types of generating facilities.

Commented [A153]: Comment: Utility testing and inspection and assigning applicable cost of the commissioning process to the IC more clearly addressed.

2.2 Authorization Required Prior to Parallel Operation

- 2.2.1 The Utility shall use Reasonable Efforts to list applicable parallel operation

requirements in Appendix 5 of this Agreement. Additionally, the Utility shall notify the Interconnection Customer of any changes to these requirements as soon as they are known. The Utility shall make Reasonable Efforts to cooperate with the Interconnection Customer in meeting requirements necessary for the Interconnection Customer to commence parallel operations by the in-service date.

- 2.2.2 The Interconnection Customer shall not operate its Generating Facility in parallel with the Utility's System without prior written authorization of the Utility. The Utility will provide such authorization once the Utility receives notification that the Interconnection Customer has complied with all applicable parallel operation requirements. Such authorization shall not be unreasonably withheld, conditioned, or delayed.

2.3 Right of Access

- 2.3.1 Upon reasonable notice, the Utility may send a qualified person to the premises of the Interconnection Customer at or immediately before the time the Generating Facility first produces energy to inspect the interconnection, and observe the commissioning of the Generating Facility (including any required testing), startup, and operation for a period of up to three (3) Business Days after initial start-up of the unit. In addition, the Interconnection Customer shall notify the Utility at least five (5) Business Days prior to conducting any on-site verification testing of the Generating Facility.

(WG1) Duke Energy has proposed the following rewrite of section 2.3.1.

- 2.3.1 Upon reasonable notice, the Utility may send a qualified person to the premises of the Interconnection Customer at or before the time the Generating Facility first produces energy to inspect the interconnection and those Interconnection Customer facilities which can impact the integrity or safety of the Utility's System or otherwise cause adverse operating effects, as described in Section 3.4.4, and observe the commissioning of the Generating Facility (including any required testing), startup, and operation for a period of up to three (3) Business Days after initial start-up of the unit. In addition, the Interconnection Customer shall notify the Utility at least five (5) Business Days prior to conducting any on-site verification testing of the Generating Facility.

Commented [A154]: Comment: Utility testing and inspection and assigning applicable cost of the commissioning process to the IC more clearly addressed.

- 2.3.2 Following the initial inspection process described above, at reasonable hours, and upon reasonable notice, or at any time without notice in the event of an emergency or hazardous condition, the Utility shall have access to the Interconnection Customer's premises for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement or if necessary to meet its legal obligation to provide service to its customers.

- 2.3.3 Each Party shall be responsible for its own costs associated with following this Article.

(WG1) Duke Energy has proposed the following rewrite of section 2.3.3.

Commented [A155]: Comment: Utility testing and inspection and assigning applicable cost of the commissioning process to the IC more clearly addressed.

- 2.3.3 Each Party shall be responsible for its own costs associated with following this Article, with the exception of Utility-required inspection and testing described in Section 2.1.3, the costs for which shall be the responsibility of the Interconnection Customer.

Article 3. Effective Date, Term, Termination, and Disconnection

3.1 Effective Date

This Agreement shall become effective upon execution by the Parties.

3.2 Term of Agreement

This Agreement shall become effective on the Effective Date and shall remain in effect for a period of ten (10) years from the Effective Date or such other longer period as the Interconnection Customer may request and shall be automatically renewed for each successive one-year period thereafter, unless terminated earlier in accordance with Article 3.3 of this Agreement.

3.3 Termination

No termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination.

- 3.3.1 The Interconnection Customer may terminate this Agreement at any time by giving the Utility 20 Business Days written notice and physically and permanently disconnecting the Generating Facility from the Utility's System.
- 3.3.2 The Utility may terminate this agreement for failure to comply with the requirements of Article 7.1.2 or Article 7.1.3.
- 3.3.3 Either Party may terminate this Agreement after Default pursuant to Article 7.6.
- 3.3.4 Upon termination of this Agreement, the Generating Facility will be disconnected from the Utility's System. All costs required to effectuate such disconnection shall be borne by the terminating Party, unless such termination resulted from the non-terminating Party's Default of this Agreement or such non-terminating Party otherwise is responsible for these costs under this Agreement.

3.3.5 The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of the termination, including any remaining term requirements for payment of Charges that are billed under a monthly payment option as prescribed in Article 6.

3.3.6 The provisions of this article shall survive termination or expiration of this Agreement.

3.4 Temporary Disconnection

Temporary disconnection shall continue only for so long as reasonably necessary under Good Utility Practice.

3.4.1 Emergency Conditions

“Emergency Condition” shall mean a condition or situation: (1) that in the judgment of the Party making the claim is imminently likely to endanger life or property; or (2) that, in the case of the Utility, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to the Utility’s System, the Utility’s Interconnection Facilities or the systems of others to which the Utility’s System is directly connected; or (3) that, in the case of the Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Generating Facility or the Interconnection Customer’s Interconnection Facilities.

Under Emergency Conditions, the Utility may immediately suspend interconnection service and temporarily disconnect the Generating Facility. The Utility shall notify the Interconnection Customer promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Interconnection Customer’s operation of the Generating Facility. The Interconnection Customer shall notify the Utility promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Utility’s System or any Affected Systems. To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties’ facilities and operations, its anticipated duration, and the necessary corrective action.

3.4.2 Routine Maintenance, Construction, and Repair

The Utility may interrupt interconnection service or curtail the output of the Generating Facility and temporarily disconnect the Generating Facility from the Utility’s System when necessary for routine maintenance, construction, and repairs on the Utility’s System. The

Utility shall provide the Interconnection Customer with ~~five-two (25)~~ Business Day notice prior to such interruption. The Utility shall use Reasonable Efforts to coordinate such reduction or temporary disconnection with the Interconnection Customer.

Commented [A156]: Dominion proposed change (WG1)

Commented [A157]: Duke Energy (WG1) proposes deleting this sentence completely.

(WG1) Duke Energy added the following narrative regarding their proposed change above:

Duke's experience is that the 5 day provision is not practical.

To provide background: Duke performs switching on its distribution system on a regular basis, connecting sections of distribution line temporarily to substations other than their "native" substation. This is done for planned work but also for unplanned reasons related to outages. Most all non-generating customers are able to be served when alternate switching configurations are in place, as this is the nature of substation and distribution system design for serving electrical loads. When this occurs, these customers remain unimpacted regardless of when Duke performs the switching. For operational reasons it is common for Duke to change switching work plans with little notice.

However, the nature of interconnection of DER facilities on radial distribution systems is that they become reliant on a particular configuration – i.e., their "native feeder." Interconnection studies cannot functionally permit connection with differing scenarios of utility back-feed.

So, when switching must take place, such facilities often must be taken off-line since their output can cause power quality problems if they are connected to alternate substations. Since Duke's regular work practices do not allow for switching activities to be planned ahead of time, with any level of significant notice, Duke therefore proposes removal of the 5 day provision.

3.4.3 Forced Outages

During any forced outage, the Utility may suspend interconnection service to effect immediate repairs on the Utility's System. The Utility shall use Reasonable Efforts to provide the Interconnection Customer with prior notice. If prior notice is not given, the Utility shall, upon request, provide the Interconnection Customer written documentation after the fact explaining the circumstances of the disconnection.

3.4.4 Adverse Operating Effects

The Utility shall notify the Interconnection Customer as soon as practicable if, based on Good Utility Practice, operation of the Generating Facility may cause disruption or deterioration of service to other customers served from the same electric system, or if operating

the Generating Facility could cause damage to the Utility's System or Affected Systems. Supporting documentation used to reach the decision to disconnect shall be provided to the Interconnection Customer upon request. If, after notice, the Interconnection Customer fails to remedy the adverse operating effect within a reasonable time, the Utility may disconnect the Generating Facility. ~~The Utility shall provide the Interconnection Customer with five (5) Business Day notice of such disconnection, unless the provisions of Article 3.4.1 apply.~~

Commented [A158]: Duke Energy (WG1) proposed change (and see highlighted text above)

3.4.5 Modification of the Generating Facility

The Interconnection Customer must receive written authorization from the Utility before making a Material Modification or any other change to the Generating Facility that may have a material impact on the safety or reliability of the Utility's System. Such authorization shall not be unreasonably withheld. Modifications shall be done in accordance with Good Utility Practice. If the Interconnection Customer makes such modification without the Utility's prior written authorization, the latter shall have the right to temporarily disconnect the Generating Facility.

3.4.6 Reconnection

The Parties shall cooperate with each other to restore the Generating Facility, Interconnection Facilities, and the Utility's System to their normal operating state as soon as reasonably practicable following a temporary or emergency disconnection.

Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades

4.1 Interconnection Facilities

4.1.1 The Interconnection Customer shall pay for the cost of the Interconnection Facilities itemized in Appendix 2 of this Agreement. The Utility shall provide a best estimate cost, including overheads, for the purchase and construction of its Interconnection Facilities and provide a detailed itemization of such costs. Costs associated with Interconnection Facilities may be shared with other entities that may benefit from such facilities by agreement of the Interconnection Customer, such other entities, and the Utility.

4.1.2 The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its own Interconnection Facilities, and (2) operating, maintaining, repairing, and replacing the Utility's Interconnection Facilities.

4.2 Distribution Upgrades

The Utility shall design, procure, construct, install, and own the Distribution Upgrades described in Appendix 6 of this Agreement. If the Utility and the Interconnection Customer agree, the Interconnection Customer may construct Distribution Upgrades that are located on land owned by the Interconnection Customer. The actual cost of the Distribution Upgrades, including overheads, on-going operations, maintenance, repair, and replacement, shall be directly assigned to the Interconnection Customer.

Article 5. Cost Responsibility for Network Upgrades

5.1 Applicability

No portion of this Article 5 shall apply unless the interconnection of the Generating Facility requires Network Upgrades.

5.2 Network Upgrades

The Utility shall design, procure, construct, install, and own the Network Upgrades described in Appendix 6 of this Agreement. If the Utility and the Interconnection Customer agree, the Interconnection Customer may construct Network Upgrades that are located on land owned by the Interconnection Customer. Unless the Utility elects to pay for Network Upgrades, the actual cost of the Network Upgrades, including overheads, on-going operations, maintenance, repair, and replacement shall be borne by the Interconnection Customer.

Article 6. Billing, Payment, Milestones, and Financial Security

6.1 Billing and Payment Procedures and Final Accounting

6.1.1 The Interconnection Customer shall pay 100% of required Interconnection Facilities and any other charges as required in Appendix 2 pursuant to the milestones specified in Appendix 4.

The Interconnection Customer shall pay 100% of required Upgrades and any other charges as required in Appendix 6 pursuant to the milestones specified in Appendix 4.

Upon receipt of 100% of the foregoing pre-payment charges, the payment is not refundable due to cancellation of the Interconnection Request for any reason.

6.1.2 If implemented by the Utility or requested by the Interconnection Customer in writing within 15 Business Days of the Interconnection Facilities Delivery Date, the Utility shall provide the Interconnection Customer a final accounting report within 120 Business Days addressing any difference between (1) the Interconnection Customer's cost responsibility for the actual cost of such facilities or Upgrades, and (2) the Interconnection

Customer's previous aggregate payments to the Utility for such facilities or Upgrades. If the Interconnection Customer's cost responsibility exceeds its previous aggregate payments, the Utility shall invoice the Interconnection Customer for the amount due and the Interconnection Customer shall make payment to the Utility within 20 Business Days. If the Interconnection Customer's previous aggregate payments exceed its cost responsibility under this Agreement, the Utility shall refund to the Interconnection Customer an amount equal to the difference within 20 Business Days of the final accounting report. If necessary and appropriate as a result of the final accounting, the Utility may also adjust the monthly charges set forth in Appendix 2 of the Interconnection Agreement.

- 6.1.3 The Utility shall also bill the Interconnection Customer for the costs associated with operating, maintaining, repairing and replacing the Utility's System Upgrades, as set forth in Appendix 6 of this Agreement. The Utility shall bill the Interconnection Customer for the costs of providing the Utility's Interconnection Facilities including the costs for on-going operations, maintenance, repair and replacement of the Utility's Interconnection Facilities under a Utility rate schedule, tariff, rider or service regulation providing for extra facilities or additional facilities charges, as set forth in Appendix 2 of this Agreement, such monthly charges to continue throughout the entire life of the interconnection.

6.2 Milestones

The Parties shall agree on milestones for which each Party is responsible and list them in Appendix 4 of this Agreement. A Party's obligations under this provision may be extended by agreement, except for timing for Payment or Financial Security-related requirements set forth in the milestones, which shall adhere to Section 5.2.4 of the Standards. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Force Majeure Event, it shall immediately notify the other Party of the reason(s) for not meeting the milestone and (1) propose the earliest reasonable alternate date by which it can attain this and future milestones, and (2) request appropriate amendments to Appendix 4. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless (1) it will suffer significant uncompensated economic or operational harm from the delay, (2) the delay will materially affect the schedule of another Interconnection Customer with subordinate Queue Position, (3) attainment of the same milestone has previously been delayed, or (4) it has reason to believe that the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstances explained by the Party proposing the amendment.

6.3 Financial Security Arrangements

Pursuant to the Interconnection Agreement Milestones Appendix 4, the Interconnection Customer shall provide the Utility a letter of credit or other financial security arrangement that is reasonably acceptable to the Utility and is consistent with the Uniform Commercial Code of North Carolina. Such security for payment

shall be in an amount sufficient to cover the costs for constructing, designing, procuring, and installing the applicable portion of the Utility's Interconnection Facilities and shall be reduced on a dollar-for-dollar basis for payments made to the Utility under this Agreement during its term. In addition:

- 6.3.1 The guarantee must be made by an entity that meets the creditworthiness requirements of the Utility, and contain terms and conditions that guarantee payment of any amount that may be due from the Interconnection Customer, up to an agreed-to maximum amount.
- 6.3.2 The letter of credit must be issued by a financial institution or insurer reasonably acceptable to the Utility and must specify a reasonable expiration date.
- 6.3.3 The Utility may waive the security requirements if its credit policies show that the financial risks involved are de minimus, or if the Utility's policies allow the acceptance of an alternative showing of creditworthiness from the Interconnection Customer.

Article 7. Assignment, Liability, Indemnity, Force Majeure, Consequential Damages, and Default

7.1 Assignment

- 7.1.1 The Interconnection Customer shall notify the Utility of the pending sale of an existing Generation Facility in writing. The Interconnection Customer shall provide the Utility with information regarding whether the sale is a change of ownership of the Generation Facility to a new legal entity, or a change of control of the existing legal entity.
- 7.1.2 The Interconnection Customer shall promptly notify the Utility of the final date of sale and transfer date of ownership in writing. The purchaser of the Generation Facility shall confirm to the Utility the final date of sale and transfer date of ownership in writing.
- 7.1.3 This Agreement shall not survive the transfer of ownership of the Generating Facility to a new legal entity owner. The new owner must complete a new Interconnection Request and submit it to the Utility within 20 Business Days of the transfer of ownership or the Utility's Interconnection Facilities shall be removed or disabled and the Generating Facility disconnected from the Utility's System. The Utility shall not study or inspect the Generating Facility unless the new owner's Interconnection Request indicates that a Material Modification has occurred or is proposed.
- 7.1.4 This Agreement shall survive a change of control of the Generating Facility' legal entity owner, where only the contact information in the Interconnection Agreement must be modified. The new owner must

complete a new Interconnection Request and submit it to the Utility within 20 Business Days of the change of control and provide the new contact information. The Utility shall not study or inspect the Generating Facility unless the new owner's Interconnection Request indicates that a Material Modification has occurred or is proposed.

7.1.5 The Interconnection Customer shall have the right to assign this Agreement, without the consent of the Utility, for collateral security purposes to aid in providing financing for the Generating Facility, provided that the Interconnection Customer will promptly notify the Utility of any such assignment. Assignment shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof.

7.1.6 Any attempted assignment that violates this article is void and ineffective.

7.2 Limitation of Liability

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, incidental, consequential, or punitive damages of any kind, except as authorized by this Agreement.

7.3 Indemnity

7.3.1 This provision protects each Party from liability incurred to third parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in Article 7.2.

7.3.2 The Parties shall at all times indemnify, defend, and save the other Party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's action or inaction of its obligations under this Agreement on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

7.3.3 If an indemnified Party is entitled to indemnification under this Article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this Article, to assume the defense of such claim, such indemnified Party may at the expense of the indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.

- 7.3.4 If an indemnifying Party is obligated to indemnify and hold any indemnified Party harmless under this Article, the amount owing to the indemnified Party shall be the amount of such indemnified Party's actual loss, net of any insurance or other recovery.
- 7.3.5 Promptly after receipt by an indemnified Party of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in this Article may apply, the indemnified Party shall notify the indemnifying Party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying Party.

7.4 Consequential Damages

Other than as expressly provided for in this Agreement, neither Party shall be liable under any provision of this Agreement for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to the other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

7.5 Force Majeure

- 7.5.1 As used in this article, a Force Majeure Event shall mean any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure Event does not include an act of negligence or intentional wrongdoing.
- 7.5.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the Force Majeure Event (Affected Party) shall promptly notify the other Party, either in writing or via the telephone, of the existence of the Force Majeure Event. The notification must specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the Affected Party is taking to mitigate the effects of the event on its performance. The Affected Party shall keep the other Party informed on a continuing basis of developments relating to the Force Majeure Event until the event ends. The Affected Party will be entitled to suspend or modify its performance of obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of Reasonable

Efforts. The Affected Party will use Reasonable Efforts to resume its performance as soon as possible.

7.6 Default

- 7.6.1 No Default shall exist where such failure to discharge an obligation (other than the payment of money or provision of Financial Security) is the result of a Force Majeure Event as defined in this Agreement or the result of an act or omission of the other Party. Upon a Default, the non-defaulting Party shall give written notice of such Default to the defaulting Party. Except as provided in Article 7.6.2, the defaulting Party shall have five (5) Business Days from receipt of the Default notice within which to cure such Default.
- 7.6.2 If a Default is not cured as provided in this Article, the non-defaulting Party shall have the right to terminate this Agreement by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this article will survive termination of this Agreement.

Article 8. Insurance

- 8.1 The Interconnection Customer shall obtain and retain, for as long as the Generating Facility is interconnected with the Utility's System, liability insurance which protects the Interconnection Customer from claims for bodily injury and/or property damage. The amount of such insurance shall be sufficient to insure against all reasonably foreseeable direct liabilities given the size and nature of the generating equipment being interconnected, the interconnection itself, and the characteristics of the system to which the interconnection is made. This insurance shall be primary for all purposes. The Interconnection Customer shall provide certificates evidencing this coverage as required by the Utility. Such insurance shall be obtained from an insurance provider authorized to do business in North Carolina. The Utility reserves the right to refuse to establish or continue the interconnection of the Generating Facility with the Utility's System, if such insurance is not in effect.
- 8.1.1 For an Interconnection Customer that is a residential customer of the Utility proposing to interconnect a Generating Facility no larger than 250 kW, the required coverage shall be a standard homeowner's insurance policy with liability coverage in the amount of at least \$100,000 per occurrence.
- 8.1.2 For an Interconnection Customer that is a non-residential customer of the Utility proposing to interconnect a Generating Facility no larger than 250 kW, the required coverage shall be comprehensive general liability insurance with coverage in the amount of at least \$300,000 per occurrence.

- 8.1.3 For an Interconnection Customer that is a non-residential customer of the Utility proposing to interconnect a Generating Facility greater than 250 kW, the required coverage shall be comprehensive general liability insurance with coverage in the amount of at least \$1,000,000 per occurrence.
- 8.1.4 An Interconnection Customer of sufficient credit-worthiness may propose to provide this insurance via a self-insurance program if it has a self-insurance program established in accordance with commercially acceptable risk management practices, and such a proposal shall not be unreasonably rejected.
- 8.2 The Utility agrees to maintain general liability insurance or self-insurance consistent with the Utility's commercial practice. Such insurance or self-insurance shall not exclude coverage for the Utility's liabilities undertaken pursuant to this Agreement.
- 8.3 The Parties further agree to notify each other whenever an accident or incident occurs resulting in any injuries or damages that are included within the scope of coverage of such insurance, whether or not such coverage is sought.

Article 9. Confidentiality

- 9.1 Confidential Information shall mean any confidential and/or proprietary information provided by one Party to the other Party that is clearly marked or otherwise designated "Confidential." For purposes of this Agreement all design, operating specifications, and metering data provided by the Interconnection Customer shall be deemed Confidential Information regardless of whether it is clearly marked or otherwise designated as such.
- 9.2 Confidential Information does not include information previously in the public domain, required to be publicly submitted or divulged by Governmental Authorities (after notice to the other Party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce this Agreement. Each Party receiving Confidential Information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the Party providing that information, except to fulfill obligations under this Agreement, or to fulfill legal or regulatory requirements.
 - 9.2.1 Each Party shall employ at least the same standard of care to protect Confidential Information obtained from the other Party as it employs to protect its own Confidential Information.
 - 9.2.2 Each Party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of Confidential Information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.

9.2.3 All information pertaining to a project will be provided to the new owner in the case of a change of control of the existing legal entity or a change of ownership to a new legal entity.

9.3 If information is requested by the Commission from one of the Parties that is otherwise required to be maintained in confidence pursuant to this Agreement, the Party shall provide the requested information to the Commission within the time provided for in the request for information. In providing the information to the Commission, the Party may request that the information be treated as confidential and non-public in accordance with North Carolina law and that the information be withheld from public disclosure.

Article 10. Disputes

10.1 The Parties agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this Article.

10.2 In the event of a dispute, either Party shall provide the other Party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute.

10.3 If the dispute has not been resolved within 20 Business Days after receipt of the notice, either Party may contact the Public Staff for assistance in informally resolving the dispute. If the Parties are unable to informally resolve the dispute, either Party may then file a formal complaint with the Commission.

10.4 Each Party agrees to conduct all negotiations in good faith.

Article 11. Taxes

11.1 The Parties agree to follow all applicable tax laws and regulations, consistent with North Carolina and federal policy and revenue requirements.

11.2 Each Party shall cooperate with the other to maintain the other Party's tax status. Nothing in this Agreement is intended to adversely affect the Utility's tax exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

Article 12. Miscellaneous

12.1 Governing Law, Regulatory Authority, and Rules

The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of North Carolina, without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.

12.2 Amendment

The Parties may amend this Agreement by a written instrument duly executed by both Parties, or under Article 12.12 of this Agreement.

12.3 No Third-Party Beneficiaries

This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.

12.4 Waiver

12.4.1 The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

12.4.2.1 Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this Agreement. Termination or default of this Agreement for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Utility. Any waiver of this Agreement shall, if requested, be provided in writing.

12.5 Entire Agreement

This Agreement, including all Appendices, constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

12.6 Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

12.7 No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to

otherwise bind, the other Party.

12.8 Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

12.9 Security Arrangements

Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. All Utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

12.10 Environmental Releases

Each Party shall notify the other Party, first orally and then in writing, of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Generating Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any Governmental Authorities addressing such events.

12.11 Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

12.11.2 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall the Utility be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon

the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

- 12.11.3 The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

12.12 Reservation of Rights

The Utility shall have the right to make a unilateral filing with the Commission to modify this Agreement with respect to any rates, terms and conditions, charges, or classifications of service, and the Interconnection Customer shall have the right to make a unilateral filing with the Commission to modify this Agreement; provided that each Party shall have the right to protest any such filing by the other Party and to participate fully in any proceeding before the Commission in which such modifications may be considered. Nothing in this Agreement shall limit the rights of the Parties except to the extent that the Parties otherwise agree as provided herein.

Article 13. Notices

13.1 General

Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement (Notice) shall be deemed properly given if delivered in person, delivered by recognized national courier service, sent by first class mail, postage prepaid, or sent electronically to the person specified below:

If to the Interconnection Customer:

Interconnection Customer: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

E-Mail Address: _____

Phone: _____ Fax: _____

If to the Utility:

Utility: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

E-Mail Address: _____

Phone: _____ Fax: _____

13.2 Billing and Payment

Billings and payments shall be sent to the addresses set out below: If to the Interconnection Customer:

Interconnection Customer: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

E-Mail Address: _____

If to the Utility:

Utility: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

E-Mail Address: _____

13.3 Alternative Forms of Notice

Any notice or request required or permitted to be given by either Party to the other and not required by this Agreement to be given in writing may be so given by telephone, facsimile or e-mail to the telephone numbers and e-mail addresses set out below:

If to the Interconnection Customer:

Interconnection Customer: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

E-Mail Address: _____

If to the Utility:

Utility: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

E-Mail Address: _____

13.4 Designated Operating Representative

The Parties may also designate operating representatives to conduct the communications which may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities.

Interconnection Customer's Operating Representative:

Interconnection Customer: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

E-Mail Address: _____

Utility's Operating Representative:

Utility: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

E-Mail Address: _____

13.5 Changes to the Notice Information

Either Party may change this information by giving five Business Days written notice prior to the effective date of the change.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

For the Utility

Name: _____

Print Name: _____

Title: _____

Date: _____

For the Interconnection Customer

Name: _____

Print Name: _____

Title: _____

Date: _____

Glossary of Terms

See Glossary of Terms, Attachment 1 to the North Carolina Interconnection Procedures.

**Description and Costs of the Generating Facility,
Interconnection Facilities, and Metering Equipment**

Equipment, including the Generating Facility, Interconnection Facilities, and metering equipment shall be itemized and identified as being owned by the Interconnection Customer, or the Utility. The Utility will provide a best estimate itemized cost, including overheads, of its Interconnection Facilities and metering equipment, and a best estimate itemized cost of the annual operation and maintenance expenses associated with its Interconnection Facilities and metering equipment.

**One-line Diagram Depicting the Generating Facility,
Interconnection Facilities, Metering Equipment, and Upgrades**

This agreement will incorporate by reference the one-line diagram submitted by the Customer on _____, dated _____, with file name "_____" as part of the Interconnection Request, or as subsequently updated and provided to the Company.

Interconnection Agreement
Appendix 4

Milestones

Requested Upgrade In-Service Date: _____

Requested Interconnection Facilities In-Service Date _____

For an Interim Interconnection Agreement, this Appendix 4 is null and void.

Critical milestones and responsibility as agreed to by the Parties:

The build-out schedule does not include contingencies for deployment of Utility personnel to assist in outage restoration efforts on the Utility's system or the systems of other utilities with whom the Utility has a mutual assistance agreement. Consequently, the Requested In-service date may be delayed to the extent outage restoration work interrupts the design, procurement and construction of the requested facilities.

Commented [A159]: December Comment from Duke Energy: Consistent with Duke's proposal to eliminate Section 4.3.8, the 3rd sentence beginning with "For an Interim..." should be deleted.

	Milestone	Completion Date	Responsible Party
1)			
2)			
3)			
4)			
5)			
6)			
7)			
8)			
9)			
10)	Expand as needed		

Signatures on next page

Interconnection Agreement
Appendix 4

Agreed to for the Utility

Name: _____

Print Name: _____

Date: _____

Agreed to for the Interconnection Customer

Name: _____

Print Name: _____

Date: _____

**Additional Operating Requirements for the Utility's
System and Affected Systems Needed to Support
the Interconnection Customer's Needs**

The Utility shall also provide requirements that must be met by the Interconnection Customer prior to initiating parallel operation with the Utility's System.

**Utility's Description of its Upgrades
and Best Estimate of Upgrade Costs**

The Utility shall describe Upgrades and provide an itemized best estimate of the cost, including overheads, of the Upgrades and annual operation and maintenance expenses associated with such Upgrades. The Utility shall functionalize Upgrade costs and annual expenses as either transmission or distribution related.



Clay Faber - Director
Federal & CA Regulatory
8330 Century Park Court
San Diego, CA 92123

cfaber@semprautilities.com

October 12, 2017

ADVICE LETTER 3131-E
(U902-E)

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

SUBJECT: INFORMATION ONLY FILING REGARDING NET ENERGY METERING (NEM) COSTS

San Diego Gas & Electric Company (SDG&E) hereby submits to the California Public Utilities Commission (Commission) an Information-only report on interconnection costs for all Net Energy Metering (NEM) customers in compliance with Decision (D.) 16-01-044. This filing covers the period of August 1, 2016 through July 31, 2017.

BACKGROUND

On February 5th, 2016, the Commission issued D.16-01-044 that authorized investor-owned utilities (IOUs) to collect a one-time application fee for NEM successor tariff customers with systems smaller than 1 megawatt (MW), to allow the utility to recover the costs of providing the interconnection service from the customers benefitting from the interconnections.¹ The fee for each IOU must be based on the interconnection costs shown in each IOU's June 2015 advice letter², filed in accordance with D.14-05-033 and Resolution E-4610.

D.16-01-044 required each IOU to continue to report its interconnection costs in accordance with the directions in D.14-05-033 and Resolution E-4610.³ This report contains data from August 1, 2016 through July 31, 2017 and is included in this filing as Attachment A.

EFFECTIVE DATE

This filing is subject to Energy Division disposition and is classified as Tier 1 (effective pending disposition) pursuant to GO 96-B. SDG&E respectfully requests that this filing become effective on October 12, 2017, which is the date of this filing.

PROTEST

In accordance with GO 96-B Section 6.2, this information-only filing is not subject to protest.

¹ D.16-01-044, pp.87-88.

² SDG&E filed Advice Letter 2761-E on June 30, 2015 (approved on December 31, 2015).

³ D.16-01-044 at p. 88.

Public Utilities Commission

2

October 12, 2017

NOTICE

A copy of this filing has been served on the utilities and interested parties shown on the attached list, including interested parties in R.12-11-005 and R.14-07-002, by providing them a copy hereof either electronically or via the U.S. mail, properly stamped and addressed.

Address changes should be directed to SDG&E Tariffs by email to SDG&ETariffs@semprautilities.com.

CLAY FABER
Director – Regulatory Affairs

OFFICIAL COPY

Dec 15 2017

CALIFORNIA PUBLIC UTILITIES COMMISSION**ADVICE LETTER FILING SUMMARY
ENERGY UTILITY****MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)**Company name/CPUC Utility No. **SAN DIEGO GAS & ELECTRIC (U 902)**

Utility type:

☒ ELC☐ GAS☐ PLC☐ HEAT☐ WATERContact Person: Joff MoralesPhone #: (858) 650-4098E-mail: jmorales@semprautilities.com

EXPLANATION OF UTILITY TYPE

ELC = Electric

GAS = Gas

PLC = Pipeline

HEAT = Heat

WATER = Water

(Date Filed/ Received Stamp by CPUC)

Advice Letter (AL) #: 3131-ESubject of AL: Information Only Filing Regarding Net Energy Metering (NEM) CostsKeywords (choose from CPUC listing): NEMAL filing type: ☐ Monthly ☐ Quarterly ☐ Annual ☐ One-Time ☒ Other

If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #:

D.16-01-044Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: N/ASummarize differences between the AL and the prior withdrawn or rejected AL¹: N/A

Does AL request confidential treatment? If so, provide explanation:

Resolution Required? ☐ Yes ☒ NoTier Designation: ☒ 1 ☐ 2 ☐ 3Requested effective date: 10/12/2017No. of tariff sheets: 0Estimated system annual revenue effect (%): N/AEstimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: N/AService affected and changes proposed¹: N/APending advice letters that revise the same tariff sheets: N/A**Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this filing, unless otherwise authorized by the Commission, and shall be sent to:****CPUC, Energy Division****Attention: Tariff Unit****505 Van Ness Ave.,****San Francisco, CA 94102****EDTariffUnit@cpuc.ca.gov****San Diego Gas & Electric****Attention: Megan Caulson****8330 Century Park Ct., CP 32F****San Diego, CA 92123****MCaulson@semprautilities.com**OFFICIAL COPY
Dec 15 2017

General Order No. 96-B
ADVICE LETTER FILING MAILING LIST

cc: (w/enclosures)

Public Utilities Commission

DRA

R. Pocta

Energy Division

M. Ghadessi

M. Salinas

Tariff Unit

CA. Energy Commission

F. DeLeon

R. Tavares

Alcantar & Kahl LLP

K. Cameron

American Energy Institute

C. King

APS Energy Services

J. Schenk

BP Energy Company

J. Zaiontz

Barkovich & Yap, Inc.

B. Barkovich

Bartle Wells Associates

R. Schmidt

Braun & Blaising, P.C.

S. Blaising

California Energy Markets

S. O'Donnell

C. Sweet

California Farm Bureau Federation

K. Mills

California Wind Energy

N. Rader

Children's Hospital & Health Center

T. Jacoby

City of Poway

R. Willcox

City of San Diego

J. Cervantes

G. Lonergan

M. Valerio

Commerce Energy Group

V. Gan

CP Kelco

A. Friedl

Davis Wright Tremaine, LLP

E. O'Neill

J. Pau

Dept. of General Services

H. Nanjo

M. Clark

Douglass & Liddell

D. Douglass

D. Liddell

G. Klatt

Duke Energy North America

M. Gillette

Dynegy, Inc.

J. Paul

Ellison Schneider & Harris LLP

E. Janssen

Energy Policy Initiatives Center (USD)

S. Anders

Energy Price Solutions

A. Scott

Energy Strategies, Inc.

K. Campbell

M. Scanlan

Goodin, MacBride, Squeri, Ritchie & Day

B. Cragg

J. Heather Patrick

J. Squeri

Goodrich Aerostructures Group

M. Harrington

Hanna and Morton LLP

N. Pedersen

Itsa-North America

L. Belew

J.B.S. Energy

J. Nahigian

Luce, Forward, Hamilton & Scripps LLP

J. Leslie

Manatt, Phelps & Phillips LLP

D. Huard

R. Keen

Matthew V. Brady & Associates

M. Brady

Modesto Irrigation District

C. Mayer

Morrison & Foerster LLP

P. Hanschen

MRW & Associates

D. Richardson

Pacific Gas & Electric Co.

J. Clark

M. Huffman

S. Lawrie

E. Lucha

Pacific Utility Audit, Inc.

E. Kelly

San Diego Regional Energy Office

S. Freedman

J. Porter

School Project for Utility Rate Reduction

M. Rochman

Shute, Mihaly & Weinberger LLP

O. Armi

Solar Turbines

F. Chiang

Southern California Edison Co.

M. Alexander

K. Cini

K. Gansecki

H. Romero

TransCanada

R. Hunter

D. White

TURN

M. Florio

M. Hawiger

UCAN

D. Kelly

U.S. Dept. of the Navy

K. Davoodi

N. Furuta

L. DeLacruz

Utility Specialists, Southwest, Inc.

D. Koser

Western Manufactured Housing

Communities Association

S. Dey

White & Case LLP

L. Cottle

Interested Parties

R.12-11-005

R.14-07-002

OFFICIAL COPY

Dec 15 2017

San Diego Gas & Electric Advice Letter 3131-E
October 12, 2017

ATTACHMENT A

ATTACHMENT A SDG&E AL 3131-E

REPORT OF SAN DIEGO GAS & ELECTRIC REGARDING NET ENERGY METERING INTERCONNECTION COSTS PURSUANT TO E-4610, D.14-05-033 AND D.16-01-044

Applicable for Schedule NEM {standard (<10kW), NEM Expanded (>10kW)}, MASH-VNM, NEM-V and FC-NEM (Fuel Cell), NEM Aggregation, NEM MT, and NEM MT-Storage

The overall costs of NEM are not limited to the interconnection costs that the Commission ordered the IOUs to track and report. The overall costs of NEM also include ongoing billing services, customer contact center costs in responding to customer inquiries on NEM bills, and other administration costs necessary in offering NEM.

I. NEM Interconnection Costs

Pursuant to the California Public Utilities Commission's (Commission) order in Resolution E-4610, Tables 1 through 4 below show the costs related to the interconnection of eligible Net Energy Metering (NEM) generating facilities under SDG&E's NEM tariffs, namely, Schedules NEM, VNM-A, NEM-V, and NEM-FC. The amounts shown represent the NEM interconnection costs tracked and recorded from August 1, 2016 through July 31, 2017.

Table 1 Processing / Administration Expenditures (1)								Total Processing and Administration Costs
Category	# of NEW Applications	# of New Construction Batch Projects	# of Resubmittals Corrections/ Add Docmts	# of Final Inspections	# of Interconnect Agreements	# of PTO issued	Total Received	
Application Processing (1)	20,820	396	0	5,366	N/A	19793	20,820	\$ 2,116,009

(1) Includes Application Processing (e.g., validating and approving single line diagram, interconnection agreement, electrical inspection clearance from governmental agency having jurisdiction, and other required documents), and back office tasks (e.g., initial billing setup), inquiry calls and emails. PTO's are issued within the application processing step, not an extra step.

ATTACHMENT A
SDG&E AL 3131-E

Table 2		
Distribution Engineering Cost (1)		
Category	# of projects	Total Cost
In-office Review (1)	926	\$52,068
(1) Single Line Diagram, Includes technical analysis, studies, and screens consistent with Rule 21 (e.g., voltage rise, 15% Penetration, transformer loading)		

Table 3		
Metering Installation/Inspection and Commissioning		
Category	# of projects	Total Cost
Remote Meter Programming/Meter Change	19,793	\$6,865
NEM Field Inspections	5,366	\$453,234
(1) Includes residential and non-residential meter changes and remote meter programming, material, supplies, procurement costs, labor for installation, testing, engineering, and quality assurance necessary for interconnection.		

Table 4		
Facility/Upgrade Costs (1)		
Category	# of projects	Total Cost
Interconnection Facilities	0	\$0.00
Distribution Upgrades		\$99,825.78
(1) Includes Interconnection Facilities (some cost paid by customer) and Distribution Upgrades (cost paid by non-NEM customers)		

ATTACHMENT A SDG&E AL 3131-E

II. Interconnection Fees Waived

Table 5 below shows the waived fees associated with interconnecting qualifying NEM-paired storage system and supplemental review costs for NEM-paired and NGOM projects. The amounts shown represent the waived fees and costs from August 1, 2016 through July 31, 2017.

Table 5		
Waived Fees and Costs (1)		
Category	# of projects	Total Cost
Interconnection application fees	0	\$0
Supplemental review fees	78	\$4,386
Distribution upgrade fees	0	\$0
Standby charges	0	\$0
NGOM Metering	55	\$12,370
Refunded Interconnection Application fees	0	\$0
Refunded NGOM Metering fees	0	\$0
*Supervisor/Management time is not included in costs		

III. Interconnection Cost Refunded

The IOUs requested to track and report the interconnection costs refunded to customers who paid to interconnect qualifying NEM-paired storage systems prior to the issuance of D.14-05-033. The request was approved and, as such, Table 6 below shows the interconnection costs refunded by SDG&E to its customer with qualifying NEM-paired storage systems from August 1, 2016 through July 31, 2017.

Table 6		
Refunded Interconnection Costs For Qualifying NEM-Paired Storage System		
Category	Number of Projects	Total Costs Refunded
Interconnection Application	0	\$0
NGOM	0	\$0

Note: The difference in Number of Projects between Tables 5 and 6 reflect SDG&E's implementation of D.14-05-033

Total Application Steps	20,820
Total Application Costs less Waived Fees	\$2,744,758
Cost per Application Step	\$131.83



Erik Jacobson
Director
Regulatory Relations

Pacific Gas and Electric Company
77 Beale St., Mail Code B13U
P.O. Box 770000
San Francisco, CA 94177

Fax: 415-973-3582

September 19, 2017

Advice 5143-E

(Pacific Gas and Electric Company ID U 39 E)

Public Utilities Commission of the State of California

Subject: Information-Only Filing Regarding Net Energy Metering (NEM) Costs

Purpose

Pacific Gas and Electric Company (PG&E) hereby submits via an Information-only filing a report on interconnection costs for all Net Energy Metering (NEM) customers in compliance with Decision (D.) 16-01-044.¹ This filing covers the period of August 2016 through August 2017.

Background

D.16-01-044 authorized the investor-owned utilities (IOUs) to collect a one-time application fee for NEM successor tariff customers with systems smaller than 1 megawatt (MW), to allow the utility to recover the costs of providing the interconnection service from the customers benefitting from the interconnections². The fee for each IOU must be based on the interconnection costs shown in each IOU's June 2015 advice letter³, filed in accordance with D.14-05-033 and Resolution E-4610.

D.16-01-044 required each IOU to continue to report its interconnection costs in accordance with the directions in D.14-05-033 and Resolution E-4610. After discussion with Energy Division, it was determined that the IOUs shall submit this report yearly on

¹ D.16-01-044, p. 88, provides in pertinent part: "Because costs may change over time, each IOU must continue to report its interconnection costs in accordance with the directions in D.14-05-033 and Res. E-4610."

² D.16-01-044 at pp.87-88. Note that Single-family Affordable Solar Housing (SASH) customers are exempted from this interconnection fee.

³ PG&E filed Advice 4660-E on June 30, 2015 (approved December 31, 2015). PG&E filed a subsequent advice letter, Advice 4847-E, on May 25, 2016 (approved January 9, 2017) to correct costs that were inadvertently omitted.

Advice 5143-E

- 2 -

September 19, 2017

September 19⁴. This report contains data from August 2016 through August 2017. Next year's report will contain data from September 2017 through July 2018.

Net Energy Metering Interconnection Costs

The report of interconnection costs for all NEM customers from August 1, 2016 through August 31, 2017 is attached to this Advice Letter, Attachment A.

The filing would not increase any current rate or charge, cause the withdrawal of service, or conflict with any rate schedule or rule.

Protests

This is an information-only advice letter filing. Pursuant to General Order 96-B Section 6.2, PG&E is not seeking relief through this advice letter and is not subject to protest. Instead, PG&E is simply reporting the interconnection costs for all NEM customers pursuant to D.16-01-044.

Effective Date

PG&E requests that this information-only advice filing become effective September 19, 2017, the date of filing.

Notice

In accordance with General Order 96-B, Section IV, a copy of this advice letter is being sent electronically and via U.S. mail to parties shown on the attached list and the parties on the service lists for R.12-11-005 and R.14-07-002. Address changes to the General Order 96-B service list should be directed to PG&E at email address PGETariffs@pge.com. For changes to any other service list, please contact the Commission's Process Office at (415) 703-2021 or at Process_Office@cpuc.ca.gov. Send all electronic approvals to PGETariffs@pge.com. Advice letter filings can also be accessed electronically at: <http://www.pge.com/tariffs/>.

/S/

Erik Jacobson
Director, Regulatory Relations

Attachments

cc: Service Lists R.12-11-005 and R.14-07-002

⁴ Or the next business day, should September 19 fall on a weekend or holiday (Rule 1.15 Computation of Time California Public Utilities Commission Rules of Practice and Procedure)

CALIFORNIA PUBLIC UTILITIES COMMISSION**ADVICE LETTER FILING SUMMARY
ENERGY UTILITY****MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)**Company name/CPUC Utility No. **Pacific Gas and Electric Company (ID U39 E)**

Utility type:

☒ ELC☐ GAS☐ PLC☐ HEAT☐ WATERContact Person: Kingsley ChengPhone #: (415) 973-5265E-mail: k2c0@pge.com and PGETariffs@pge.com

EXPLANATION OF UTILITY TYPE

ELC = Electric

GAS = Gas

PLC = Pipeline

HEAT = Heat

WATER = Water

(Date Filed/ Received Stamp by CPUC)

Advice Letter (AL) #: **5143-E**Tier: **N/A**Subject of AL: **Information-Only Filing Regarding Net Energy Metering (NEM) Costs**Keywords (choose from CPUC listing): ComplianceAL filing type: ☒ Monthly ☐ Quarterly ☐ Annual ☐ One-Time ☐ Other _____If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #: D.16-01-044Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: No

Summarize differences between the AL and the prior withdrawn or rejected AL: _____

Is AL requesting confidential treatment? If so, what information is the utility seeking confidential treatment for: NoConfidential information will be made available to those who have executed a nondisclosure agreement: N/A

Name(s) and contact information of the person(s) who will provide the nondisclosure agreement and access to the confidential information: _____

Resolution Required? ☐ Yes ☒ NoRequested effective date: **September 19, 2017**No. of tariff sheets: N/AEstimated system annual revenue effect (%): N/AEstimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: N/AService affected and changes proposed: N/APending advice letters that revise the same tariff sheets: N/A

This is an information-only advice letter filing. Pursuant to General Order 96-B Section 6.2, PG&E is not seeking relief through this advice letter and is not subject to protest.

California Public Utilities Commission**Energy Division****EDTariffUnit****505 Van Ness Ave., 4th Flr.****San Francisco, CA 94102****E-mail: EDTariffUnit@cpuc.ca.gov****Pacific Gas and Electric Company****Attn: Erik Jacobson****Director, Regulatory Relations****c/o Megan Lawson****77 Beale Street, Mail Code B13U****P.O. Box 770000****San Francisco, CA 94177****E-mail: PGETariffs@pge.com**OFFICIAL COPY
Dec-15-2017

Attachment A
NEM Interconnection Costs

In response to the California Public Utilities Commission (CPUC) order stated in Decision (D) 16-01-044, PG&E has tracked the following interconnection costs (Tables 1-5) related to its Net Energy Metering tariffs for the period August 1, 2016 through August 31, 2017. PG&E's current available NEM tariffs include: Schedules NEM (including NEMA and NEMMT), NEMFC, NEMV, NEMVMASH and NEM 2.

Note: The figures included in this report are based on historic interconnection records. They represent the cost of interconnection between the dates of August 1, 2016 and August 31, 2017 as a result of existing interconnection processes and requirements. As such, any attempts to use these figures to forecast future interconnection costs should account for changes to processes, requirements/ standards, and changes in capacity of interconnected distributed energy resources relative to the local integration capacity of the circuit.

Total NEM Applications	71,010
Total NEM Interconnections	68,449

Table 1 Processing/Administration Costs	
Total	\$5,714,701
Note: Includes Application Processing (e.g., validating single line diagram, interconnection agreement, electrical inspection clearance from governmental agency having jurisdiction, and other required documents), and back office tasks (e.g., initial billing setup).	

Table 2 Distribution Engineering Costs	
Total	\$1,306,596
Note: Includes technical analysis, studies, and screens consistent with Rule 21 (e.g., voltage rise, 15% Penetration, transformer loading)	

Table 3 Metering Installation/Inspection and Commissioning	
Total	\$262,674
Note: Includes residential and non-residential meter changes and remote meter programming, material, supplies, procurement costs, labor for installation, testing, engineering, and quality assurance necessary for interconnection	

Table 4 Facility Upgrade Costs	
Type	Total
Interconnection Facilities	\$4,882,328
Distribution Upgrades	\$11,226,192
Total	\$16,108,520

In response to the CPUC order stated in Decision (D) 16-01-044, PG&E has tracked the following waived fees and costs (Table 5) related to interconnection of NEM-Paired Storage for the period of August 1, 2016 through August 31, 2017.

Table 5 NEM-Paired Storage Waived Fees and Costs		
Category	Number of Projects	Total Cost
Application Fee	72	\$57,600
Supplemental Review Fee	6	\$15,000
Distribution Upgrades	0	\$0
Standby Charges	191	\$210,203
NGOM Metering	175	\$159,359
Notes:		
• Application Fee calculated for NEM-Paired Storage from August 1, 2016 until the December 15, 2016 (PG&E NEM Cap Date). All NEM-Paired Storage applications received, under the NEM 2 Tariff, have been subject to the \$145 Application fee.		
• Standby Charges calculated according to Schedule S for customers interconnected at distribution level. PG&E understands that there can be reactive demand impacts from inverter based customer-storage units without reactive power compensation; however since most of these customers do not have a meter capable of measuring VARs, the reactive demand charges will be tracked as \$0.00.		

In addition to reporting NEM interconnection costs and waived fees, PG&E proposed in Advice Letter 4446-E to track and report the interconnection costs refunded to customers who paid to interconnect qualifying NEM-Paired Storage systems prior to the issuance of Decision (D) 14-05-033.

Table 6 Refunded NEM-Paired Storage Interconnection Costs		
Category	Number of Projects	Total Cost
Refunded IC fees and Metering costs	0	\$0
Notes:		
•All relevant Interconnection costs for NEM-Paired Storage Projects are waived as per the the issuance of Decision (D) 14-05-033		

**PG&E Gas and Electric
Advice Filing List
General Order 96-B, Section IV**

AT&T	Don Pickett & Associates, Inc.	OnGrid Solar
Albion Power Company	Douglass & Liddell	Pacific Gas and Electric Company
Alcantar & Kahl LLP	Downey & Brand	Praxair
Anderson & Poole	Ellison Schneider & Harris LLP	Regulatory & Cogeneration Service, Inc.
Atlas ReFuel	Energy Management Services	SCD Energy Solutions
	Evaluation + Strategy for Social	
	Innovation	
BART		SCE
Barkovich & Yap, Inc.	G. A. Krause & Assoc.	SDG&E and SoCalGas
Braun Blaising McLaughlin & Smith, P.C.	GenOn Energy Inc.	SPURR
Braun Blaising McLaughlin, P.C.		San Francisco Water Power and Sewer
	Goodin, MacBride, Squeri, Schlotz &	
CENERGY POWER	Ritchie	Seattle City Light
CPUC	Green Charge Networks	Sempra Energy (Socal Gas)
CalCom Solar	Green Power Institute	Sempra Utilities
California Cotton Ginners & Growers Assn	Hanna & Morton	SoCalGas
California Energy Commission	ICF	Southern California Edison Company
California Public Utilities Commission	International Power Technology	Southern California Gas Company
	Intestate Gas Services, Inc.	(SoCalGas)
California State Association of Counties		Spark Energy
Calpine	Kelly Group	Sun Light & Power
Casner, Steve	Ken Bohn Consulting	Sunshine Design
Center for Biological Diversity	Leviton Manufacturing Co., Inc.	Tecogen, Inc.
City of Palo Alto	Linde	TerraVerde Renewable Partners
	Los Angeles County Integrated Waste	
City of San Jose	Management Task Force	TerraVerde Renewable Partners, LLC
Clean Power	Los Angeles Dept of Water & Power	Tiger Natural Gas, Inc.
Clean Power Research	MRW & Associates	TransCanada
Coast Economic Consulting	Manatt Phelps Phillips	Troutman Sanders LLP
Commercial Energy	Marin Energy Authority	Utility Cost Management
Cool Earth Solar, Inc.	McKenna Long & Aldridge LLP	Utility Power Solutions
County of Tehama - Department of Public	McKenzie & Associates	Utility Specialists
Works	Modesto Irrigation District	
Crossborder Energy		Verizon
Crown Road Energy, LLC	Morgan Stanley	Water and Energy Consulting
Davis Wright Tremaine LLP	NLine Energy, Inc.	Wellhead Electric Company
Day Carter Murphy	NRG Solar	Western Manufactured Housing
	Nexant, Inc.	Communities Association (WMA)
Defense Energy Support Center	ORA	YEP Energy
Dept of General Services	Office of Ratepayer Advocates	Yelp Energy
Division of Ratepayer Advocates	Office of Ratepayer Advocates, Electricity	
	Planning and Policy B	

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Dec 15 2017



Russell G. Worden
Managing Director, State Regulatory Operations

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Dec 15 2017

September 19, 2017

**ADVICE 3658-E
(U 338-E)**

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA
ENERGY DIVISION

SUBJECT: Information-Only Advice Letter, Southern California Edison
Company's Report on Net Energy Metering Interconnection
Costs

PURPOSE

Pursuant to California Public Utilities Commission (Commission or CPUC) Decision (D.)16-01-044, Southern California Edison Company (SCE) respectfully submits this information-only Advice Letter (AL) to report the costs of interconnection for all Net Energy Metering (NEM) customers for the period covering August 1, 2016 through July 31, 2017.

BACKGROUND AND DISCUSSION

On February 5, 2016, the Commission issued D.16-01-044 to adopt a successor to the NEM tariff and adopt standardized interconnection fees for NEM customers installing systems sized 1 megawatt (MW) and smaller. D.16-01-044 required that each Investor-Owned Utility's (IOU's) fee must be based on the interconnection costs shown in each IOU's June 2015 advice letter, filed in accordance with D.14-05-033 and Resolution E-4610. Due to interconnection costs changing over time, D.16-01-044 required each IOU to continue to report its interconnection costs in accordance with the directions in D.14-05-033 and Resolution E-4610.¹ In compliance with D.16-01-044, SCE hereby submits this update to its NEM interconnection cost report, which is included as Attachment A to this advice filing and includes interconnection costs for the period covering August 1, 2016 through July 31, 2017. Subsequent updates will be filed annually on September 19 of each year.

¹ D.16-01-044 p. 88.

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(U 338-E)

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September 19, 2017

TIER DESIGNATION

Pursuant to General Order (GO) 96-B, Energy Industry Rule 5.1, this advice letter is submitted with a Tier 1 designation.

PROTESTS

In accordance with GO 96-B, Section 6.2, this information-only advice filing is not subject to protest.

NOTICE

In accordance with General Rule 4 of GO 96-B, Ordering Paragraph (OP) 4 of Resolution E-4610, and OP 16 of D.14-05-033, and page 88 of D.16-01-044, SCE is serving copies of this advice filing to the interested parties shown on the attached service lists for GO 96-B, R.12-11-005 and R.14-07-002. Address change requests to the GO 96-B service list should be directed by electronic mail to AdviceTariffManager@sce.com or at 626-302-4039. For changes to all other service lists, please contact the Commission's Process Office at (415) 703-2021 or by electronic mail at Process_Office@cpuc.ca.gov.

Further, in accordance with the Public Utilities Code Section 491, notice to the public is hereby given by filing and keeping the advice filing at SCE's corporate headquarters. To view other SCE advice letters filed with the Commission, log on to SCE's web site at <https://www.sce.com/wps/portal/home/regulatory/advice-letters>.

For questions, please contact Kathy Wong at (626) 302-2327 or by electronic mail at Kathy.Wong@sce.com.

Southern California Edison Company

/s/ Russell G. Worden
Russell G. Worden

RGW:kw:jm
Enclosure

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Dec 15 2017

ATTACHMENT A
SCE ADVICE 3658-E
REPORT OF SOUTHERN CALIFORNIA EDISON COMPANY REGARDING
NET ENERGY METERING INTERCONNECTION COSTS PURSUANT TO
DECISION 16-01-044

I. NEM Interconnection Costs

Tables 1 through 4 below show the costs related to the interconnection of eligible Net Energy Metering (NEM) generating facilities under SCE's NEM tariffs, namely, Schedules NEM, MASH-VNM, NEM-V, and FC-NEM. The amounts shown represent the actual NEM interconnection costs tracked and recorded from August 1, 2016 through July 31, 2017.

Table 1 NEM Processing and Administration Costs	
Category	Total Costs
Application Processing and Administration	\$1,845,630

Note:

- Includes application processing (e.g., validating and approving single line diagram, interconnection agreement, electrical inspection clearance from governmental agency having jurisdiction, and other required documents), and back office tasks (e.g., initial billing setup), inquiry calls and emails, and permit-to-operate (PTO) mailer.
- The total cost is based on processing and administering:
 - 51,660 new applications (i.e. applications from customers or contractors)
 - 17,333 resubmitted applications with corrections and/or additional documents
 - 10,776 Equipment changes
 - 47,230 PTO
- Management and administration time is included in the cost.

Table 2 Distribution Engineering Costs		
Category	Number of projects	Total Costs
In-Office Review	6,237	\$230,995

Note:

- Includes technical analysis, studies, and screens consistent with Rule 21 (e.g., voltage rise, 15 percent penetration, transformer loading.
- Management and administration time are included in the cost.

Table 3 Metering Installation/Inspection and Commissioning Costs		
Category	Number of projects	Total Costs
Meter Change	1,805	\$208,035
Remote Meter Programming	62,419	\$1,260
Inspection and Commissioning	678	\$47,767

Note:

- Includes residential and non-residential meter changes, remote meter programming, material, supplies, procurement costs, labor for installation, testing, engineering, and quality assurance necessary for interconnection.

Table 4 Facility Upgrade Costs		
Category	Number of projects	Total Costs
Interconnection Facilities	5,670	\$2,507,254
Distribution Upgrades	125	\$4,690,416

Note:

- Interconnection facility costs include material and labor charges and are comprised of costs paid by NEM customers and costs not paid by NEM customers.
- Distribution upgrade costs include material and labor charges paid and not paid by NEM 1.0 and NEM 2.0 customers.
- NEM Paired Storage Complex Metering Costs are included. For a detailed breakdown of these costs from January 1 through July 31, 2017 please refer to Table 7.

II. Interconnection Fees Waived

Table 5 below shows the waived fees associated with interconnecting qualifying NEM-paired storage systems. The amounts shown represent the waived fees from August 1, 2016 through July 31, 2017.

Table 5		
Waived Interconnection Fees for Qualifying NEM-Paired Storage System		
Category	Number of projects	Total Costs
Interconnection Application	329	\$263,200
Supplemental Review	0	\$0
Distribution Upgrade	0	\$0
Standby	n/a	n/a
NGOM	6	\$498

Note:

- Current SCE policy is to not charge Standby for NEM-paired storage system.

III. Interconnection Costs Refunded

In Advice 3062-E et al., the IOUs requested to track and report the interconnection costs refunded to customers who paid to interconnect qualifying NEM-paired storage systems prior to the issuance of D.14-05-033. The request was approved and, as such, Table 6 below shows the interconnection costs refunded by SCE to its customers with qualifying NEM-paired storage systems from August 1, 2016 through July 31, 2017.

Table 6		
Refunded Interconnection Costs Qualifying NEM-Paired Storage System		
Category	Number of projects	Total Costs
Interconnection Application	0	\$0
NGOM	0	\$0

IV. NEM Paired Storage Complex Metering Costs

Table 7 below shows the metering costs associated with NEM Paired Storage Complex Meters. The amounts shown represent complex metering costs for systems from January 1, 2017 through July 31, 2017.

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(U 338-E)

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September 19, 2017

Table 7	
NEM Paired Storage Complex Metering Costs	
Invoice Category	Total Costs
Labor	\$14,338
Material	\$9,463
ITCC	\$5,236
Other (Ownership Cost)	\$8,412
Grand Total	\$37,450

Note:

- Total costs are for 12 NEM-PS complex metering projects

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Dec 15 2017

CALIFORNIA PUBLIC UTILITIES COMMISSION

ADVICE LETTER FILING SUMMARY ENERGY UTILITY

MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)	
Company name/CPUC Utility No.: Southern California Edison Company (U 338-E)	
Utility type: <input checked="" type="checkbox"/> ELC <input type="checkbox"/> GAS <input type="checkbox"/> PLC <input type="checkbox"/> HEAT <input type="checkbox"/> WATER	Contact Person: Darrah Morgan Phone #: (626) 302-2086 E-mail: Darrah.Morgan@sce.com E-mail Disposition Notice to: AdviceTariffManager@sce.com
EXPLANATION OF UTILITY TYPE ELC = Electric GAS = Gas PLC = Pipeline HEAT = Heat WATER = Water	(Date Filed/ Received Stamp by CPUC)
Advice Letter (AL) #: <u>3658-E</u> Tier Designation: <u>1</u>	
Subject of AL: <u>Information-Only Advice Letter, Southern California Edison Company's Report on Net Energy Metering Interconnection Costs</u>	
Keywords (choose from CPUC listing): <u>Compliance, Metering</u>	
AL filing type: <input checked="" type="checkbox"/> Monthly <input type="checkbox"/> Quarterly <input type="checkbox"/> Annual <input type="checkbox"/> One-Time <input type="checkbox"/> Other	
If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #: <u>Decision 16-01-044</u>	
Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: _____	
Summarize differences between the AL and the prior withdrawn or rejected AL: _____	
Confidential treatment requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, specification of confidential information: Confidential information will be made available to appropriate parties who execute a nondisclosure agreement. Name and contact information to request nondisclosure agreement/access to confidential information: _____	
Resolution Required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Requested effective date: <u>N/A</u> No. of tariff sheets: <u>-0-</u>	
Estimated system annual revenue effect: (%): _____	
Estimated system average rate effect (%): _____	
When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).	
Tariff schedules affected: <u>None</u>	
Service affected and changes proposed ¹ : _____	
Pending advice letters that revise the same tariff sheets: <u>None</u>	

¹ Discuss in AL if more space is needed.

All correspondence regarding this AL filing shall be sent to:

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Ave.,
San Francisco, CA 94102
E-mail: EDTariffUnit@cpuc.ca.gov

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