#### 4000 PURPOSE AND APPLICABILITY

- This chapter establishes the District of Columbia Small Generator Interconnection Rules ("DCSGIR") which apply to facilities satisfying the following criteria:
  - (a) The total Nameplate Capacity of the Small Generator Facility is equal to or less than twenty (20) megawatts ("MW").
  - (b) The Small Generator Facility is not subject to the interconnection requirements of PJM Interconnection.
  - (c) The Small Generator Facility is designed to operate in parallel with the Electric Distribution System.

AUTHORITY: D.C. Code §§ 2-505; 34-802

## 4001 INTERCONNECTION REQUESTS, FEES, AND FORMS

- Interconnection Customers seeking to interconnect a Small Generator Facility shall submit an Interconnection Request using a standard form approved by the Commission to the Electric Distribution Company ("EDC") that owns the Electric Distribution System ("EDS") to which interconnection is sought. The EDC shall establish processes for accepting Interconnection Requests electronically.
- The Commission shall determine the appropriate interconnection fees, and the fees shall be posted on the EDC's website and listed in the EDC's tariffs. There shall be no application fee for submitting a Level 1 Interconnection Request.
- In circumstances where standard forms and agreements are used as part of the interconnection process defined in these rules, electronic versions of those forms shall be approved by the Commission and posted on the EDC's website. The EDC's Interconnection Request forms shall be provided in a format that allows for electronic entry of data.
- The EDC shall allow an Interconnection Request to be submitted through the EDC's website. The EDC shall allow electronic signatures to be used for the Interconnection Request.
- In accordance with Subsection 4003.2 herein, Interconnection Customers may request an optional Pre-Application Report from the EDC to get information about the condition(s) of the Electric Distribution System at their proposed Point of Common Coupling without submitting a completed Interconnection Request form.
- The EDC shall assign each complete Interconnection Request a queue position based on when it is deemed complete. The EDC shall maintain a single queue, which includes all Interconnection Requests which have been assigned a queue position. The queue information which pertains to Levels 2, 3, and 4 Interconnection Requests shall be available publicly, sortable by feeder, and updated at least monthly. Information to be included in the publicly-available queue is shown in Attachment A.

#### 4002 APPLICABLE STANDARDS

- Unless one or more of the following standards are waived by the EDC, a Small Generator Facility must comply with the following standards, as applicable:
  - (a) Institute of Electrical and Electronics Engineers ("IEEE") 1547 Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces;
  - (b) IEEE 1547.1 Standard Conformance Test Procedures for Equipment Interconnecting Distributed Energy Resources with Electric Power Systems and Associated Interfaces;
  - (c) IEEE 1547.2 Application Guide for IEEE Standard 1547 for Interconnecting Distributed Resources with Electric Power Systems;
  - (d) Underwriters Laboratories ("UL") 6142 Standard for Small Wind Turbine Systems; and
  - (e) UL 1741 Standard for Inverters, Converters and Controllers for Use in Independent Power Systems. UL 1741 compliance must be recognized or certified by a Nationally Recognized Testing Laboratory as designated by the U.S. Occupational Safety and Health Administration. Certification of a particular model or a specific piece of equipment is sufficient. It is also sufficient for an inverter built into a Generating Facility to be recognized as being UL 1741 compliant by a Nationally Recognized Testing Laboratory.

#### 4002.2-4002.4 [RESERVED]

- The Interconnection Equipment shall meet the requirements of the most current approved version of each standard listed in Subsection 4002.1, as amended, and supplemented at the time the Interconnection Request is submitted.
- Nothing herein shall preclude the need for an on-site Witness Test or operational test by the Interconnection Customer.

#### 4002.7 Advanced Inverters

To comply with IEEE 1547-2018:

- (a) After January 1, 2022 (*upon commercial availability*), any Small Generator Facility requiring an inverter that submits an interconnection request shall use an Advanced Inverter with either a default or a site-specific EDC required inverter settings profile, as determined by the EDC.
- (b) Any Small Generator Facility may replace an existing inverter that was purchased prior January 1, 2022, with an inverter of equal or greater capability than the original inverter, for use at the Small Generator Facility.

- (c) The EDC shall establish default EDC required inverter settings profiles for Advanced Inverters pursuant to Subsection 4002.7 (e), and shall publish the default EDC required inverter settings profile on the EDC's website prior to January 1, 2022.
- (d) To the extent reasonable, pursuant to any modifications required by Subsection 4002.7 (e), all EDC required inverter settings profiles shall be consistent with applicable Advanced Inverter recommendations from PJM Interconnection, LLC.
- (e) A default EDC required inverter settings profile shall be established by an EDC to optimize the safe and reliable operation of the Electric Distribution System, and shall serve the following objectives:
  - (1) The primary objective is to incur no involuntary real power inverter curtailments incurred during normal operating conditions and minimal real power curtailments during abnormal operating conditions.
  - (2) The secondary objective is to enhance Electric Distribution System hosting capacity and to optimize the provision of grid support services.
- (f) A site-specific EDC required inverter settings profile may be established by an EDC as necessary to optimally meet objectives established in Subsection 4002.7 (e).
- (g) All default EDC required inverter settings profiles will be documented in the interconnection agreements.
- (h) A list of acceptable Advanced Inverters shall be published on the EDC's website prior to January 1, 2022.

#### 4003 INTERCONNECTION REVIEW LEVELS

- The EDC shall review Interconnection Requests using one (1) or more of the four (4) levels of review procedures established by this chapter. The EDC shall first use the level of agreement specified by the Interconnection Customer in the Interconnection Request form. If a Small Generator Facility fails a screen at any level, the EDC may elect to complete the evaluation at the current level, if safety and reliability are not adversely impacted, or at the next appropriate level. The EDC may not impose additional requirements not specifically authorized unless the EDC and the Interconnection Customer mutually agree to do so in writing.
- 4003.2 If an Interconnection Customer requests a Pre-Application Report from the EDC, the request shall include:
  - (a) Contact information (name, address, phone number and email).
  - (b) A proposed Point of Common Coupling, including latitude and longitude, site map, street address, utility equipment number (*e.g.*, pole number), meter number, account number or some combination of the above sufficient to clearly identify the location of the Point of Common Coupling.
  - (c) Generation technology and fuel source (if applicable).
  - (d) A three hundred dollar (\$300) non-refundable processing fee.
- For each Pre-Application Report requested, which includes the requisite information and fee, the EDC shall furnish a report, within ten (10) business days of receipt of the completed Pre-Application Report request, which:
  - (a) Advises the Interconnection Customer that the existence of "Available Capacity" in no way implies that an interconnection up to this level may be completed without impacts since there are many variables studied as part of the interconnection review procedures.
  - (b) Informs the Interconnection Customer that the Electric Distribution System is dynamic and subject to change.
  - (c) Informs the Interconnection Customer that data provided in the Pre-Application Report may become outdated and not useful at the time of submission of the complete Interconnection Request.
  - (d) Includes the following information, if available:
    - (1) Total Capacity (MW) of substation/area bus or bank and distribution circuit likely to serve proposed Point of Common Coupling.
    - (2) Allocated Capacity (MW) of substation/area bus or bank and distribution circuit likely to serve proposed Point of Common Coupling.
    - (3) Queued Capacity (MW) of substation/area bus or bank and distribution circuit likely to serve proposed Point of Common Coupling.

- (4) Available Capacity (MW) of substation/area bus or bank and distribution circuit likely to serve proposed Point of Common Coupling.
- (5) Whether the proposed Small Generator Facility is located on an area, spot or radial network.
- (6) Substation nominal distribution voltage or transmission nominal voltage if applicable.
- (7) Nominal distribution circuit voltage at the proposed Point of Common Coupling.
- (8) Approximate distribution circuit distance between the proposed Point of Common Coupling and the substation.
- (9) Relevant Line Section(s) peak load estimate, and minimum load data, when available.
- (10) Number of protective devices and number of voltage regulating devices between the proposed Point of Common Coupling and the substation/area.
- (11) Whether or not three-phase power is available at the proposed Point of Common Coupling and/or distance from three-phase service.
- (12) Limiting conductor rating from proposed Point of Common Coupling to the electrical distribution substation.
- (13) Based on proposed Point of Common Coupling, 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.
- (14) The Pre-Application Report need only include pre-existing data. The EDC is not obligated in its preparation of a Pre-Application Report to conduct a study or other analysis of the proposed project if that data is not available. If the EDC cannot complete all or some of a Pre-Application Report due to lack of available data, the EDC will provide the potential Applicant with a Pre-Application Report that includes the information that is available and identify the information that is unavailable. Notwithstanding any of the provisions of this Section, the EDC shall, in good faith, provide Pre-Application Report data that represents the best available information at the time of reporting.
- (e) As an alternative to information required pursuant to § 4003.3 (d), the EDC may elect to perform a power flow-based study providing the Interconnection Customer with the maximum size of Small Generator Facility that can be installed at a specified location without any Distribution System Upgrades and constraints that would preclude the installation of a larger system. EDC shall make available, upon request, a copy of its power flow-based study for each Interconnection Customer to the Commission.

# District of Columbia Municipal Regulations: CHAPTER 40: DISTRICT OF COLUMBIA SMALL GENERATOR INTERCONNECTION RULES

#### 4004 LEVEL 1 INTERCONNECTION REVIEWS

- For Level 1 Interconnection Review, the EDC shall use Level 1 procedures for evaluation of all Interconnection Requests to connect inverter-based Small Generator Facilities.
- For Level 1 Adverse System Impact screens, the EDC shall evaluate the potential for Adverse System Impacts using the following screens, which must be satisfied:
  - (a) The Small Generator Facility has a Nameplate Capacity of twenty (20) kW or less.
  - For interconnection of a proposed Small Generator Facility to a Line Section on a (b) Radial Distribution Circuit, the aggregated generation on the Line Section, including the proposed Small Generator Facility and all other generator facilities capable of coincidental export of energy on the Line Section, shall not exceed the anticipated minimum load on the Line Section, as determined by the results of a power flow-based study performed by the EDC to evaluate the impact of the proposed Small Generator Facility. If such results are unavailable, the aforementioned aggregate generating capacity shall not exceed fifteen percent (15%) of the Line Section's annual peak load as most recently measured at the substation or calculated for the Line Section. Should the EDC have previously identified the aforementioned Line Section as exceeding fifteen percent (15%) of the Line Section's annual peak load, the EDC shall use its best efforts to complete a power-flow based study to evaluate the impact of the proposed Small Generator Facility as described herein. The EDC shall not fail the Small Generator Facility based solely on the application of the fifteen percent (15%) peak load limitation if the EDC has valid power flow-based study results that can be used to evaluate the impact of the proposed Small Generator Facility.
  - (c) When a proposed Small Generator Facility is to be interconnected on a singlephase shared Secondary Line, the aggregate generation capacity on the shared Secondary Line, including the proposed Small Generator Facility, may not exceed twenty (20) kW.
  - (d) When a proposed Small Generator Facility is single-phase and is to be interconnected on a transformer center tap neutral of a two hundred forty (240) volt service, its addition may not create an imbalance between the two (2) sides of the two hundred forty (240) volt service of more than twenty percent (20%) of the nameplate rating of the service transformer.
  - (e) For interconnection of a Small Generator Facility within a Spot Network or Area Network, the aggregate generating capacity including the Small Generator Facility may exceed fifty percent (50%) of the network's anticipated minimum load if the EDC determines that safety and reliability are not adversely impacted. If solar energy small generator facilities are used, only the anticipated daytime minimum load shall be considered. The EDC may select any of the following methods to determine the anticipated minimum load:
    - (1) The network's measured minimum load in the previous year, if available;
    - (2) Five percent (5%) of the network's maximum load in the previous year;

- (3) The Interconnection Customer's good faith estimate, if provided; or
- (4) The EDC's good faith estimate, if provided in writing to the Interconnection Customer, along with the reasons why the EDC considered the other methods to estimate minimum load inadequate.
- (f) No construction of facilities by the EDC on its own system other than metering is required in order to accommodate the Small Generator Facility.
- (g) If the Interconnection Request requires the construction of Interconnection Facilities or Distribution System Upgrades to accommodate the Small Generator Facility, the EDC shall continue its evaluation using Level 2 procedures, commencing at Subsection 4005.4 (d)(1), and the EDC shall notify the Interconnection Customer that it is continuing its evaluation using Level 2 procedures. The EDC may use results from a valid power flow-based study performed to evaluate the impact of the proposed Small Generator Facility, provided such results are not used to fail Subsections 4004.2 (c), (d), or (e) screens. EDC shall make available upon request a copy of its power flow-based study for each applicant to the Commission.
- (h) If a Small Generator Facility fails a Level 1 Adverse System Impact screen, the EDC may elect to complete the evaluation at Level 1, if safety and reliability are not adversely impacted, or at the next appropriate level.
- The Level 1 Interconnection Review shall be conducted in accordance with the following procedures:
  - (a) The EDC shall, within five (5) business days after receipt of Part 1 of the Interconnection Request, notify the Interconnection Customer in writing or by electronic mail of the review results, which shall indicate that the Interconnection Request is complete or incomplete, and what materials, if any, are missing.
  - (b) When an Interconnection Request is complete, the EDC shall assign the Interconnection Request a Queue Position.
  - (c) Within five (5) business days after the EDC acknowledges receipt of a complete Interconnection Request, the EDC shall notify the Interconnection Customer of the Level 1 Adverse System Impact screening results. If the proposed interconnection meets all of the applicable Level 1 Adverse System Impact screens or the EDC determines that the Small Generator Facility can be interconnected safely and reliably to its system, the EDC shall provide the Interconnection Customer with an Approval to Install.
  - (d) The EDC will provide an EDC-executed Interconnection Agreement within three (3) business days of issuing the Approval to Install.
  - (e) Unless extended by mutual agreement of the Interconnection Customer and the EDC, within six (6) months of receiving an Approval to Install or six (6) months from the completion of any upgrades, whichever is later, the Interconnection Customer shall provide the EDC a completed Level 1 PART II Small Generator

Facility Interconnection Certificate of Completion Form, including the signed inspection certificate.

- (f) The EDC may, within ten (10) business days of receiving a completed Level 1 PART II Small Generator Facility Interconnection Certificate of Completion Form and the inspection certificate from the Interconnection Customer, conduct a Witness Test at a time mutually agreeable to the Interconnection Customer and the EDC. If the Witness Test fails to reveal that all equipment has been appropriately installed and that all electrical connections have been made in accordance with applicable codes, the EDC shall offer to redo the Witness Test at the Interconnection Customer's expense at a time mutually agreeable to the Interconnection Customer and the EDC. If the EDC determines that the Small Generator Facility fails the inspection, it must provide a written explanation detailing the reasons and any standards violated. If the EDC does not perform the Witness Test within ten (10) business days or other time as is mutually agreed to by the Interconnection Customer and the EDC, the Witness Test is deemed waived.
- (g) The EDC shall provide the Interconnection Customer with the Authorization to Operate within twenty (20) business days of receiving a completed Level 1 PART II Small Generator Facility Interconnection Certificate of Completion Form, including the signed inspection certificate. An Interconnection Customer may begin interconnected operation of a Small Generator Facility provided that there is an Interconnection Agreement in effect, the EDC has received proof of the electrical code official's approval, the Small Generator Facility has passed any Witness Test by the EDC, and the EDC has issued the Authorization to Operate.
- (h) The EDC may require the submission of photographs of the site, Small Generator Facility components, meters, or any other aspect of the Interconnection Facilities as part of the Level 1 Interconnection Review process, provided that failure to provide a photo in a timely manner will not be a reason for the EDC to deem an Interconnection Request incomplete.

#### 4004.4 [RESERVED]

#### 4004.5 [RESERVED]

- The EDC, at its sole option, may approve the Interconnection Request provided that such approval is consistent with safety and reliability. If the EDC cannot determine that the Small Generator Facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the EDC shall provide the Interconnection Customer with detailed information on the reason(s) for failure in writing. In addition, the EDC shall either:
  - (a) Notify Interconnection Customer that the EDC is continuing to evaluate the Small Generator Facility under Supplemental Review if the EDC concludes that the Supplemental Review might determine that the Small Generator Facility could continue to qualify for interconnection pursuant to Level 2; or
  - (b) Offer to continue evaluating the Interconnection Request under Level 4.

- If, on an annual basis, the EDC fails to issue at least ninety percent (90%) of all Authorizations to Operate and Approvals to Install in the Level 1 interconnection process (as specified within the timeline(s) stipulated in Subsection 4004.3), it shall be required to develop a corrective action plan.
  - (a) The corrective action plan shall describe the cause(s) of the EDC's non-compliance with Subsection 4004.7, describe the corrective measure(s) to be taken to ensure that the standard is met or exceeded in the future, and set a target date for completion of the corrective measure(s). To the extent automation is an element of the corrective measure(s), this should be described in the plan.
  - (b) Progress on current corrective action plans shall be included in the EDC's Small Generator Interconnection Annual Report.
  - (c) The EDC shall report the actual performance of compliance with Subsection 4004.7 during the reporting period in the Small Generator Interconnection Annual Report of the following year.

### 4005 LEVEL 2 INTERCONNECTION REVIEWS

- For a Level 2 Interconnection Review, the EDC shall use the Level 2 procedures for an Interconnection Request.
- For Level 2 Adverse System Impact screens, the EDC shall evaluate the potential for Adverse System Impacts using the following screens, which must be satisfied:
  - (a) The Small Generator Facility Nameplate Capacity rating does not exceed the limits identified in the table below, which vary according to the voltage of the line at the proposed Point of Common Coupling. Small Generator Facilities located within two and a half (2.5) miles of a substation and on a main distribution line with a minimum six hundred (600)-amp capacity are eligible for Level 2 Interconnection Review under higher thresholds.

Line Capacity	Level 2 Eligibility	
	Regardless of location	On ≥ 600 amp line and ≤ 2.5 miles from substation
< 4 kV	< 1 MW	< 2 MW
<u>≤4 KV</u> 4.1 kV − 14 kV	< 2 MW	< 3 MW
$\frac{4.1 \text{ kV} - 14 \text{ kV}}{15 \text{ kV} - 30 \text{ kV}}$	< 3 MW	< 4 MW
31 kV – 60 kV	< 4 MW	< 5 MW

- (b) For interconnection of a proposed Small Generator Facility to a Radial Distribution Circuit, the Small Generator Facility aggregated with all other generation capable of coincidental exporting energy on the Line Section may not exceed the anticipated minimum load on the Line Section, as determined by the results of a power flow-based study performed by the EDC to evaluate the impact of the proposed Small Generator Facility. If such results are unavailable, the aforementioned aggregate generating capacity shall not exceed fifteen percent (15%) of the Line Section annual peak load, as most recently measured at the substation or calculated for the Line Section. Should the EDC have previously identified the aforementioned Line Section as exceeding fifteen percent (15%) of the Line Section's annual peak load, the EDC shall use its best efforts to complete a power-flow based study to evaluate the impact of the proposed Small Generator Facility as described herein. The EDC shall not fail the Small Generator Facility based solely on the application of the fifteen percent (15%) peak load limitation if the EDC has valid power flow-based study results that can be used to evaluate the impact of the proposed Small Generator Facility.
- (c) For interconnection of a proposed Small Generator Facility within a Spot or Area Network, the proposed Small Generator Facility shall utilize an inverter-based equipment package and use a minimum import relay or other protective scheme that will ensure power imported from the EDC to the network will, during normal EDC operations, remain above twenty percent (20%) of the minimum load on the network transformer based on historical data, or will remain above an import point reasonably set by the EDC in good faith. For interconnection of a proposed Small Generator Facility within an Area Network, the proposed Small Generator Facility shall utilize an inverter-based equipment package and adhere to a maximum aggregate export level of eighty percent (80%) of the generation level that would

- cause reverse flow on a network transformer, or will remain below an export point reasonably set by the EDC in good faith. At the EDC's discretion, the requirement for minimum import relays or other protective schemes may be waived.
- (d) The proposed Small Generator Facility, in aggregation with other generation on the distribution circuit, may not contribute more than ten percent (10%) to the distribution circuit's maximum Fault Current at the point on the high voltage (primary) level nearest the Point of Common Coupling.
- (e) The proposed Small Generator Facility, in aggregate with other generation on the distribution circuit, may not cause any distribution protective devices and equipment (including substation breakers, fuse cutouts, and line reclosers), or EDC customer equipment on the Electric Distribution System, to exceed ninety percent (90%) of the short circuit interrupting capability. The Interconnection Request may not receive approval for interconnection on a circuit that already exceeds ninety percent (90%) of the short circuit interrupting capability.
- (f) The proposed Small Generator Facility's Point of Common Coupling may not be on a transmission line.
- (g) The Small Generator Facility complies with the applicable type of interconnection, based on the table below. This screen includes a review of the type of electrical service provided to the Interconnecting Customer, including line configuration and the transformer connection to limit the potential for creating over-voltages on the EDC's Electric Distribution System due to a loss of ground during the operating time of any anti-islanding function. This screen does not apply to Small Generator Facilities with a gross rating of 11 kVA or less.

Primary Distribution Line Configuration	Type of Interconnection to be Made to the Primary Circuit	Results/Criteria
Three-phase, three-wire	Any type	Pass Screen
Three-phase, four-wire	Single-phase, line-to-neutral	Pass Screen
Three-phase, four-wire (For any line that has such a section, or mixed three wire and four wire)	All Others	To pass, aggregate Small Generator Facility Nameplate Capacity must be less than or equal to 10% of Line Section peak load

- (h) When the proposed Small Generator Facility is to be interconnected on single-phase shared Secondary Line, the aggregate generation capacity on the shared Secondary Line, including the proposed Small Generator Facility, shall not exceed sixty-five percent (65%) of the transformer nameplate power rating.
- (i) When a proposed Small Generator Facility is single-phase and is to be interconnected on a transformer center tap neutral of a two hundred forty (240)-volt service, its addition may not create an imbalance between the two sides of the

240-volt service of more than twenty percent (20%) of the nameplate rating of the service transformer.

- (j) A Small Generator Facility, in aggregate with other generation interconnected to the distribution low-voltage side of a substation transformer feeding the electric distribution circuit where the Small Generator Facility proposes to interconnect, may not exceed 20MW in an area where there are known or posted transient stability limitations to generating units located in the general electrical vicinity (e.g., three (3) or four (4) transmission voltage level buses from the Point of Common Coupling), or the proposed Small Generator Facility shall not have interdependencies, known to the EDC, with earlier-queued Interconnection Requests.
- (k) Except as permitted by the modified Level 2 review process in Subsection 4005.6, no construction of facilities by the EDC on its own system other than metering shall be required to accommodate the Small Generator Facility.
- (1) The EDC may use results from a valid power flow-based study performed to evaluate the impact of the proposed Small Generator Facility, provided such results are not used to fail any of the Subsection 4005.2 (c), (d), (e), (f), (g), (h), (i), or (j) screens.
- (m) If a power-flow analysis is performed based on Subsections 4005.2 (b) or (l), the EDC shall make available upon request a copy of its power flow-based study for each applicant to the Commission.

#### 4005.3 [RESERVED]

- The Level 2 Interconnection Review shall be conducted in accordance with the following procedures:
  - (a) The EDC shall, within five (5) business days after receipt of Part 1 of the Interconnection Request, acknowledge, in writing or by electronic mail, receipt of the Interconnection Request, indicating whether it is complete or incomplete, and the appropriate application fee.
  - (b) When the Interconnection Request is deemed incomplete, the EDC shall provide a written list detailing all information that must be provided to complete the request. The Interconnection Customer shall have ten (10) business days after receipt of the list to revise the Interconnection Request to include the requested information and resubmit the Interconnection Request or request an extension of time to provide such information. If the Interconnection Request is not resubmitted with the requested information within ten (10) business days, the Interconnection Request shall be deemed withdrawn. The EDC shall notify the Interconnection Customer within three (3) business days of receipt of a revised Interconnection Request whether the request is complete or incomplete. The EDC may deem the request withdrawn if it remains incomplete.
  - (c) When an Interconnection Request is complete, the EDC shall assign a Queue Position.

- (d) Unless Subsection 4005.6 applies, within fifteen (15) business days after the EDC notifies the Interconnection Customer that it has received a completed Interconnection Request, the EDC shall evaluate the Interconnection Request using the Level 2 screening criteria and notify the Interconnection Customer whether the Small Generator Facility meets all of the applicable Level 2 Adverse System Impact screens. If the proposed interconnection meets all of the applicable Level 2 Adverse System Impact screens and the EDC determines that the Small Generator Facility can be interconnected safely and reliably to the Electric Distribution System, the EDC shall provide the Interconnection Customer an Approval to Install. The EDC shall provide an EDC-executed Interconnection Agreement within three (3) business days after notification of Level 2 issuance of the Approval to Install.
  - a. If the EDC requires the construction of Distribution System Upgrades during the Interconnection Request process, the EDC shall provide a technical explanation that reviews the need for the identified facilities and/or upgrades. The EDC shall demonstrate that required functionalities are not satisfied by employing IEEE STD 1547 certified and UL 1741 SA listed equipment.

If requested by the Interconnection Customer, and agreed to by the Interconnection Customer and the EDC, a Modified Level 1 or Level 2 Scoping Meeting shall be held within ten (10) business days, or other mutually agreed to time, after the EDC has notified the Interconnection Customer that Interconnection Facilities and/or a Distribution System Upgrade are being required by the EDC. The Modified Level 1 or Level 2 Scoping Meeting shall take place in person, by telephone, or electronically by a means mutually agreeable to the Interconnection Customer and the EDC. The purpose of this meeting shall be to review the Interconnection Request, existing studies relevant to the Interconnection Request, the conditions at the proposed location, the results of the Level 1 or Level 2 Adverse System Impact screening criteria, and provide a technical explanation in which the EDC reviews the need for the aforementioned facilities and/or system upgrade.

- (e) Unless extended by mutual agreement of the Interconnection Customer and the EDC, within twenty-four (24) months of receiving an Approval to Install or six (6) months of completion of any Distribution System Upgrades, whichever is later, the Interconnection Customer shall provide the EDC with the signed Level 2-4 Part II Small Generator Interconnection Certificate of Completion, including the signed inspection certificate. An Interconnection Customer shall communicate with the EDC no less frequently than every six (6) months regarding the status of a proposed Small Generator Facility to which an Interconnection Agreement refers.
- (f) The EDC may conduct a Witness Test within ten (10) business days of receiving the completed Level 2-4 Part II Small Generator Facility Interconnection Certificate of Completion and the signed inspection certificate from the Interconnection Customer, conduct a Witness Test at a time mutually agreeable to the Interconnection Customer and the EDC. If the Witness Test fails to reveal that all equipment has been appropriately installed and that all electrical connections have been made in accordance with applicable codes, the EDC shall offer to redo

the Witness Test at the Interconnection Customer's expense at a time mutually agreeable to the Interconnection Customer and the EDC. If the EDC determines that the Small Generator Facility fails the inspection it must provide a written explanation detailing the reasons and any standards violated. If the EDC does not perform the Witness Test within ten (10) business days or other such time as is mutually agreed to by the Interconnection Customer and the EDC, the Witness Test is deemed waived.

- (g) An Interconnection Customer may begin interconnected operation of a Small Generator Facility provided that there is an Interconnection Agreement in effect, the EDC has received proof of the electrical code official's approval, the Small Generator Facility has passed any Witness Test by the EDC, and the EDC has issued the Authorization to Operate. Evidence of approval by an electric code official includes a signed inspection certificate.
- (h) The EDC may require the submission of photographs of the site, Small Generator Facility components, meters, or any other aspect of the Interconnection Facilities as part of the Level 2 Interconnection Review process, provided that failure to provide a photo in a timely manner will not be a reason for the EDC to deem an Interconnection Request incomplete.

#### 4005.5 [RESERVED]

#### 4005.6 Modifications to Level 2 Interconnection Review Process:

- (a) If the Interconnection Request requires only the addition of Interconnection Facilities to the Electric Distribution System, a non-binding good faith cost estimate and construction schedule for such upgrades, along with an Approval to Install, shall be provided within fifteen (15) business days after notification of the Level 2 Interconnection Review results.
- (b) If the Interconnection Request requires more than the addition of Interconnection Facilities to the Electric Distribution System, the EDC may elect to either provide a non-binding good faith cost estimate and construction schedule for such upgrades within thirty (30) business days after notification of the Level 2 Interconnection Review results, or the EDC may notify the Interconnection Customer that the EDC will need to complete a Facilities Study under Subsection 4007.2, paragraphs (d)(3), to determine the necessary Distribution System Upgrades and complete the construction.
- (c) The EDC shall design, procure, construct, install, and own any Distribution System Upgrades for a CREF. The Distribution System Upgrades costs shall be allocated as follows, subject to availability of funding.
  - (1) The total Distribution System Upgrade costs for shared allocation as described in Subsection 4005.6 (c) (2) shall be capped at \$500,000 per calendar year or as otherwise determined by the Commission.
  - (2) If funding is available, Distribution System Upgrade cost responsibility shall be assigned as follows:

- (A) For Distribution System Upgrade costs of \$50,000 or less, fifty percent (50%) of the costs shall be paid for by the CREF Interconnection Customer and fifty percent (50%) of the costs paid for by the EDC.
- (B) For Distribution System Upgrade costs of over \$50,000, the portion paid by the EDC shall be capped at \$25,000. The CREF Interconnection Customer shall pay the balance of the Distribution System Upgrade costs after the EDC portion has been subtracted.
- When a Small Generator Facility is not approved under a Level 2 review, the EDC, at its sole option, may approve the Interconnection Request, provided such approval is consistent with safety and reliability, and shall provide the Interconnection Customer an Approval to Install after the determination. If the EDC cannot determine that the Small Generator Facility may be interconnected consistent with safety, reliability, and power quality standards, the EDC shall provide the Interconnection Customer with detailed information on the reason(s) for failure in writing. In addition, the EDC shall either:
  - (a) Notify Interconnection Customer that the EDC is continuing to evaluate the Interconnection Request under Supplemental Review if the EDC concludes that the Supplemental Review might determine that the Small Generator Facility could qualify for interconnection pursuant to Level 2; or
  - (b) Offer to continue evaluating the Interconnection Request under Level 4.
- 4005.8 On an annual basis, if the EDC fails to issue at least ninety percent (90%) of all Approvals to Install in the Level 2 interconnection process (as specified within the timeline(s) specified in Subsections 4005.4 and 4005.6), and it shall be required to develop a corrective action plan.
  - (a) The corrective action plan shall describe the cause(s) of the EDC's non-compliance with Subsection 4005.8, describe the corrective measure(s) to be taken to ensure that the standard is met or exceeded in the future, and set a target date for completion of the corrective measure(s). To the extent automation is an element of the corrective measure(s), this should be described in the plan.
  - (b) Progress on current corrective action plans shall be included in the EDC's Small Generator Interconnection Annual Report.
  - (c) The EDC shall report the actual performance of compliance with Subsection 4005.8 during the reporting period in the Small Generator Interconnection Annual Report of the following year, including milestones for the number of Interconnection Requests in total, number and percentage meeting timeline requirements for Approval to Install and estimated cost letter.

#### 4006 LEVEL 3 INTERCONNECTION REVIEWS

The EDC shall use Level 2 Interconnection Review procedures for evaluating Level 3 Interconnection Requests provided the proposed Small Generator Facility has a Nameplate Capacity rating not greater than 20MW and uses reverse power relays, minimum import relays, or other protective devices to assure that power may never be exported from the Small Generator Facility to the EDC's electrical distribution system. An Interconnection Customer proposing to interconnect a Small Generator Facility to a spot or Area Network is not permitted under the Level 3 review process.

#### 4007 LEVEL 4 INTERCONNECTION REVIEWS

- The EDC shall use the Level 4 Interconnection Review procedures for evaluating Interconnection Requests when:
  - (a) The Interconnection Request was not approved under a Level 1, Level 2, or Level 3 Interconnection Review and the Interconnection Customer has submitted a new Interconnection Request for consideration under a Level 4 Interconnection Review or requested that the rejected Interconnection Request be treated as a Level 4 Interconnection Request; and
  - (b) The Interconnection Request does not meet the criteria for qualifying for a review under Level 1, Level 2, or Level 3 Interconnection Review procedures.
- The Level 4 Interconnection Review shall be conducted in accordance with the following process:
  - (a) Within five (5) business days from receipt of Part I of an Interconnection Request or transfer of an existing request to a Level 4 Interconnection Request, the EDC shall notify the Interconnection Customer whether the request is complete.
    - (1) If the EDC requires the construction of Distribution System Upgrades during the Interconnection Request process, the EDC shall provide a technical explanation that justifies the need for the identified facilities and/or upgrades. The EDC shall demonstrate that required functionalities are not satisfied by employing IEEE STD 1547 certified and UL 1741 SA listed equipment.
  - (b) When the Interconnection Request is deemed incomplete, the EDC shall provide the Interconnection Customer with a written list detailing information required to complete the Interconnection Request. The Interconnection Customer shall have twenty (20) business days to revise the Interconnection Request to include the requested information and resubmit the Interconnection Request, or the Interconnection Request shall be considered withdrawn. The Interconnection Customer and the EDC may agree to extend the time for receipt of the revised Interconnection Request. The EDC shall notify the Interconnection Customer within five (5) business days of receipt of the revised Interconnection Request whether the Interconnection Request is complete. The EDC may deem the Interconnection Request withdrawn if it remains incomplete.
  - (c) When an Interconnection Request is complete, the EDC shall assign a Queue Position.
  - (d) The following procedures shall be followed in performing a Level 4 Interconnection Review:
    - (1) By mutual agreement of the Interconnection Customer and the EDC, the Scoping Meeting, interconnection feasibility study, interconnection impact study, or Facilities Study provided for in a Level 4 Interconnection Review and discussed in this paragraph may be waived;

- (2) If agreed to by the Interconnection Customer and the EDC, a Scoping Meeting shall be held within ten (10) business days, or other mutually agreed to time, after the EDC has notified the Interconnection Customer that the Interconnection Request is deemed complete, or the Interconnection Customer has requested that its Interconnection Request proceed after failing the requirements of a Level 2 Interconnection Review or Level 3 Interconnection Review. The Scoping Meeting shall take place in person, by telephone, or electronically by a means mutually agreeable to the Interconnection Customer and EDC. The purpose of the Scoping Meeting shall be to review the Interconnection Request; existing studies relevant to the Interconnection Request; the conditions at the proposed location including the available Fault Current at the proposed location, the existing peak loading on the lines in the general vicinity of the proposed Small Generator Facility, and the configuration of the distribution line at the proposed Point of Common Coupling; and the results of the Level 1, Level 2 or Level 3 Adverse System Impact screening criteria;
- (3) When the Interconnection Customer and EDC agree at a Scoping Meeting that an interconnection feasibility study shall be performed, and if the Interconnection Customer and EDC do not waive the interconnection impact study, the EDC shall provide to the Interconnection Customer, no later than five (5) business days after the Scoping Meeting, an Interconnection System Feasibility Study Agreement, including an outline of the scope of the study and a nonbinding good faith estimate of the cost and time to perform the study;
- (4) When the Interconnection Customer and EDC agree at a Scoping Meeting that an interconnection feasibility study is not required, and if the Interconnection Customer and EDC agree that an interconnection system impact study shall be performed, the EDC shall provide to the Interconnection Customer, no later than five (5) business days after the Scoping Meeting, an Interconnection System Impact Study Agreement, including an outline of the scope of the study and a nonbinding good faith estimate of the cost to perform the study; and
- (5) When the Interconnection Customer and EDC agree at the Scoping Meeting that an interconnection feasibility study and interconnection system impact study are not required, the EDC shall provide to the Interconnection Customer, no later than five (5) business days after the Scoping Meeting, an Interconnection Facilities Study Agreement including an outline of the scope of the study and a nonbinding good faith estimate of the cost to perform the study.
- (6) The EDC may elect to perform one or more of these studies concurrently.
- (e) Any required Adverse System Impact studies shall be carried out using the following guidelines:
  - (1) An interconnection feasibility study shall include the following analyses and conditions for the purpose of identifying and addressing potential

Adverse System Impact to the EDC's Electric Distribution System that would result from the interconnection:

- (A) Initial identification of any circuit breaker short circuit capability limits exceeded as a result of the interconnection;
- (B) Initial identification of any thermal overload or voltage limit violations resulting from the interconnection;
- (C) Initial review of grounding requirements and system protection;
- (D) Description and nonbinding estimated cost of facilities required to interconnect the Small Generator Facility to the EDC's Electric Distribution System in a safe and reliable manner; and
- (E) Additional evaluations, at the expense of the Interconnection Customer, when an Interconnection Customer requests that the interconnection feasibility study evaluate multiple potential Points of Common Coupling.
- (2) An interconnection system impact study shall evaluate the impacts of the proposed interconnection on both the safety and reliability of the EDC's Electric Distribution System. The study shall identify and detail the Adverse System Impacts that result when a Small Generator Facility is interconnected without project modifications or Distribution System Upgrades, focusing on the Adverse System Impacts identified in the interconnection feasibility study or potential impacts including those identified in the Scoping Meeting. The interconnection system impact study shall consider all Small Generator Facilities that, on the date the interconnection system impact study is commenced, are directly interconnected with the EDC's Electric Distribution System, have a pending higher Queue Position to interconnect to the system, or have a signed Interconnection Agreement.
  - (A) A distribution interconnection system impact study shall be performed when a potential Electric Distribution System Adverse System Impact is identified in the interconnection feasibility study. The EDC shall send the Interconnection Customer an Interconnection System Impact Study Agreement within five (5) business days of transmittal of the interconnection feasibility study report. The agreement shall include an outline of the scope of the study and a good faith estimate of the cost to perform the study. The impact study shall include:
    - (i) A load flow study;
    - (ii) Identification of Affected Systems;
    - (iii) An analysis of equipment interrupting ratings;
    - (iv) A protection coordination study;

- (v) Voltage drop and flicker studies;
- (vi) Protection and set point coordination studies;
- (vii) Grounding reviews; and
- (viii) Impact on system operation.
- (B) An interconnection system impact study shall consider the following criteria:
  - (i) A short circuit analysis;
  - (ii) A stability analysis;
  - (iii) Alternatives for mitigating Adverse System Impacts on Affected Systems;
  - (iv) Voltage drop and flicker studies;
  - (v) Protection and set point coordination studies; and
  - (vi) Grounding reviews.
- (C) The final interconnection system impact study shall provide the following:
  - (i) The underlying assumptions of the study;
  - (ii) The results of the analyses;
  - (iii) A list of any potential impediments to providing the requested interconnection service;
  - (iv) Required Distribution System Upgrades; and
  - (v) A nonbinding good faith estimate of cost and time to construct any required Distribution System Upgrades.
- (D) The Interconnection Customer and EDC shall use an Interconnection System Impact Study Agreement approved by the Commission.
- (3) The Facilities Study shall be conducted as follows:
  - (A) Within five (5) business days of completion of the interconnection system impact study, the EDC shall transmit a report to the Interconnection Customer with an Interconnection Facilities Study Agreement, which includes an outline of the scope of the study and a nonbinding good faith estimate of the cost and time to perform the study;

- (B) The Facilities Study shall estimate the cost of the equipment, engineering, procurement and construction work including overheads needed to implement the conclusions of the interconnection feasibility study and the interconnection system impact study to interconnect the Small Generator Facility. The Facilities Study shall identify:
  - (i) The electrical switching configuration of the equipment, including transformer, switchgear, meters and other station equipment;
  - (ii) The nature and estimated cost of the EDC's Interconnection Facilities and Distribution System Upgrades necessary to accomplish the interconnection; and
  - (iii) An estimate of the time required to complete the construction and installation of the facilities.
- (C) The Interconnection Customer and EDC may agree to permit an Interconnection Customer to separately arrange for a third party to design and construct the required Interconnection Facilities. The EDC may review the design of the facilities under the Interconnection Facilities Study Agreement. When the Interconnection Customer and EDC agree to separately arrange for design and construction and to comply with security and confidentiality requirements, the EDC shall make all relevant information and required specifications available to the Interconnection Customer to permit the Interconnection Customer to obtain an independent design and cost estimate for the facilities, which shall be built in accordance with the specifications;
- (D) Upon completion of the Facilities Study and with the agreement of the Interconnection Customer to pay for the Interconnection Facilities and Distribution System Upgrades identified in the Facilities Study, the EDC shall issue the Approval to Install; and
- (E) The Interconnection Customer and EDC shall use an Interconnection Facilities Study Agreement approved by the Commission.
- (f) Upon completion or waiver of procedures defined in Subsection 4007.2 (c) as mutually agreed by the Interconnection Customer and EDC and the EDC determines that the Small Generator Facility can be interconnected safely and reliably to the Electric Distribution System, the EDC shall provide the Interconnection Customer with an Approval to Install. If the Interconnection Request is denied, the EDC shall provide a written explanation.
- (g) When Distribution System Upgrades are required, the interconnection of the Small Generator Facility shall proceed according to milestones agreed to by the

Interconnection Customer and EDC in the Interconnection Agreement. The Authorization to Operate may not be issued until:

- (1) The milestones agreed to in the Interconnection Agreement are satisfied;
- (2) The Small Generator Facility is approved by electric code officials with jurisdiction over the interconnection;
- (3) The Interconnection Customer provides a Certificate of Completion to the EDC. Completion of local inspections may be designated on inspection forms used by local inspecting authorities; and
- (4) There is a successful completion of the Witness Test per the terms and conditions found in the Standard Agreement for Interconnection of Small Generator Facilities, unless waived.
- (h) The EDC may require the submission photographs of the site, Small Generator Facility components, meters or any other aspect of the Interconnection Facilities as part of the Level 4 Interconnection Review process, provided that failure to provide a photo in a timely manner will not be a reason for the EDC to deem an Interconnection Request incomplete.
- An interconnection system impact study is not required when the interconnection feasibility study concludes there is no Adverse System Impact, or when the study identifies an Adverse System Impact, but the EDC is able to identify a remedy without the need for an interconnection system impact study.
- The Interconnection Customer and EDC shall use a form of Interconnection Feasibility Study Agreement approved by the Commission.

## 4008 TECHNICAL REQUIREMENTS

- 4008.1 Unless one or more of the listed standards are waived by the EDC, a Small Generator Facility must comply with the technical standards listed in Subsection 4002.1, as applicable.<sup>1</sup>
- When an Interconnection Request is for a Small Generator Facility that includes multiple energy production devices at a site for which the Interconnection Customer seeks a single Point of Common Coupling, the Interconnection Request shall be evaluated on the basis of the aggregate Nameplate Capacity of multiple devices.
- When an Interconnection Request is for an increase in capacity for an existing Small Generator Facility, the Interconnection Request shall be evaluated on the basis of the new total Nameplate Capacity of the Small Generator Facility.
- The EDC shall maintain records of the following for a minimum of three (3) years:
  - (a) The total number and the Nameplate Capacity of the Interconnection Requests received, approved, and denied under Level 1, Level 2, Level 3, and Level 4 reviews;
  - (b) The number of Interconnection Requests that were not processed within the timelines established in this rule;
  - (c) The number of Scoping Meetings held and the number of feasibility studies, impact studies, and Facility Studies performed, and the fees charged for these studies;
  - (d) The justifications for the actions taken to deny Interconnection Requests; and
  - (e) Any special operating requirements required in Interconnection Agreements that are not part of the EDC's written and published operating procedures applicable to Small Generator Facilities.
- The EDC shall provide a report to the Commission containing the information required in Subsection 4008.4, paragraphs (a)-(e) within ninety (90) calendar days of the close of each year.
  - (a) The EDC shall include the estimated total amount of renewable energy credits to be obtained from solar energy systems meeting the requirements of D.C. Official Code § 34-1432 (e)(1) for which interconnection requests have been submitted in the previous six (6) months in its Quarterly Interconnection Report filed in accordance with Commission Order No. 18575.

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The PJM Manual, PJM Manual 14G, "Generation Interconnection Requests" Attachment C, which is available at: https://www.pjm.com/-/media/documents/manuals/m14g.ashx, shall be used as a guide (but not a requirement) to detail and illustrate the interconnection protection requirements that are provided in IEEE Standard 1547.

- (b) The EDC shall provide a public and confidential list of final interconnection approvals for renewable generators (name, address, capacity (DC and AC), and system type) on the 15<sup>th</sup> of each month, for the previous month's interconnections.
- The EDC shall designate a contact person and provide the designee's contact information on its website. The EDC shall also provide the Commission's website for submission of all Interconnection Requests and from whom information on the Interconnection Request process and the EDC's Electric Distribution System can be obtained regarding a proposed project. The information shall include studies and other materials useful to understand the feasibility of interconnecting a Small Generator Facility at a particular point on the EDC's Electric Distribution System, except to the extent that providing the materials would violate security requirements or confidentiality agreements, or would otherwise be contrary to District or federal law/regulations. In appropriate circumstances, the EDC may require a confidentiality agreement prior to release of information.
- When an Interconnection Request is deemed complete, a modification other than a minor equipment modification that is not agreed to in writing by the EDC, shall require submission of a new Interconnection Request.
- When an Interconnection Customer is not currently a customer of the EDC at the proposed site, the Interconnection Customer, upon request from the EDC, shall provide proof of site control evidenced by a property tax bill, deed, lease agreement, or other legally binding contract.
- 4008.9 To minimize the cost of interconnecting multiple Small Generator Facilities, the EDC or the Interconnection Customer may propose a single Point of Common Coupling for multiple Small Generator Facilities located at a single site. If the Interconnection Customer rejects the EDC's proposal for a single Point of Common Coupling, the Interconnection Customer shall pay the additional cost, if any, of providing a separate Point of Common Coupling for each Small Generator Facility. If the EDC rejects the customer's proposal for a single Point of Common Coupling without providing a written technical explanation, the EDC shall pay the additional cost, if any, of providing a separate Point of Common Coupling for each Small Generator Facility.
- Small Generator Facilities shall be capable of being isolated from the EDC. For all Small Generator Facilities interconnecting to a Primary Line, the isolation shall be by means of a lockable, visible-break isolation device accessible by the EDC. For all Small Generator Facilities interconnecting to a Secondary Line, the isolation shall be by means of a lockable isolation device whose status is clearly indicated and is accessible by the EDC. The isolation device shall be installed, owned and maintained by the owner of the Small Generator Facility and located between the Small Generator Facility and the Point of Common Coupling. A Draw-out Type Circuit Breaker with a provision for padlocking at the draw-out position can be considered an isolation device for purposes of this requirement.
- The Interconnection Customer may elect to provide the EDC access to an isolation device that is contained in a building or area that may be unoccupied and locked or not otherwise readily accessible to the EDC, by installing a lockbox provided by the EDC that shall provide ready access to the isolation device. The Interconnection Customer shall install the lockbox in a location that is readily accessible by the EDC, and the Interconnection Customer shall permit the EDC to affix a placard in a location of its choosing that provides

clear instructions to the EDC's operating personnel on access to the isolation device. In the event that the Interconnection Customer fails to comply with the terms of this subsection and the EDC needs to gain access to the isolation device, the EDC shall not be held liable for any damages resulting from any necessary EDC action to isolate the Interconnection Customer.

- Any metering necessitated by a Small Generator Facility interconnection shall be installed, operated, and maintained in accordance with applicable tariffs. Any such metering requirements shall be clearly identified as part of the Interconnection Agreement executed by the Interconnection Customer and the EDC. The EDC is not responsible for installing, operating, or maintaining customer-owned meters.
- 4008.13 [RESERVED]
- 4008.14 [RESERVED]
- The Interconnection Customer shall design its Small Generator Facility to maintain a composite power delivery at continuous rated power output at the Point of Common Coupling at a power factor within the power factor range required by the EDC's applicable tariff for a comparable load customer. The EDC may also require the Interconnection Customer to follow a voltage or VAR schedule if such schedules are applicable to similarly situated generators in the control area on a comparable basis and have been approved by the Commission. The specific requirements for meeting a voltage or VAR schedule shall be clearly specified in Attachment 3 of the "District of Columbia Small Generator Interconnection Rule Level 2-4 Standard Agreement for Interconnection of Small Generator Facilities". Under no circumstance shall these additional requirements for reactive power or voltage support exceed the normal operating capabilities of the Small Generator Facility.
- 4008.16 For retail interconnection non-exporting Energy Storage devices, the load aspects of the storage devices will be treated the same as other load from customers, based on incremental net load.
- Interconnection of Energy Storage facilities should comply with IEEE Standard 1547 technical & test specifications and requirements.
- The Energy Storage overcurrent protection (charge/discharge) ratings from inverter nameplate shall not exceed EDC capabilities.
- In front of the meter Energy Storage exporting systems will be subject to Level 4 review requirements.
- When a Microgrid reconnects to the EDC, the Microgrid must be synchronized to the grid, matching: (1) voltage, (2) frequency, and (3) phase angle. This should require an asynchronous interconnection.
- At all interconnection levels, the power conversion system performing energy conversion/control at the Point of Common Coupling must be equipped to communicate system characteristics over secured EDC protocol.

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Inverters shall meet the safety requirements of UL 1741 and 12 months after the publication of UL 1741 SA (Supplement A) utility-interactive inverters shall meet the specifications of UL 1741 SA.

## 4009 **DISPUTES** 4009.1 A party shall attempt to resolve all disputes regarding interconnection as provided in the DCSGIR promptly, equitably, and in a good faith manner. 4009.2 When a dispute arises, a party may seek immediate resolution through complaint procedures available through the Commission by providing written notice to the Commission and the other party stating the issues in dispute. 4009.3 When disputes relate to the technical application of the DCSGIR, the Commission may designate a technical consultant to resolve the dispute. Upon Commission designation, the Interconnection Customer and EDC shall use the technical consultant to resolve disputes related to interconnection. Estimated costs for a dispute resolution conducted by the technical consultant shall be established by the technical consultant and subject to review by the Commission. 4009.4 Pursuit of dispute resolution shall not affect an Interconnection Customer with regard to consideration of an Interconnection Request or an Interconnection Customer's Queue Position.

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### 4010 WAIVER

The Commission may upon request, or on its own initiative after notice to the parties of its intention do so, waive any provision of this chapter for good cause.

#### 4011 SUPPLEMENTAL REVIEW

Within twenty (20) business days of determining that Supplemental Review is appropriate, the EDC shall perform Supplemental Review using the screens set forth below, notify the Interconnection Customer of the results, and include with the notification a written report of the analyses and data underlying the EDC's determinations under the screens.

- (a) Where twelve (12) months of Line Section minimum load data is available, can be calculated, can be estimated from existing data, or can be determined from a power flow model, the aggregate Small Generator Facility Nameplate Capacity on the Line Section is less than one hundred percent (100%) of the minimum load for all Line Sections bounded by automatic sectionalizing devices upstream of the proposed Small Generator Facility. If the minimum load data is not available, or cannot be calculated or estimated, the aggregate Small Generator Facility Nameplate Capacity on the Line Section is less than thirty percent (30%) of the peak load for all Line Sections bounded by automatic sectionalizing devices upstream of the proposed Small Generator Facility.
  - (1) The type of generation used by the proposed Small Generator Facility will be taken into account when calculating, estimating, or determining circuit or Line Section minimum load relevant for the application of this screen. Solar photovoltaic (PV) generation systems with no battery storage use daytime minimum load (*e.g.*, 8 a.m. to 6 p.m.), while all other generation uses absolute minimum load.
  - (2) When this screen is being applied to a Small Generator Facility that serves some onsite electrical load, all generation will be considered as part of the aggregate generation. If a Small Generator Facility uses Energy Storage without energy production equipment, and incorporates controls which limit Energy Storage discharge schedule to periods that are fixed and known to the EDC, the EDC shall consider the Energy Storage discharge schedule when calculating, estimating, or determining circuit or Line Section minimum load relevant for the application of this screen
- (b) 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 IEEE Standard 1453 or Good Utility Practice similar to IEEE Standard 1453; and
  - (3) The harmonic levels meet IEEE 519 limits at the Point of Common Coupling.
- (c) The locations of the proposed Small Generator Facility and the aggregate Small Generator Facility Nameplate Capacity on the Line Section do not create impacts to safety or reliability that cannot be adequately addressed without application of Level 4 Interconnection Review procedures. The EDC may consider the following

factors and others in determining potential impacts to safety and reliability in applying this screen.

- (1) Whether the Line Section has significant minimum loading levels dominated by a small number of customers (*i.e.*, several large commercial customers);
- (2) If there is an even or uneven distribution of loading along the feeder;
- (3) If the proposed Small Generator Facility is located in close proximity to the substation (*i.e.*, < 2.5 electrical line miles), and if the distribution line from the substation to the Small Generator Facility is composed of large conductor/feeder section (*i.e.*, 600A class cable);
- (4) If the proposed Small Generator Facility incorporates a time delay function to prevent reconnection of the generator to the Electric Distribution System until system voltage and frequency are within normal limits for a prescribed time;
- (5) If operational flexibility is reduced by the proposed Small Generator Facility, such that transfer of the Line Section(s) of the Small Generator Facility to a neighboring distribution circuit/substation may trigger overloads or voltage issues; and/or
- (6) If the proposed Small Generator Facility utilizes certified anti-islanding functions and equipment.
- (d) Modifications to the Electric Distribution System required by interconnections based on the Supplemental Review shall be treated in the following manner:
  - (1) If the Interconnection Request requires only Interconnection Facilities to the Electric Distribution System, a non-binding good faith cost estimate and construction schedule for the Interconnection Facilities to the Electric Distribution System, along with an Approval to Install, shall be provided within fifteen (15) business days after notification of the Supplemental Review results; or
  - (2) If the Interconnection Request requires more than the addition of Interconnection Facilities, the EDC may elect to provide a non-binding good faith cost estimate and construction schedule for such Distribution System Upgrades within thirty (30) business days after notification of the Supplemental Review results, or the EDC may notify the Interconnection Customer that the EDC will need to complete a Facilities Study under Level 4 Interconnection Review to determine the cost estimate and construction schedule for necessary Distribution System Upgrades.
- (e) If the proposed interconnection meets all of the applicable Adverse System Impact screens and the EDC determines that the Small Generator Facility can be interconnected safely and reliably to the Electric Distribution System, the EDC shall provide the Interconnection Customer an Approval to Install.

- (f) An Interconnection Customer that receives an Approval to Install shall provide the Small Generator Interconnection Part II Certificate of Completion and signed inspection certificate in the following timeframes:
  - (1) For Level 1 Interconnection Requests: Unless extended by mutual agreement of the Interconnection Customer and EDC, within six (6) months of receipt of the Approval to Install or six (6) months from the completion of any Distribution System Upgrades, whichever is later, the Interconnection Customer shall provide to the EDC the Level 1 Small Generator Interconnection Part II Certificate of Completion, including the signed inspection certificate.
  - (2) For Level 2 and 3 Interconnection Requests: Unless extended by mutual agreement of the Interconnection Customer and EDC, within twenty-four (24) months from an Interconnection Customer's receipt of the Approval to Install or six (6) months of completion of any Distribution System Upgrades, whichever is later, the Interconnection Customer shall provide to the EDC the Level 2-4 Small Generator Interconnection Part II Certificate of Completion, including the signed certificate of inspection. An interconnection customer shall communicate with the EDC no less frequently than every six (6) months regarding the status of a proposed small generator facility to which an Interconnection Agreement refers.
- (g) The EDC may conduct a Witness Test within ten (10) business days' of issuing the Authorization to Operate at a time mutually agreeable to the Interconnection Customer and EDC. If a Small Generator Facility initially fails the test, the EDC shall offer to redo the Witness Test at the Interconnection Customer's expense at a time mutually agreeable to the Interconnection Customer and EDC. If the EDC determines that the Small Generator Facility fails the Witness Test it must provide a written explanation detailing the reasons and any standards violated.
- (h) Upon EDC's issuance of the Authorization to Operate, an Interconnection Customer may begin interconnected operation of a Small Generator Facility, provided that there is an Interconnection Agreement in effect, the Small Generator Facility has passed any Witness Test required by the EDC, and that the Small Generator Facility has passed any inspection required by the EDC. Evidence of approval by an electric code official includes a signed inspection certificate.
- (i) As an alternative to the Supplemental Review procedures prescribed in this section, the EDC may elect to perform a power flow-based study, providing the Interconnection Customer with the results and the required mitigation, if necessary. The EDC shall make available, upon request, a copy of its power flow-based study for each applicant to the Commission within thirty (30) business days after analysis completion.
- (j) The EDC may require photographs of the site, Small Generator Facility components, meters or any other aspect of the Interconnection Facilities as part of the Supplemental Review process.

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### 4012 APPLICANT OPTIONS MEETING

If the EDC determines the Interconnection Request cannot be approved without evaluation under Level 4 Interconnection Review, at the time the EDC notifies the Interconnection Customer of either the Level 1, 2, or 3 Interconnection Review, or Supplemental Review, results, it shall provide the Interconnection Customer the option of proceeding to a Level 4 Interconnection Review or of participating in an applicant options meeting with the EDC to review possible Small Generator Facility modifications or the screen analysis and related results, to determine what further steps are needed to permit the Small Generator Facility to be connected safely and reliably. The Interconnection Customer shall notify the EDC that it requests an applicant options meeting or that it would like to proceed to Level 4 Interconnection Review in writing within fifteen (15) business days of the EDC's notification or the Interconnection Request shall be deemed withdrawn. If the Interconnection Customer requests an applicant options meeting, the EDC shall offer to convene a meeting at a mutually agreeable time within the next fifteen (15) business days.

## 4013 – 4098 **RESERVED**

SOURCE: As amended by Final Rulemaking published at 56 DCR 1415, 1418 (February 13, 2009).

### **4099 DEFINITIONS**

- When used in this chapter, the following terms and phrases shall have the following meaning:
  - "Adverse System Impact" means a negative effect, due to technical or operational limits on conductors or equipment being exceeded, that compromises the safety and reliability of the Electric Distribution System.
  - "Affected System" means an electric system not owned or operated by the Electric Distribution Company reviewing the Interconnection Request that may suffer an Adverse System Impact from the proposed interconnection.
  - "Advanced Inverter" means inverter(s) with a digital architecture, bidirectional communications, and software that enables functionalities providing autonomous grid support and enhance system reliability, along with the capability to adjust their operational set points in response to the changing characteristics of the grid through dedicated communications protocols and standards. The advanced inverter must enable, at the minimum, the following functionalities, as defined in IEEE Standard 1547-2018: dynamic and real power support, voltage ride-through, frequency ride-through, voltage support, frequency support, and ramp rates.
  - "Area Network" means a type of Electric Distribution System served by multiple transformers interconnected in an electrical network circuit, which is generally used in large metropolitan areas that are densely populated. Area networks are also known as grid networks. Area network has the same meaning as the term distribution secondary grid networks in Section 9.2 of IEEE Standard 1547.
  - "Approval to Install" means written notification that the Small Generator Facility is conditionally approved for installation contingent upon the terms and conditions of the Interconnection Request, and the EDC may provide such conditional approval by furnishing to Interconnection Customer an EDC-executed copy of the Interconnection Agreement.
  - "Authorization to Operate" means written notification that the Small Generator Facility is approved for operation under the terms and conditions of the District of Columbia Small Generator Interconnection Rules.
  - "Certificate of Completion" means a certificate in a completed form approved by the Commission containing information about how the Interconnection Equipment is to be used, its installation, and local inspections.
  - "Commission" means the Public Service Commission of the District of Columbia.
  - "Commissioning Test" means the tests applied to a Small Generator Facility by the Interconnection Customer after construction is completed to verify that the facility does not create Adverse System Impacts. The scope of the Commissioning Tests performed shall include the Commissioning Test specified IEEE Standard 1547 Section 11.2.5 "Commissioning tests".

- "Community Renewable Energy Facility" or "CREF" means an energy facility with a capacity no greater than five (5) megawatts that: (a) uses renewable resources defined as a Tier One Renewable Source in accordance with Section 3(15) of the Renewable Energy Portfolio Standard Act of 2004, effective April 12, 2005, (D.C. Law 15-340; D.C. Official Code § 34-1431(15) (2019 Repl.), as amended); (b) is located within the District of Columbia; (c) has at least two (2) Subscribers; and (d) has executed an Interconnection Agreement and a CREF Rider with the Electric Company.
- "Distribution System Upgrade" means a required addition or modification to the EDC's Electric Distribution System at or beyond the Point of Common Coupling to accommodate the interconnection of a Small Generator Facility. Distribution upgrades do not include interconnection facilities.
- "District of Columbia Small Generator Interconnection Rule (DCSGIR)" means the most current version of the procedures for interconnecting Small Generator Facilities adopted by the Public Service Commission of the District of Columbia.
- "Draw-out Type Circuit Breaker" means a switching device capable of making, carrying, and breaking currents under normal and abnormal circuit conditions such as those of a short circuit. A draw-out circuit breaker can be physically removed from its enclosure, creating a visible break in the circuit. For the purposes of these regulations, the draw-out circuit breaker shall be capable of being locked in the open, draw-out position.
- "Electric Distribution Company" or "EDC" means an electric utility entity that distributes electricity to customers and is subject to the jurisdiction of the Commission.
- "Electric Distribution System" or "EDS" means the facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries from interchanges with higher voltage transmission networks that transport bulk power over longer distances. The voltage levels at which Electric Distribution Systems operate differ among areas but generally carry less than sixty-nine (69) kilovolts of electricity. Electric distribution system has the same meaning as the term Area EPS, as defined in IEEE Standard 1547.
- "Energy Storage" means a resource capable of absorbing electric energy from the grid, from a behind-the-meter generator, or other DER, storing it for a period of time and thereafter dispatching the energy for use on-site or back to the grid, regardless of where the resource is located on the electric distribution system. These resources include all types of energy storage technologies, regardless of their size, storage medium (e.g., batteries, flywheels, electric vehicles, compressed air), or operational purpose.
- "Facilities Study" means an engineering study conducted by the EDC to determine the required modifications to the EDC's Electric Distribution System, including the cost and the time required to build and install such modifications as necessary to accommodate an Interconnection Request.

- "Fault Current" means the electrical current that flows through a circuit during an electrical fault condition. A fault condition occurs when one (1) or more electrical conductors contact ground or each other. Types of faults include phase to ground, double-phase to ground, three-phase to ground, phase-to-phase, and three-phase. Fault current is several times larger in magnitude than the current that normally flows through a circuit.
- "Generation Meter" means the meter used to capture the level of customer-generated electricity at an Interconnection Customer's premise. The Generation Meter shall be owned, operated, and maintained as distribution plant by EDC, unless the Interconnection Customer is a CREF (see "Production Meter").
- "Good Utility Practice" means any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility 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 of the lowest 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" means 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 Interconnection Customer and EDC, respective facilities, or services provided, 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, EDC or any affiliate thereof.
- "IEEE Standard 1547" refers to the Institute of Electrical and Electronics Engineers, Inc. (IEEE) Standard 1547 (2018) "Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces," as amended and supplemented at the time the Interconnection Request is submitted.
- "IEEE Standard 1547.1" refers to the IEEE Standard 1547.1 (2015) "Conformance Test Procedures for Equipment Interconnecting Distributed Energy Resources with Electric Power Systems," as amended and supplemented at the time the Interconnection Request is submitted.
- "Interconnection Customer" means a person or entity that has submitted either an Interconnection Request to interconnect a Small Generator Facility to the EDC's Electric Distribution System or a pre-application report to get information about EDC's electrical distribution system at a proposed Point of Common Coupling.
- "Interconnection Equipment" means a group of equipment, components, or an integrated system connecting an electric generator with a Local Electric Power System or an Electric Distribution System that includes all interface equipment including switchgear, protective devices, inverters or other interface devices.

Interconnection equipment may be installed as part of an integrated equipment package that includes a generator or other electric source.

- "Interconnection Facilities" means facilities and equipment required by the EDC to accommodate the interconnection of a Small Generator Facility. Collectively, Interconnection Facilities include all facilities and equipment between the Small Generator Facility and the Point of Common Coupling, including modifications, additions, or upgrades that are necessary to physically and electrically interconnect the Small Generator Facility to the Electric Distribution System. Interconnection Facilities are sole use facilities and do not include Distribution System Upgrades, Generation Meter(s), or Usage Meter(s).
- "Interconnection Request" means an Interconnection Customer's application and interconnection agreement, in a form approved by the Commission, requesting to interconnect a new Small Generator Facility, or to increase the capacity or modify operating characteristics of an existing approved Small Generator Facility that is interconnected with the EDC's Electric Distribution System.
- "Interconnection System Impact Study" means a study performed by the EDC which evaluates the impacts of the proposed interconnection on both the safety and reliability of the EDC's Electric Distribution System. The study seeks to identify and detail the Adverse System Impacts that result when a Small Generator Facility is interconnected without project modifications or Distribution System Upgrades, focusing on EDC-identified or potential Adverse System Impacts.
- "Line Section" means that portion of the EDC's Electric Distribution System connected to an Interconnection Customer, bounded by automatic sectionalizing devices or the end of the distribution line.
- "Local Electric Power System" or "Local EPS" means facilities that deliver electric power to a load that are contained entirely within a single premises or group of premises. Local electric power system has the same meaning as the term Local Electric Power System defined in IEEE Standard 1547.
- "Microgrid" means a collection of interconnected loads, generation assets, and advanced control equipment, installed across a limited geographic area and within a defined electrical boundary that is capable of disconnecting from the larger Electric Distribution System. A Microgrid may serve a single customer with several structures or serve multiple customers. A Microgrid can connect and disconnect from the distribution system to enable it to operate in both interconnected or island mode.
- "Modified Level 1 or Level 2 Scoping Meeting" means a meeting between representatives of the Interconnection Customer and EDC conducted for the purpose of reviewing the Interconnection Request, existing studies relevant to the Interconnection Request, the conditions at the proposed location, and the results of the Level 1 or Level 2 Adverse System Impact screening criteria, and a technical explanation in which the EDC describes the need for Interconnection Facilities and/or a Distribution System Upgrade to accommodate the Interconnection Request.

- "Nameplate Capacity" means the maximum rated output of a generator, prime mover, or other electric power production equipment under specific conditions designated by the manufacturer and is usually indicated on a nameplate physically attached to the power production equipment.
- "Nationally Recognized Testing Laboratory" or "NRTL" means a qualified private organization that meets the requirements of the Occupational Safety and Health Administration's (OSHA) regulations. NRTLs perform independent safety testing and product certification. Each NRTL shall meet the requirements as set forth by OSHA in the NRTL program.
- "Parallel Operation" or "Parallel" means the sustained state of operation over one hundred (100) milliseconds, which occurs when a Small Generator Facility is connected electrically to the Electric Distribution System and thus has the ability for electricity to flow from the Small Generator Facility to the Electric Distribution System.
- **"PJM Interconnection"** means the regional transmission organization that is regulated by the Federal Energy Regulatory Commission and functionally controls the transmission system for the region that includes the District of Columbia.
- **"Point of Common Coupling"** means the point where the Small Generator Facility is electrically connected to the Electric Distribution System. Point of common coupling has the same meaning as defined in IEEE Standard 1547.
- "Primary Line" means a distribution line rated at greater than six hundred (600) volts.
- **"Production Meter"** means the Generation Meter used to capture the level of customergenerated electricity at an Interconnection Customer's premise, when the Interconnection Customer is a CREF. In accordance with D.C. Official Code § 34-1518, the Production Meter shall be owned by the CREF and read by the EDC.<sup>2</sup>
- "Production Test" is defined in IEEE Standard 1547.
- "Queue Position" means the order of a valid Interconnection Request, relative to all other pending valid Interconnection Requests, that is established based upon the date and time of receipt of the complete Interconnection Request by the EDC.
- "Radial Distribution Circuit" means a circuit configuration where independent feeders branch out radially from a common source of supply. From the standpoint of a utility system, the area described is between the generating source or intervening substations and the customer's entrance equipment. A radial distribution system is the most common type of connection between a utility and load in which power flows in one direction from the utility to the load.
- "Scoping Meeting" means a meeting between representatives of the Interconnection Customer and EDC conducted for the purpose of discussing alternative interconnection options, exchanging information including any Electric Distribution System data and earlier study evaluations that would be reasonably

D.C. Official Code § 34-1518 (2019 Repl.).

- expected to impact interconnection options, analyzing information, and determining the potential feasible points of interconnection.
- "Secondary Line" means a service line subsequent to the Primary Line that is rated for six hundred (600) volts or less, also referred to as the customer's service line.
- "Shared Transformer" means a transformer that supplies secondary source voltage to more than one customer.
- "Small Generator Facility" means the equipment used by an Interconnection Customer to generate or store electricity that operates in parallel with the Electric Distribution System and, for the purposes of this standard, is rated at twenty (20) MW or less. A Small Generator Facility typically includes an electric generator, Energy Storage, prime mover, and the Interconnection Equipment required to safely interconnect with the Electric Distribution System or Local Electric Power System as mutually agreed between the Interconnection Customer and EDC of the Interconnection Request.
- "Spot Network" means a type of Electric Distribution System that uses two or more inter-tied transformers to supply an electrical network circuit. A Spot Network is generally used to supply power to a single customer or a small group of customers. Spot network has the same meaning as the term distribution secondary Spot Networks defined in Section 9.3 of IEEE Standard 1547.
- "Standard Agreement for Interconnection of Small Generator Facilities", "Interconnection Agreement", or "Agreement" means a set of standard forms of Interconnection Agreements approved by the Commission which are applicable to Interconnection Requests pertaining to small generating facilities. The agreement between the Interconnection Customer and the EDC, which governs the connection of the Small Generator Facility to the EDC's Electric Distribution System, as well as the ongoing operation of the Small Generator Facility after it is connected to the EDC's Electric Distribution System.
- "UL Standard 1741" means Underwriters Laboratories' standard titled "Inverters Converters, and Controllers for Use in Independent Power Systems," as amended and supplemented at the time the Interconnection Request is submitted.
- "Usage Meter" means the meter furnished by the EDC used to capture the level of electricity consumption at an Interconnection Customer's premise. The Usage Meter shall be owned, operated, and maintained as a distribution plant by the EDC.
- "Witness Test" means verification (either by an on-site observation or review of documents) by the EDC that the installation evaluation required by IEEE Standard 1547 Section 11.2.4 and the Commissioning Test required by IEEE Standard 1547 Section 11.2.5 have been adequately performed. For Interconnection Equipment that has not been certified, the Witness Test shall also include the verification by the EDC of the on-site design tests as required by IEEE Standard 1547 Section 11.2.4 and verification by the EDC of Production Tests required by IEEE Standard 1547 Section 11.2.3. All tests verified by the EDC are to be performed in accordance with the applicable test procedures specified by IEEE Standard 1547.1.

# District of Columbia Municipal Regulations: CHAPTER 40: DISTRICT OF COLUMBIA SMALL GENERATOR INTERCONNECTION RULES

SOURCE: Final Rulemaking published at 56 DCR 1415, 1418 (February 13, 2009); as amended by Final Rulemaking published at 65 DCR 11025 (October 5, 2018); as amended by Final Rulemaking published at 66 DCR 1132 (January 25, 2019); as amended by Final Rulemaking published at 68 DCR 8244 (August 20, 2021).

#### **ATTACHMENT A – Queue Requirements**

The EDC shall maintain a publicly available interconnection queue, available in a sortable spreadsheet format, which it shall update on at least a monthly basis. Information on Interconnection Requests shall be retained in the queue for three (3) years. The date of the most recent update shall be clearly indicated.

The queue should include, at a minimum, the following information on each Level 2, 3, and 4 Interconnection Request.

- 1. Queue number
- 2. Facility capacity or capacity range (kW)
- 3. Primary fuel type (*e.g.*, solar, wind, bio-gas, etc.)
- 4. Secondary fuel type (if applicable)
- 5. Exporting or non-exporting
- 6. Zip code
- 7. Substation
- 8. Feeder
- 9. Status (active, withdrawn, interconnected, etc.)
- 10. Date Interconnection Request deemed complete
- 11. Date of notification of Adverse Impact Screen results (Levels 2-3)
- 12. Adverse Impact Screen results for Levels 2-3 (pass or fail, and if fail, identify the screens failed and if Interconnection Facilities and/or Distribution System Upgrades are being required)
- 13. Date of notification of Supplemental Review results (if applicable)
- 14. Supplemental Review results (pass or fail, and if fail, identify the screens failed)
- 15. Date of notification of Interconnection System Impact Study results (if applicable)
- 16. Date of notification of Facilities Study results and/or construction estimates (if applicable)
- 17. Date EDC-executed Interconnection Agreement is provided to Customer
- 18. Date Interconnection Agreement is signed by both parties
- 19. Date of notification of Authorization to Operate
- 20. Final interconnection (application fee) cost paid to EDC