



**PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA**

**NOTICE OF FINAL RULEMAKING**

**FORMAL CASE NO. 1050, IN THE MATTER OF THE INVESTIGATION OF IMPLEMENTATION OF INTERCONNECTION STANDARDS IN THE DISTRICT OF COLUMBIA**

1. The Public Service Commission of the District of Columbia (“Commission”) pursuant to the D.C. Official Code, 2001 Ed. § 2-505 and § 34-802,<sup>1</sup> hereby gives notice of final rulemaking action adopting Chapter 40 of Title 15 of the District of Columbia Municipal Regulations (“DCMR” ), commonly referred to as the “District of Columbia Small Generator Interconnection Rules” (“DCSGIR”). The Commission issued a Notice of Proposed Rulemaking (“NOPR”) which was published in the *D.C. Register* on July 25, 2008, giving notice of the Commission’s intent to adopt Chapter 40 of Title 15 DCMR.<sup>2</sup> Comments were filed in response to the NOPR; however, after reviewing the comments, the Commission determined that further substantive revisions were unwarranted. The final version of the rules and the attached forms and agreements contain editorial modifications to the Notice of Proposed Rulemaking.

2. As stated in the NOPR, the DCSGIR sets forth standards to establish the technical and procedural requirements for small generator facilities to be interconnected and operated in parallel with the electric distribution system owned and operated by an electric distribution company (“EDC”) in the District of Columbia. Accordingly, the Commission hereby adopts Chapter 40 of Title 15 DCMR governing the District of Columbia Small Generator Interconnection Rules as contained in the *D.C. Register* on July 25, 2008. The rules will become effective upon publication of this notice in the *D. C. Register*. Additional copies of the final rules may be obtained by writing Dorothy Wideman, Commission Secretary, Public Service Commission of the District of Columbia, 1333 H. Street, N.W., West Tower, Suite 200, Washington, D.C. 20005. Copies may also be obtained on the Commission’s website at [www.dcpsc.org](http://www.dcpsc.org).

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<sup>1</sup>D.C. Official Code § 2-505 (2001); See also D.C. Official Code § 34-802. *55 D.C. Reg.* 8077-8147 (July 25, 2008). The first NOPR for Chapter 40 was published in *55 D.C. Reg.* 1332-1392 (February 8, 2008). To ensure the accuracy and consistency of the DCSGIR, the Commission made some modifications to the proposed rules and published July 25, 2008 NOPR.

## **CHAPTER 40 DISTRICT OF COLUMBIA SMALL GENERATOR INTERCONNECTION RULES**

### Section

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### **4000 PURPOSE AND APPLICABILITY**

4000.1 This Chapter establishes the District of Columbia Small Generator Interconnection Rules (“DSGIR”) which apply to facilities satisfying the following criteria:

- (a) The total nameplate capacity of the small generator facility is equal to or less than 10 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.

### **4001 INTERCONNECTION REQUESTS, FEES, AND FORMS**

4001.1 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 to which interconnection is sought. The EDC shall establish processes for accepting interconnection requests electronically.

4001.2 The Commission shall determine the appropriate interconnection fees, and the fees shall be posted on the EDC's website and listed in the electric utility's tariffs.

4001.3 In circumstances where standard forms and agreements are used as part of the interconnection process defined in this document, electronic versions of those forms shall be approved by the Commission and posted on the EDC's website.

## **4002 CERTIFIED INTERCONNECTION EQUIPMENT**

4002.1 Interconnection equipment shall be deemed certified with this Chapter upon establishment of the following:

- (a) The interconnection equipment has been tested in accordance with the appropriate codes and standards referenced in this Chapter by any nationally recognized testing laboratory ("NRTL") recognized by the United States Occupational Safety and Health Administration ("OSHA") to test and certify interconnection equipment pursuant to the relevant codes and standards listed in Section 4002.4.
- (b) The interconnection equipment has been labeled and is publicly listed by such NRTL at the time of the interconnection application.
- (c) The interconnection customer verifies that the intended use of the interconnection equipment falls within the use or uses for which the interconnection equipment is labeled, and is listed by the NRTL.

4002.2 If the interconnection equipment is an integrated equipment package such as an inverter, then the interconnection customer shall show that the generator or other electric source being utilized is compatible with the interconnection equipment and is consistent with the testing and listing specified for this type of interconnection equipment.

4002.3 If the interconnection equipment includes only interface components (switchgear, multi-function relays, or other interface devices), then an interconnection customer shall show that the generator or other electric source being utilized is compatible with the interconnection equipment and is consistent with the testing and listing specified for this type of interconnection equipment.

4002.4 To meet the requirements for certification, interconnection equipment shall be evaluated by an NRTL in accordance with the following codes and standards:

- (a) IEEE 1547.1 Standard for Conformance Tests Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems; and
- (b) Underwriters Laboratories (“UL”), UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems;

4002.5 The interconnection equipment shall meet the requirements of the most current approved version of each document listed in Section 4002.4, as amended and supplemented at the time the interconnection request is submitted for certification.

4002.6 Certified interconnection equipment shall not require further design testing or production testing, as specified by IEEE Standard 1547 Sections 5.1 and 5.2, or additional interconnection equipment modification to meet the requirements. However, nothing herein shall preclude the need for an on-site Witness Test or operational test by the interconnection customer.

**4003 INTERCONNECTION REVIEW LEVELS**

4003.1 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 application form. The EDC may not impose additional requirements not specifically authorized unless the EDC and the interconnection customer mutually agree to do so in writing.

**4004 LEVEL 1 INTERCONNECTION REVIEWS**

4004.1 For Level 1 Review, the EDC shall use Level 1 procedures for evaluation of all interconnection requests to connect inverter-based small generation facilities when:

- (a) The small generator facility has a nameplate capacity of 10 kW or less; and
- (b) The customer interconnection equipment proposed for the small generator facility is certified.

4004.2 For Level 1 Adverse Impact Screens, the EDC shall evaluate the potential for adverse system impacts using the following screens, which must be satisfied:

- (a) For interconnection of a proposed small generator facility to a line section on a radial distribution circuit, the aggregated generation on the line section, including the proposed small generator facility, shall not exceed fifteen (15) percent of the line section's annual peak load.
- (b) For interconnection of a proposed small generator facility to an area network with two (2) two-way power flow or to a spot network distribution system with two (2) two-way power flow, there shall be no reverse power conditions through the EDC network protector. The proposed small generator facility shall not cause network protector cycling; cause inadvertent network protector opening; or impact any other customer under any conditions (including fault conditions).
- (c) For interconnection of a proposed small generator facility to the load side of spot network protectors and, when aggregated with other generation, load may not exceed five (5) percent of the spot network's maximum load.
- (d) When a proposed small generator facility is to be interconnected on a single-phase shared secondary line, the aggregate generation capacity on the shared secondary line, including the proposed small generator facility, may not exceed 20 kW.
- (e) When a proposed small generator facility is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition may not create an imbalance between the two sides of the 240 volt service of more than twenty (20) percent of the nameplate rating of the service transformer.
- (f) Construction of facilities by the EDC on its own system is not required in order to accommodate the small generator facility.

4004.3

The Level 1 Interconnection Review shall be conducted in accordance with the following procedures:

- (a) An EDC shall, within ten (10) business days after receipt of the interconnection request, inform the interconnection customer in writing or by electronic mail that the interconnection request is complete or incomplete and indicate what materials, if any, are missing.
- (b) When an interconnection request is complete, the EDC shall assign a queue position.

- (c) The EDC shall, within fifteen (15) business days after the end of the ten (10) business days noted above in paragraph (a), verify that the small generator facility equipment can be interconnected safely and reliably using Level 1 screens and provide an interconnection agreement to the customer. If deemed necessary by the EDC, the EDC shall conduct a spot or area network impact study at its own expense within the fifteen (15) business days referenced above.

4004.4

Unless the EDC determines and demonstrates to the interconnection customer that a small generator facility cannot be interconnected safely or reliably to its system and provides a letter to the interconnection customer explaining its reasons for denying an interconnection request, the EDC shall approve the interconnection request subject to the following conditions:

- (a) The small generator facility has been approved by local or municipal electric code officials with jurisdiction over the interconnection;
- (b) A certificate of completion has been received by the EDC from the interconnection customer. Completion of local inspections may be designated on inspection forms used by local inspecting authorities;
- (c) The EDC has either waived the right to a Witness Test or completed its Witness Test in accordance with Section 4004.6; and
- (d) The interconnection customer has signed a small generator interconnection agreement. If an interconnection customer does not sign the agreement within thirty (30) business days after submission by the EDC by mail or electronic mail, the interconnection request may be deemed withdrawn unless the deadline has been extended in writing by mutual agreement of the parties.

4004.5

Within ten (10) business days of the estimated commissioning date, the EDC may, upon reasonable notice and at a mutually convenient time, conduct a Witness Test of the small generator facility to ensure that all equipment has been appropriately installed and that all electrical connections have been made in accordance with applicable codes. If the EDC does not perform the Witness Test within the ten (10) business day period or such other time as is mutually agreed to by the parties, the Witness Test is deemed waived.

4004.6 When a small generator facility is not approved under a Level 1 review, the interconnection customer may submit a new interconnection request for consideration under Level 2, Level 3, or Level 4 procedures.

**4005 LEVEL 2 INTERCONNECTION REVIEWS**

4005.1 The EDC shall use the Level 2 review procedure for an interconnection request when:

- (a) The nameplate capacity rating is 2 MW or less;
- (b) The interconnection equipment proposed for the small generator facility is certified; and
- (c) The proposed interconnection is to a radial distribution circuit or to a spot network serving one customer.

4005.2 For Level 2 Adverse Impact Screens, the EDC shall evaluate the potential or adverse system impacts using the following screens which must be satisfied:

- (a) For interconnection of a proposed small generator facility to a radial distribution circuit, the aggregated generation on the line section, including the proposed small generator facility, may not exceed fifteen (15) percent of the line section annual peak load.
- (b) For interconnection of a proposed small generator facility to the load side of a spot network that protector supplies one specific service point, the proposed small generator facility shall utilize a certified inverter-based equipment package and may not exceed five (5) percent of the spot network's maximum load.
- (c) For spot network interconnection, the generation shall not result in any reverse power conditions through the EDC network protectors. The proposed small generator facility cannot cause network protector cycling, cause inadvertent network protector opening, or have adverse impacts on any other customer under any conditions (including under fault conditions).
- (d) The proposed small generator facility, in aggregation with other generation on the distribution circuit, may not contribute more than ten (10) percent to the distribution circuit's maximum fault current at the point on the primary line 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 other customer equipment on the electric distribution system to be exposed to fault currents exceeding 87.5 percent of the short circuit interrupting capability. The interconnection request may not receive approval for interconnection on a circuit that already exceeds 87.5 percent 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) When a customer-generator facility is to be connected to three-phase, three-wire primary EDC distribution lines, a three-phase or single-phase generator shall be connected phase-to-phase.
- (h) When a customer-generator facility is to be connected to three-phase, four-wire primary EDC distribution lines, a three-phase or single-phase generator shall be connected line-to-neutral and shall be effectively grounded.
- (i) 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 20 kW.
- (j) When a proposed small generator facility is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition may not create an imbalance between the two sides of the 240 volt service of more than twenty (20) percent of the nameplate rating of the service transformer.
- (k) A small generator facility, in aggregate with other generation interconnected to the distribution side of a substation transformer feeding the circuit where the small generator facility proposes to interconnect, may not exceed 10 MW in an area where there are known or posted transient stability limitations to generating units located in the general electrical vicinity.
- (l) Except as permitted by an additional review in Level 2 Procedures, Section 4005.7, no construction of facilities by an EDC on its own system shall be required to accommodate the small generator facility.

- 4005.3 Interconnection to area networks is not permitted under the Level 2 review process.
- 4005.4 The Level 2 interconnection review shall be conducted in accordance with the following procedures:
- (a) An EDC shall, within ten (10) business days after receipt of the interconnection request, inform the interconnection customer in writing or by electronic mail that the interconnection request is complete or incomplete. As part of this process, the EDC shall assign a queue position. The queue position of the interconnection request shall be used to determine the potential adverse system impact of the small generator facility based on the relevant screening criteria. If there are higher queued interconnection customers on the same radial line circuit or spot network, the EDC shall evaluate the interconnection request by performing any Level 2 screens requiring aggregate capacity calculations and determine if the small generator facility exceeds any of the aggregate capacity requirements. If an aggregate capacity requirement is exceeded, the EDC shall not be obligated to meet the timeline for reviewing the interconnection request until such time as the EDC has completed the review of all other interconnection requests that have a higher queue position and impact the aggregate capacity calculation that has been exceeded and shall so notify the interconnection customer.
  - (b) When an EDC determines that additional information is required to complete an evaluation, the EDC shall request the information. The time necessary to complete the evaluation may be extended by mutual agreement of the parties, but only to the extent of the time required for receipt of the additional information. During an extension of time to submit additional information, the EDC may not begin a new review process or alter the interconnection customer's queue position.
- ⊖ Within twenty (20) business days after the EDC notifies the interconnection customer that it has received a completed interconnection request, the EDC shall:
- (1) Evaluate the interconnection request using the Level 2 screening criteria;
  - (2) Review the interconnection customer's analysis, if provided by the interconnection customer, using the same criteria used by the customer;

- (3) Conduct a spot network impact study at its own expense within the above noted timeframe, if deemed necessary by the EDC; and
- (4) Provide the interconnection customer with the EDC's evaluation, including a comparison of the results of its own analyses with those of interconnection customer, if applicable. When an EDC does not have a record of receipt of the interconnection request and the interconnection customer can demonstrate that the original interconnection request was delivered, the EDC shall expedite its review to complete the evaluation of the interconnection request within twenty (20) business days of the interconnection customer's re-submittal.

4005.5 When an EDC determines that the interconnection request passes the Level 2 screening criteria, the EDC shall provide the interconnection customer a small generator interconnection agreement within five (5) business days after the determination.

4005.6 When an EDC determines that the interconnection request fails one (1) or more of the Level 2 screening criteria but determines that the small generator facility can be interconnected safely and reliably, the EDC shall provide the interconnection customer a small generator interconnection agreement within five (5) business days after the determination.

4005.7 Additional review may be appropriate when a small generator facility has failed to meet one or more of the Level 2 screens. An EDC shall offer to perform additional review to determine whether minor modifications to the electric distribution system would enable the interconnection to be made consistent with safety, reliability and power quality criteria. The EDC shall provide the interconnection customer with a nonbinding, good faith estimate of the costs of additional review and minor modifications. The EDC shall undertake the additional review or modifications only after the interconnection customer consents to pay for the review and modifications.

4005.8 An interconnection customer shall have thirty (30) business days to sign and return the agreement. When an interconnection customer does not sign the agreement within thirty (30) business days, the interconnection request shall be deemed withdrawn unless the interconnection customer requests to have the deadline extended in writing prior to the expiration of the thirty (30) business day period. The request for extension may not be unreasonably denied by the EDC.

4005.9 When construction is required under the provisions of Sections 4005.5 and 4005.6, the interconnection of the small generator facility shall proceed according to all milestones agreed to by the parties in the small generator interconnection agreement. The small generator interconnection agreement shall not become final until:

- (a) The milestones agreed to in the small generator interconnection agreement are satisfied;
- (b) The small generator facility is approved by electric code officials with jurisdiction over the interconnection;
- (c) 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
- (d) 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.

4005.10 If the small generator facility is not approved under a Level 2 review, the EDC shall provide the interconnection customer a letter explaining its reasons for denying the interconnection request. The interconnection customer may submit a new interconnection request for consideration under a Level 3 or Level 4 interconnection review. The queue position assigned to the Level 2 interconnection request shall be retained provided the request is made within fifteen (15) business days of notification that the current interconnection request is denied.

#### **4006 LEVEL 3 INTERCONNECTION REVIEWS**

4006.1 The EDC shall use Level 3 review procedures for evaluating interconnection requests to area networks and radial distribution circuits where power shall not be exported based on the criteria in this section; however, interconnection to spot networks is not permitted under the Level 3 review process

4006.2 For interconnection requests to the load side of an area network the following criteria shall be satisfied to qualify for a Level 3 expedited review:

- (a) The nameplate capacity of the small generator facility is less than or equal to 50 kW; and

- 4006.3 (b) The proposed small generator facility utilizes a certified inverter-based equipment package.
- For Level 3A Adverse Impact Screens, the EDC shall evaluate the potential for adverse system impacts using the following screens which must be satisfied:
- (a) If the small generator facility utilizes reverse power relays and/or other protection functions that prevent power flow to the area network, the proposed small generator facility cannot cause network protector cycling; cause inadvertent network protector opening; or impact any other customer under any conditions (including under fault conditions);
  - (b) The aggregated other generation on the area network may not exceed the smaller of five (5) percent of an area network's maximum load or 50 kW; and
  - (c) No construction of facilities by the EDC shall be required to accommodate the small generator facility.

4006.4 For Level 3A, the EDC shall use the additional review procedures listed in Section 4006.8 and the following review procedures:

- (a) The EDC shall evaluate the interconnection request under Level 2 interconnection review procedures as set forth in Level 3A Procedures except that the EDC may have twenty-five (25) business days to conduct an area network impact study at its own expense to determine any potential adverse system impacts of interconnecting to the EDC's area network.
- (b) In the event the area network impact study identifies potential adverse system impacts, the EDC may determine at its sole discretion that it is inappropriate for the small generator facility to interconnect to the area network in which case the interconnection request shall be denied; however, the interconnection customer may elect to submit a new interconnection request for consideration under Level 4 procedures in which case the queue position assigned to the Level 3 interconnection request shall be retained provided the request is made within fifteen (15) business days of notification that the current application is denied.
- (c) In the event the EDC denies the interconnection request, the EDC shall provide the interconnection customer with a copy of its area network impact study and written justification for denying the interconnection request.

- 4006.5 For interconnection requests to a radial distribution circuit, the following criteria shall be satisfied to qualify for a Level 3 review:
- (a) The small generator facility has a nameplate capacity of 10 MW or less;
  - (b) The aggregated total of the nameplate capacity of all of the generators on the circuit, including the proposed small generator facility, is 10 MW or less;
  - (c) The small generator shall use reverse power relays or other protection functions that prevent power flow onto the electric distribution system;
  - (d) The small generator is not served by a shared transformer; and
  - (e) No construction of facilities by the electric distribution company on its own system shall be required to accommodate the small generator facility.
- 4006.6 Level 3.13 Adverse Impact Screens are the same as the Level 2 adverse impact screens.
- 4006.7 Level 3.13 review procedures are the same as Level 2 review procedures, except that Section 4006.8 contains additional procedures for all Level 3 requests.
- 4006.8 The following additional procedures shall apply to all Level 3 interconnection requests:
- (a) Once the interconnection request is deemed complete by the EDC, the EDC shall assign a queue position based upon the date and time the interconnection request is determined to be complete. The queue position of each interconnection request shall be used to determine the potential adverse system impact of the small generator facility based on the relevant screening criteria. The interconnection customer shall proceed under the timeframes of this section. The EDC shall notify the interconnection customer about other higher-queued interconnection customers on the same radial line or area network to which the interconnection customer is seeking to interconnect.
  - (b) The interconnection customer shall have thirty (30) business days after submission of the small generator interconnection agreement to sign and return the small generator interconnection agreement.

If the interconnection customer does not sign the small generator interconnection agreement within thirty (30) business days, the request shall be deemed withdrawn unless the parties mutually agree in writing to extend the time period for executing the small generator interconnection agreement prior to the expiration of the thirty (30) business day period. After the small generator interconnection agreement is signed by the parties, interconnection of the small generator facility shall proceed according to all milestones agreed to by the parties in the small generator interconnection agreement.

- (c) The interconnection agreement shall not be final until:
  - (1) All milestones agreed to in the small generator 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; 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.
- (d) If the small generator facility is not approved under a Level 3 review, the interconnection customer may submit a new interconnection request for consideration under the Level 4 procedures without sacrificing the original queue position, provided the revised interconnection request is submitted within fifteen (15) business days of notice that the current request has not been approved.

**4007 LEVEL 4 INTERCONNECTION REVIEWS**

- 4007.1 The EDC shall use the Level 4 study review procedures for evaluating interconnection requests when:
- (a) The nameplate capacity of the small generation facility is less than 10 MW;
  - (b) The interconnection request was not approved under a Level 1, Level 2, or Level 3 expedited review and the interconnection

customer has submitted an interconnection request for consideration under a Level 4 study review; and

- (c) The interconnection request does not meet the criteria for qualifying for an expedited review under Level 1, Level 2 or Level 3 review procedures.

4007.2

The Level 4 review shall be conducted in accordance with the following process:

- (a) Within ten (10) business days from receipt of an interconnection request, the EDC shall notify the interconnection customer whether the request is complete. When the interconnection request is deemed not complete, the EDC shall provide the interconnection customer with a written list detailing information required to complete the interconnection request. The interconnection customer shall have ten (10) business days to provide appropriate data in order to complete the interconnection request, or the interconnection request shall be considered withdrawn. The parties may agree to extend the time for receipt of the additional information. The interconnection request shall be deemed complete when the required information has been provided by the interconnection customer, or the parties have agreed that the interconnection customer may provide additional information at a later time.
- (b) When an interconnection request is complete, the EDC shall assign a queue position. The queue position of an interconnection request shall be used to determine the cost responsibility necessary for the facilities to accommodate the interconnection. The EDC shall notify the interconnection customer about other higher-queued interconnection customers that have the potential to impact the cost responsibility.
- (c) The following procedures shall be followed in performing a Level 4 study review:
  - (1) By mutual agreement of the parties, the scoping meeting, interconnection feasibility study, interconnection impact study, or interconnection facilities study provided for in a Level 4 review and discussed in this paragraph may be waived;
  - (2) If agreed to by the parties, 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 review or Level 3 review. The purpose of the meeting shall be to review the interconnection request, existing studies relevant to the interconnection request, and the results of the Level 1, Level 2 or Level 3 screening criteria;

- (3) When the parties agree at a scoping meeting that an interconnection feasibility 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 feasibility study agreement, including an outline of the scope of the study and a nonbinding good faith estimate of the cost to perform the study;
  - (4) When the parties agree at a scoping meeting that an interconnection feasibility study is not required, 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 parties agree at the scoping meeting that an interconnection feasibility study and 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.
- (d) Any required interconnection studies shall be carried out using the following guidelines:
- (l) An interconnection feasibility study shall include the following analyses and conditions for the purpose of identifying and addressing potential adverse system impacts 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 interconnection.
- ② An interconnection system impact study shall evaluate the impact of the proposed interconnection on both the safety and reliability of the EDC's electric distribution system. The study shall identify and detail the system impacts that result when a small generator facility is interconnected without project or system modifications, focusing on the adverse system impacts identified in the interconnection feasibility study or potential impacts including those identified in the scoping meeting. The study shall consider all generating facilities that, on the date the interconnection system impact study is commenced, are directly interconnected with the EDC's system, have a pending higher queue position to interconnect to the system, or have a signed a small generator interconnection agreement.
- (A) A distribution interconnection system impact study shall be performed when a potential 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 upgrades; and
    - v. A nonbinding good faith estimate of cost and time to construct any required distribution upgrades.
  
  - (D) The parties shall use an interconnection impact study agreement approved by the Commission.
- (3) The interconnection 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 to perform the study;

- (B) The interconnection 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 interconnection 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 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 parties 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 parties 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 interconnection facilities study, and with the agreement of the interconnection customer to pay for the

interconnection facilities and distribution upgrades identified in the interconnection facilities study, the EDC shall provide the interconnection customer with a small generator interconnection agreement within five (5) business days; and

- (E) The parties shall use an interconnection facility study agreement approved by the Commission.
- (e) When an EDC determines, as a result of the studies conducted under a Level 4 review, that it is appropriate to interconnect the small generator facility, the EDC shall provide the interconnection customer with a small generator interconnection agreement. If the interconnection request is denied, the EDC shall provide a written explanation;
- (f) An interconnection customer shall have thirty (30) business days, or another mutually agreeable time frame, after submission of the small generator interconnection agreement to sign and return the agreement. If an interconnection customer does not sign the agreement within thirty (30) business days, the interconnection request shall be deemed withdrawn unless the interconnection customer requests to have the deadline extended by the thirtieth (30<sup>th</sup>) business day. The request for extension may not be unreasonably denied by the EDC. When construction is required, the interconnection of the small generator facility shall proceed according to milestones agreed to by the parties in the small generator interconnection agreement. The small generator interconnection agreement may not be final until:
  - (1) The milestones agreed to in the small generator 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.

4007.3 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.

4007.4 The parties shall use a form of interconnection feasibility study agreement approved by the Commission.

**4008 TECHNICAL STANDARDS AND ADDITIONAL TECHNICAL REQUIREMENTS**

4008.1 The technical standard to be used in evaluating all interconnection requests under Level 1, Level 2, Level 3 and Level 4 reviews, unless otherwise provided for in these procedures, is IEEE Standard 1547. Until IEEE 1547.2, “Application Guide for IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems” is completed and approved, the PJM Interconnection Planning Manual Attachment H which is available at [www.pjm.com/committees/mrc/downloads/20060911-item-03-attachment-h-to-manual-14b-2-to-10-mw.pdf](http://www.pjm.com/committees/mrc/downloads/20060911-item-03-attachment-h-to-manual-14b-2-to-10-mw.pdf), shall be used as a guide (but not a requirement) to detail and illustrate the interconnection protection requirements that are provided in IEEE 1547.

4008.2 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.

4008.3 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.

4008.4 An EDC shall maintain records of the following for a minimum of three (3) years:

- (a) The total number of 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.
- 4008.5 An EDC shall provide a report to the Commission containing the information required in Section 4008.4, paragraphs (a)-(c) within ninety (90) calendar days of the close of each year.
- 4008.6 An EDC shall designate a contact person and contact information on its website and 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 an understanding of 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 otherwise deemed contrary to District or federal law/regulations. In appropriate circumstances, the EDC may require confidentiality prior to release of information.
- 4008.7 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.
- 4008.8 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 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

- 4008.10 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 level 2-4 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 level 2-4 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 generation facility and located between the small generation 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. Level 1 interconnections do not require an external isolation device.
- 4008.11 A level 2-4 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.
- 4008.12 Any metering necessitated by a small generator interconnection shall be installed, operated and maintained in accordance with applicable tariffs. Any such metering requirements shall be clearly identified as part of the small generator interconnection agreement executed by the interconnection customer and the EDC.
- 4008.13 The EDC shall design, procure, construct, install, and own any Distribution Upgrades. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the interconnection customer. The interconnection customer may be entitled to financial contribution from any other EDC customers who may in the future utilize the upgrades paid for by the interconnection customer. Such contributions shall be governed by the rules, regulations, and decisions of the Commission.

4008.14 EDC monitoring and control of small generator facilities shall be permitted only if the nameplate rating is equal to or greater than 3 MW. Any monitoring and control requirements shall be consistent with the EDC's written and published requirements and shall be clearly identified as part of an interconnection agreement executed by the interconnection customer and the EDC.

4008.15 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.)

#### **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 parties shall use the technical consultant to resolve disputes related to interconnection. 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.

**4010 WAIVER**

4010.1 The Commission may, in its discretion, waive any provisions of Chapter 40 upon notice to the affected persons.

**4011-4098 (Reserved)**

**4099 Definitions**

**4099.1** 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.

**“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 4.1.4.1 of IEEE Standard 1547.

**“Certificate of Completion”** means a certificate in a completed form approved by the Commission containing information about the interconnection equipment to be used, its installation and local inspections.

**“Certified Equipment”** means a designation that the interconnection equipment meets the requirements set forth in Section 4002 of this document

**“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 5.4 “Commissioning tests”.

**“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 District of Columbia Public Service Commission.

**“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”** 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 69 kilovolts of electricity. Electric distribution system has the same meaning as the term Area EPS, as defined in 3.1.6.1 of IEEE Standard 1547.

**“Estimated Commissioning Date”** means the date an interconnection customer is expected to start operation.

**“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 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.

**“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 Parties, 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”** means the Institute of Electrical and Electronics Engineers, Inc. (IEEE) Standard 1547 (2003) "Standard for Interconnecting Distributed Resources with Electric Power Systems", as amended and supplemented at the time the interconnection request is submitted.

**“IEEE Standard 1547.1”** means the IEEE Standard 1547.1 (2005) "Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems", as amended and supplemented at the time the interconnection request is submitted.

**“Interconnection Customer”** means an entity that has submitted an interconnection request to interconnect a small generator facility to an EDC's electric distribution system.

**“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 modification, 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 upgrades.

**“Interconnection Request”** means an interconnection customer's request, in a form approved by the Commission, requesting the interconnection of 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.

**“Line Section”** means that portion of an EDC's 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 3.1.6.2 of IEEE Standard 1547.

**“Minor Equipment Modification”** means changes to the proposed small generator facility that do not have a material impact on safety or reliability of the electric distribution system.

**“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 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 is has the same meaning as defined in 3.1.13 of IEEE Standard 1547.

**“Primary Line”** means a distribution line rated at greater than 600 volts.

**“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 valid 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 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 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 10 MW or less. A small generator facility typically includes an electric generator, prime mover, and the interconnection equipment required to safely interconnect with the electric distribution system or local electric power system.

**“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 4.1.4.2 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.

**“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 5.3 and the commissioning test required by IEEE Standard 1547 Section 5.4 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 5.1 and verification by the EDC of production tests required by IEEE Standard 1547 Section 5.2. All tests verified by the EDC are to be performed in accordance with the applicable test procedures specified by IEEE Standard 1547.1.