

Maryland Standard Small Generator Interconnection Rule

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GENERAL

I Scope.

The Maryland Standard Small Generator Interconnection Rule establishes technical and procedural requirements for small generator facilities up to 10 MW to be interconnected and operated in parallel with the electric distribution system owned or operated by an electric distribution company in Maryland.

II Definitions.

The following words and terms, when used in this rule, have the following meanings unless the context clearly indicates otherwise:

Adverse system impact--A negative effect, due to technical or operational limits on conductors or equipment being exceeded, that compromises the safety or reliability of the electric distribution system.

Affected system--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.

Applicant--A person who has submitted an interconnection request to interconnect a small generator facility to an EDC's electric distribution system.

Area network -- 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.

Certificate of completion--A certificate in a form approved by the Commission containing information about the interconnection equipment to be used, its installation and local inspections.

Commission--The Maryland Public Service Commission

Commissioning test – Tests applied to a small generator facility by the applicant after construction is completed to verify that the facility does not create adverse system impacts. At a minimum, the scope of the commissioning tests performed shall include the commissioning test specified IEEE standard 1547 section 5.4 “Commissioning tests”.

Distribution upgrade--A required addition or modification to the EDC's electric distribution system to accommodate the interconnection of a small generator facility. Distribution upgrades do not include interconnection facilities.

Draw-out type circuit breaker-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. The draw-out circuit breaker must be capable of being locked in the open, draw-out position.

Electric distribution company or EDC- Any electric utility entity subject to the jurisdiction of the Commission.

Electric distribution system--

(i) 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.

(ii) Electric distribution system has the same meaning as the term Area EPS, as defined in 3.1.6.1 of IEEE Standard 1547.

Fault current--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. Often, a fault current is several times larger in magnitude than the current that normally flows through a circuit.

IEEE standard 1547- 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-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--An entity that proposes to interconnect a small generator facility to an electric distribution system.

Interconnection equipment--A group of components or 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--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 interconnection, 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--An applicant's request, in a form approved by the Commission, requesting the interconnection of a new small generator facility, or to increase the capacity or operating characteristics of an existing small generator facility that is interconnected with the EDC's electric distribution system.

Interconnection study--Any of the following studies:

- (i) The interconnection feasibility study as described in XIV (5)(i).
- (ii) The interconnection system impact study as described in XIV (5)(ii).
- (iii) The interconnection facilities study as described in XIV (5)(iii).

Line section--That portion of an EDC's distribution system connected to an interconnection customer, bounded by sectionalizing devices or the end of the distribution line.

Local electric power system-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--Changes to the proposed small generator facility that do not have a significant impact on safety or reliability of the electric distribution system.

Nameplate capacity-- 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.

NRTL--Nationally recognized testing laboratory--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 must meet the requirements as set forth by OSHA in the NRTL program.

Parallel operation-parallel--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.

Point of interconnection-- The point where the small generator facility is electrically connected to the electric distribution system. Point of interconnection has the same meaning as the term point of common coupling defined in 3.1.13 of IEEE Standard 1547.

Primary line--A distribution line rated at greater than 600 volts.

Queue position--The order of a completed interconnection request, relative to all other pending completed interconnection requests, that is established based upon the date and time of receipt of the completed interconnection request by the EDC.

Radial distribution circuit--A circuit configuration in which 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 electric service 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--A meeting between representatives of the applicant 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 – 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—A transformer that supplies secondary source voltage to more than one customer

Small generator facility--The equipment used by an interconnection customer to generate, or store electricity that operates in parallel with the electric distribution system. 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 -- A spot network is 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 spot network defined in 4.1.4 of IEEE Standard 1547.

Standard small generator interconnection agreement - A set of standard forms of interconnection agreements approved by the Commission which are applicable to interconnection requests pertaining to small generating facilities.

UL Standard 1741--Underwriters Laboratories' standard titled "Inverters Converters, and Controllers for Use in Independent Power Systems", November 7, 2005 edition, as amended and supplemented.

Witness test— For lab certified or field approved equipment, verification (either by an on-site observation or review of documents) by the EDC that the interconnection 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 lab certified or field approved, 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 test procedures specified by IEEE Standard 1547.1.

INTERCONNECTION PROVISIONS

III Applicability.

The interconnection procedures apply to applicants proposing to install and interconnect a small generator facility that satisfies the following criteria:

- (1) The nameplate capacity of the small generator facility is equal to or less than 10 MW.
- (2) The small generator facility is not subject to the interconnection requirements of PJM Interconnection.
- (3) The small generator facility is designed to operate in parallel with the electric distribution system.

IV Interconnection requests.

Applicants seeking to interconnect a small generator facility shall submit an interconnection request using a standard form approved by the Commission to the EDC that owns the electric distribution system to which interconnection is sought. EDCs shall establish processes for accepting interconnection requests electronically.

V Fees and forms.

The Commission shall determine the appropriate interconnection fees for Levels 1, 2, 3 and 4. In circumstances when standard forms and agreements are used for the interconnection process, electronic versions of those forms shall be approved by the Commission and posted on the its website.

VI Lab certified or field approved equipment.

An interconnection request may be eligible for expedited interconnection review under VII (expedited review procedures) if the small generator facility uses lab certified or field approved interconnection equipment. To qualify for expedited review, the interconnection equipment must be either lab certified as provided for in paragraph (1) or field approved as provided for in paragraph (2)

- (1) Interconnection equipment shall be deemed to be lab certified upon establishment of the following:
 - (i) The interconnection equipment has been tested in accordance IEEE 1547.1 in compliance with the appropriate codes and standards referenced below in paragraph (vii) by any nationally recognized testing laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in paragraph (vii).
 - (ii) The interconnection equipment has been labeled and is publicly listed by such NRTL at the time of the interconnection application.
 - (iii) The NRTL testing the interconnection equipment makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its web site and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.
 - (iv) The applicant verifies that the intended use of the interconnection equipment falls within the use or uses for which the interconnection equipment was labeled, and listed by the NRTL.
 - (v) If the interconnection equipment is an integrated equipment package such as an inverter, then the applicant must 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.
 - (vi) If the interconnection equipment includes only interface components (switchgear, multi-function relays, or other interface devices), then the applicant must 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.
 - (vii) To meet the requirements for lab certification, interconnection equipment must be evaluated by a NRTL in accordance with the following codes and standards:
 - (a) IEEE 1547 Standard for Interconnecting Distributed Resources with Electric Power Systems (including use of IEEE 1547.1 testing protocols to establish conformity)
 - (b) UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems
 - (c) NFPA 70 National Electrical Code, which is incorporated by reference in COMAR 20.50.02.02.

(viii) Lab 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 for expedited review; however, nothing herein shall preclude the need for an interconnection installation evaluation, commissioning tests or periodic testing as specified by IEEE standard 1547 Sections 5.3, 5.4 and 5.5 or for a witness test that may be conducted by an EDC.

- (2) Interconnection equipment shall be deemed to be field approved if within the previous 36 months of the date of the interconnection request, it has been previously approved for use with the proposed small generator facility and the following criteria are met:
- i) The EDC has previously approved interconnection equipment identical to that being proposed under the Level 4 study review process described in XIV in a materially identical system application; or, the EDC has agreed to accept a Level 4 study review conducted for identical interconnection equipment and system application by another EDC; and
 - ii) The prior approval process included a successful witness test
 - iii) The applicant provides as part of its interconnection request the following information:
 - (a) A copy of the final certificate of completion from the prior approval process.
 - (b) A written statement that the proposed interconnection equipment is identical to what was previously approved.
 - (c) Documentation (or drawings) indicating the system interconnection details.
- (3) Each EDC shall retain copies of studies it performs to determine the feasibility of, system impacts of, or facilities required by the interconnection of any small generator facility, and shall avoid duplicating such studies to the extent possible. If requested by the applicant, the EDC shall provide the applicant copies of any studies performed in analyzing an interconnection request. Any applicant can elect to provide any other applicant with copies of its own studies in the desire to streamline a future EDC review; provided, however, that an EDC has no obligation to provide any future applicants any information regarding prior interconnection requests, including but not limited to a prior applicant's name, copies of prior studies performed by the EDC, or any other information surrounding the prior applicant's request.

VII Expedited review procedures.

An EDC shall review interconnection requests on an expedited basis using one or more of the following three review procedures:

- (1) An EDC shall use Level 1 procedures for evaluation of all interconnection requests to connect inverter-based small generation facilities when:
 - (i) The small generator facility has a nameplate capacity of 10 kW or less; and
 - (ii) The customer interconnection equipment proposed for the small generator facility is lab certified.
- (2) An EDC shall use Level 2 procedures for evaluating interconnection requests when:
 - (i) The nameplate capacity rating is 2 MW or less; and

- (ii) The interconnection equipment proposed for the small generator facility is lab certified or field approved; and
 - (iii) The proposed interconnection is to a radial distribution circuit, or a spot network limited to serving one customer; or
 - (iv) Alternatively, the small generator facility was reviewed under Level 1 review procedures but not approved and the applicant has submitted a new interconnection request for consideration.
- (3) An EDC shall use Level 3 review procedures for evaluating interconnection requests to area networks and radial distribution circuits where power will not be exported based on the following criteria:
- (i) For interconnection requests to the load side of an area network the following criteria must 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 50kW.
 - (b) The proposed small generator facility utilizes a lab certified inverter-based equipment package.
 - (c) The small generator facility utilizes reverse power relays and/or other protection functions that prevent the export of power into the area network.
 - (d) The aggregate of all generation on the area network does not exceed the smaller of 5% of an area network's maximum load or 50kW.
 - (e) No construction of facilities by the electric distribution company shall be required to accommodate the small generator facility.
 - (ii) For interconnection requests to a radial distribution circuit, the following criteria must be satisfied to qualify for a Level 3 expedited 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 will 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.
 - (e) No construction of facilities by the electric distribution company on its own system shall be required to accommodate the small generator facility.

VIII Study review procedures.

An EDC shall use the Level 4 study review procedures for evaluating interconnection requests when:

- (1) The nameplate capacity of the small generation facility is 10 MW or less; and
- (2) The interconnection request was not approved under a Level 1, Level 2, or Level 3 expedited review and the applicant has submitted an interconnection request for consideration under a Level 4 study review; and
- (3) The interconnection request does not meet the criteria for qualifying for an expedited review under Level 1, Level 2 or Level 3 review procedures.

IX Technical standards.

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

(<http://www.pjm.com/committees/mrc/downloads/20060911-item-03-attachment-h-to-manual-14b-2-to-10-mw.pdf>) shall be used to detail and illustrate the interconnection protection requirements that are provided in IEEE 1547.

X Additional requirements.

Additional requirements include:

- (1) When an interconnection request is for a small generator facility that includes multiple energy production devices at a site for which the applicant seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate nameplate capacity of multiple devices.
- (2) 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.
- (3) An EDC shall maintain records of the following which it shall keep on file for a minimum of three years:
 - (i) 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;
 - (ii) The fuel type, total number and the nameplate capacity of small generator facilities approved in each of the following categories, net metering, emergency standby capable of operating in parallel, behind the meter load offset, combined heat and power, other;
 - (iii) The number of interconnection requests that were not processed within the timelines established in this rule;
 - (iv) 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;
 - (v) The justifications for the actions taken to deny interconnection requests; and
 - (vi) 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.

- (4) An EDC shall provide a report to the commission in a format acceptable to the commission containing the information required in paragraph (3) i - iii within 90 calendar days of the close of each annualized period.
- (5) 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 through informal requests regarding a proposed project. The information must 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 providing the materials would violate security requirements or confidentiality agreements, or be contrary to law or State or Federal regulations. In appropriate circumstances, the EDC may require confidentiality prior to release of this information.
- (6) 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.
- (7) When an applicant is not currently a customer of the EDC at the proposed site, upon request from the EDC, the applicant shall provide proof of site control evidenced by a property tax bill, deed, lease agreement or other legally binding contract.
- (8) To minimize the cost of interconnecting multiple small generator facilities, the EDC or the customer may propose a single point of interconnection for multiple small generator facilities located at a single site. If the applicant rejects the EDC's proposal for a single point of interconnection, the applicant shall pay the additional cost, if any, of providing a separate point of interconnection for each small generator facility. If the EDC unreasonably rejects the customer's proposal for a single point of interconnection without providing a written technical explanation, the EDC shall pay the additional cost, if any, of providing a separate point of interconnection for each small generator facility.
- (9) Small generator facilities shall be capable of being isolated from the EDC. For 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 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 interconnection. 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.
- (10) An 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 EDC operating personnel on access to the isolation device. In the event the interconnection customer fails to comply with the terms of this paragraph 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.

- (11) Any metering necessitated by a small generator interconnection shall be installed, operated and maintained in accordance with applicable tariffs. Any such metering requirements must be clearly identified as part of the standard small generator interconnection agreement executed by the interconnection customer and the EDC.
- (12) EDC monitoring and control of small generator facilities shall be permitted only if the nameplate rating is greater than 2 MW. Any monitoring and control requirements shall be consistent with the EDC's written and published requirements and must be clearly identified as part of an interconnection agreement executed by the interconnection customer and the EDC.
- (13) The EDC shall have the option of performing a witness test after construction of the small generator facility is completed. The applicant shall provide the EDC at least 20 days notice of the planned commissioning test for the small generator facility. If the EDC elects to perform a witness test, it shall contact the applicant to schedule the witness test at a mutually agreeable time within 10 business days of the scheduled commissioning test. If the EDC does not perform the witness test within 10 business days of the commissioning test, the witness test is deemed waived unless the parties mutually agree to extend the date for scheduling the witness test. If the witness test is not acceptable to the EDC, the applicant shall be granted a period of 30 calendar days to address and resolve any deficiencies. The time period for addressing and resolving any deficiencies may be extended upon the mutual agreement of the EDC and the applicant. If the applicant fails to address and resolve the deficiencies to the satisfaction of the EDC, the interconnection request shall be deemed withdrawn. If a witness test is not performed by the EDC or an entity approved by the EDC, the applicant must still satisfy the interconnection test specifications and requirements set forth in IEEE Standard 1547 Section 5. The applicant shall, if requested by the EDC, provide a copy of all documentation in its possession regarding testing conducted pursuant to IEEE Standard 1547.1.

XI Level 1 expedited review

- (1) An EDC shall use the Level 1 interconnection review procedure for an interconnection request that meets the criteria in VII(1) (relating to review procedures). An EDC may not impose additional requirements for Level 1 reviews not specifically authorized under this section unless the EDC and the Applicant mutually agree to do so.
- (2) The EDC shall evaluate the potential for adverse system impacts using the following screens which must be satisfied:
 - (i) For interconnection of a proposed small generator facility to a radial distribution circuit, the aggregated generation on the circuit, including the proposed small generator facility, may not exceed 15% of the line section annual peak load as most recently measured at the sub station or calculated for the line section.
 - (ii) For interconnection of a proposed small generator facility to the load side of spot network protectors, the proposed small generator facility shall utilize an inverter-based equipment package. The customer interconnection equipment proposed for the small generator facility must be lab certified, and when aggregated with other generation, may not exceed 5% of the spot network's maximum load.
 - (iii) 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.
 - (iv) 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 20% of the nameplate rating of the service transformer.
 - (v) Construction of facilities by the EDC on its own system is not required to accommodate the small generator facility.
- (3) The Level 1 interconnection review must be conducted in accordance with the following procedures:
 - (i) An EDC shall, within 5 business days after receipt of the interconnection request, inform the applicant that the interconnection request is complete or incomplete and what materials are missing.
 - (ii) The EDC shall, within 15 business days after the end of the 5 business days noted in paragraph (i), verify that the small generator facility equipment can be interconnected safely and reliably using Level 1 screens.
 - (iii) Unless the EDC determines and demonstrates that a small generator facility cannot be interconnected safely or reliably to its system and provides a letter to the applicant 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; and
 - (b) A certificate of completion has been returned to the EDC. Completion of local inspections may be designated on inspection forms used by local inspecting authorities; and
 - (c) The witness test has been successfully completed or waived; and
 - (d) The applicant has signed a standard small generator interconnection agreement. When an applicant does not sign the agreement within 30 business days after receipt from the EDC, the interconnection request be deemed withdrawn unless the applicant requests to have the deadline extended. The request for extension shall not be unreasonably denied by the EDC.
- (iv) When a small generator facility is not approved under a Level 1 review, the applicant may submit a new interconnection request for consideration under Level 2, Level 3 or Level 4 procedures.

XII Level 2 expedited review.

- (1) An EDC shall use the Level 2 review procedure for an interconnection request that meets the criteria in VII (2) (relating to expedited review procedures). An EDC shall not impose additional requirements for Level 2 reviews not specifically authorized under this subchapter unless otherwise mutually agreed to.
- (2) The EDC shall evaluate the potential for adverse system impacts using the following screens which must be satisfied:
 - (i) For interconnection of a proposed small generator facility to a radial distribution circuit, the aggregated generation on the circuit, including the proposed small generator facility, may not exceed 15% of the line section annual peak load most recently measured at the sub-station or calculated for the line section.
 - (ii) For interconnection of a proposed small generator facility to the load side of spot network protectors, the proposed small generator facility shall utilize an inverter-based equipment package. The customer interconnection equipment proposed for the small generator facility must be lab certified or field approved and, when aggregated with other generation, may not exceed 5% of a spot network's maximum load.
 - (iii) The proposed small generator facility, in aggregation with other generation on the distribution circuit, may not contribute more than 10 % to the distribution circuit's maximum fault current at the point on the primary line nearest the point of interconnection.
 - (iv) 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 85% of the short circuit interrupting capability. The interconnection request may not request interconnection on a circuit that already exceeds 85% of the short circuit interrupting capability.
- (v) The proposed small generator facility's point of interconnection may not be on a transmission line.
 - (vi) When a customer-generator facility is to be connected to 3 phase, 3 wire primary EDC distribution lines, a 3 phase or single-phase generator shall be connected phase-to-phase.
 - (vii) When a customer-generator facility is to be connected to 3 phase, 4 wire primary EDC distribution lines, a 3 phase or single phase generator will be connected line-to-neutral and will be effectively grounded.
 - (viii) 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.
 - (ix) 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 20% of the nameplate rating of the service transformer.
 - (x) 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 (for example, three or four distribution busses from the point of interconnection).
 - (xi) Except as permitted by an additional review in VII (5), no construction of facilities by an EDC on its own system shall be required to accommodate the small generator facility.
- (3) The Level 2 interconnection review must be conducted in accordance with the following procedures:
- (i) An EDC shall, within 5 business days after receipt of the interconnection request, inform the interconnection that the interconnection request is complete or incomplete and what materials are missing.
 - (ii) When an interconnection request is complete, 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. The EDC shall notify the applicant about other higher-queued applicants on the same substation bus or spot network for which interconnection is sought.
 - (iii) When an EDC determines additional information is required to complete an evaluation, the EDC shall request the information. The time necessary to complete the evaluation may be extended, but only to the extent of the delay

- required for receipt of the additional information. The EDC may not revert to the start of the review process or alter the applicant's queue position.
- (iv) Within 20 business days after the EDC notifies the applicant it has received a completed interconnection request, the EDC shall:
 - (a) Evaluate the interconnection request using the Level 2 screening criteria.
 - (b) Review the applicant's analysis, if provided by applicant, using the same criteria.
 - (c) Provide the applicant with the EDC's evaluation, including a comparison of the results of its own analyses with those of applicant, if applicable. When an EDC does not have a record of receipt of the interconnection request and the applicant can demonstrate that the original interconnection request was delivered, the EDC shall expedite its review to complete the evaluation of the interconnection request within 20 business days of the applicant's resubmittal.
 - (d) However, the EDC shall not be obligated to meet the timeline for reviewing the interconnection request as provided for in this section (iv) until such time as the EDC has completed the review of all other interconnection requests that have a higher queue position.
 - (4) When an EDC determines that the interconnection request passes the Level 2 screening criteria, or fails one or more of the Level 2 screening criteria but determines that the small generator facility can be interconnected safely and reliably, it shall provide the applicant a standard small generator interconnection agreement within 5 business days after the determination.
 - (5) 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 applicant 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 applicant consents to pay for the review and modifications.
 - (6) An applicant shall have 30 business days or another mutually agreeable time after receipt of the standard small generator interconnection agreement to sign and return the agreement. When an applicant does not sign the agreement within 30 business days, the interconnection request shall be deemed withdrawn unless the applicant requests to have the deadline extended prior to the expiration of the 30 business day period. The request for extension may not be unreasonably denied by the EDC. When construction is required under the provisions of paragraph (5), the interconnection of the small generator facility shall proceed according to any milestones agreed to by the parties in the standard small generator interconnection agreement. The standard small generator interconnection agreement may not become final until:
 - (i) The milestones agreed to in the standard small generator interconnection agreement are satisfied; and
 - (ii) The small generator facility is approved by electric code officials with jurisdiction over the interconnection; and

(iii)The applicant provides a certificate of completion to the EDC. Completion of local inspections may be designated on inspection forms used by local inspecting authorities; and

(iv)There is a successful completion of the witness test, unless waived.

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

XIII Level 3 expedited review.

- (1) An EDC shall use the Level 3 expedited review procedure for an interconnection request that meets the criteria in VII (3) (relating to expedited review procedures). An EDC may not impose additional requirements for Level 3 reviews not specifically authorized under this section unless otherwise mutually agreed to.
- (2) 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 applicant will proceed under the timeframes of this section. The EDC shall notify the applicant about other higher-queued applicants on the same radial line or area network that the applicant is seeking to interconnect to.
- (3) Interconnection requests meeting the requirements set forth in VII (3)(i) for non-exporting small generator facilities interconnecting to an area network shall be presumed to be appropriate for interconnection. The EDC shall process the interconnection request to area networks using the following procedures:
 - (i) The EDC shall evaluate the interconnection request under Level 2 interconnection review procedures as set forth in XII (3) except that the EDC may have 25 business days to conduct an area network impact study to determine any potential adverse system impacts of interconnecting to the EDC's area network; however, the EDC shall not be obligated to meet the timeline for reviewing the interconnection request as provided for herein until such time as the EDC has completed the review of all other interconnection requests that have a higher queue position.
 - (ii) 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 applicant 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 will be retained provided the request is made within 15 business days of notification that the current application is denied.

- (iii)The EDC will conduct the area network impact study at its own expense
- (iv)In the event the EDC denies the interconnection request, the EDC shall provide the applicant with a copy of its area network impact study and written justification for denying the interconnection request.
- (4) For an interconnection request meeting the requirements of VII (3)(ii) for non-exporting small generator facilities interconnecting to a radial distribution circuit, the EDC shall evaluate the interconnection request under the Level 2 expedited review in XII. The EDC shall approve the interconnection request if all of the applicable screens in XII (2) are satisfied.
- (5) For a small generator facility that satisfies the criteria in paragraph (3) or paragraph (4), the EDC shall approve the interconnection request and provide a standard interconnection agreement for the applicant to sign.
- (6) The applicant shall have either 30 calendar days, or another mutually agreeable timeframe after receipt of the standard small generator interconnection agreement, to sign and return the standard small generator interconnection agreement. If the applicant does not sign the standard small generator interconnection agreement within 30 calendar days, the request shall be deemed withdrawn unless the parties mutually agree to extend the time period for executing the standard small generator interconnection agreement prior to the expiration of the 30 business day period. After the standard small generator interconnection agreement is signed by the parties, interconnection of the small generator facility shall proceed according to any milestones agreed to by the parties in the standard small generator interconnection agreement.
- (7) The interconnection agreement will not be final until:
 - (i) Any milestones agreed to in the standard small generator interconnection agreement are satisfied; and
 - (ii) The small generator facility is approved by electric code officials with jurisdiction over the interconnection; and
 - (iii)The applicant provides a certificate of completion to the EDC; and.
 - (iv)There is a successful completion of the witness test, if conducted by the EDC.
- (8) If the small generator facility is not approved under a Level 3 review, the applicant may submit a new interconnection request for consideration under the Level 4 procedures specified in XIV without sacrificing the original queue position provided the revised interconnection request is submitted within 15 business days of notice that the current request has not been approved.

XIV Level 4 study review.

- (1) An EDC shall use the Level 4 study review procedure for an interconnection request that meets the criteria in VIII (relating to study review procedures).
- (2) Within 5 business days from receipt of an interconnection request, the EDC shall notify the applicant whether the request is complete. When the interconnection request is not complete, the EDC shall provide the applicant a written list detailing information that shall be provided to complete the interconnection request. The applicant shall have 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 applicant, or the parties have agreed that the applicant may provide additional information at a later time.
- (3) 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 applicant about other higher-queued applicants. Any required interconnection studies shall not begin until the EDC has completed its review of all other interconnection requests that have a higher queue position.
- (4) The following procedures shall be followed in performing a Level 4 study review:
 - (i) By mutual agreement of the parties, the scoping meeting, interconnection feasibility study, interconnection impact study, or interconnection facilities studies provided for in a Level 4 review and discussed in this paragraph may be waived.
 - (ii) If agreed to by the parties, a scoping meeting will be held within 10 business days, or other mutually agreed to time, after the EDC has notified the applicant that the interconnection request is deemed complete, or the applicant 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 must 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.
 - (iii) When the parties agree at a scoping meeting that an interconnection feasibility study shall be performed, the EDC shall provide to the applicant, no later than 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.
 - (iv) When the parties agree at a scoping meeting that an interconnection feasibility study is not required, the EDC shall provide to the applicant, no later than 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.
 - (v) 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 applicant, no later than 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.

- (5) The following guidelines shall be followed in conducting all required interconnection studies:
- (i) An interconnection feasibility study shall include any necessary analyses for the purpose of identifying a potential adverse system impact to the EDC's electric distribution system that would result from the interconnection from among the following:
 - (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.
 - (e) When an applicant requests that the interconnection feasibility study evaluate multiple potential points of interconnection, additional evaluations may be required. Additional evaluations shall be paid by the applicant.
 - (f) 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.
 - (g) The parties shall use a form of interconnection feasibility study agreement approved by the Commission.
 - (ii) 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 standard small generator interconnection agreement. As part of its impact study, the EDC shall agree to evaluate and consider any separate studies prepared by the applicant that evaluate alternatives for interconnecting the small generator facility including the applicant's assessment of potential impacts of the small generator facility on the electric distribution system. The EDC shall provide the applicant with the EDC's final impact study evaluation including a comparison of the results of its own analyses with those provided by the applicant.
 - (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 applicant an interconnection system impact study agreement within 5 business days of transmittal of the interconnection feasibility study report. The agreement will

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 any necessary elements from among the following:

1. A load flow study.
2. Identification of affected systems.
3. An analysis of equipment interrupting ratings.
4. A protection coordination study.
5. Voltage drop and flicker studies.
6. Protection and set point coordination studies.
7. Grounding reviews.
8. Impact on system operation.

(b) An interconnection system impact study must consider any necessary criteria from among the following:

1. A short circuit analysis.
2. A stability analysis.
3. Alternatives for mitigating adverse system impacts on affected systems.
4. Voltage drop and flicker studies.
5. Protection and set point coordination studies.
6. Grounding reviews.

(c) The final interconnection system impact study must provide the following:

1. The underlying assumptions of the study.
2. The results of the analyses.
3. A list of any potential impediments to providing the requested interconnection service.
4. Required distribution upgrades.
5. 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 as approved by the Commission.

(iii) The interconnection facilities study shall be conducted as follows:

- (a) Within 5 business days of completion of the interconnection system impact study, a report shall be transmitted to the applicant 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:
 1. The electrical switching configuration of the equipment, including transformer, switchgear, meters and other station equipment.
 2. The nature and estimated cost of the EDC's interconnection facilities and distribution upgrades necessary to accomplish the interconnection.
 3. An estimate of the time required to complete the construction and installation of the facilities.

- (c) The parties may agree to permit an applicant 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 applicant to permit the applicant to obtain an independent design and cost estimate for the facilities, which must be built in accordance with the specifications.
 - (d) Upon completion of the interconnection facilities study, and with the agreement of the applicant to pay for the interconnection facilities and distribution upgrades identified in the interconnection facilities study, the EDC shall provide the applicant with a standard small generator interconnection agreement within 5 business days.
 - (e) In the event that distribution upgrades are identified in the impact study that must be added only in the event that higher-queued customers not yet interconnected eventually complete and interconnect their generation facilities, an applicant may elect to interconnect without paying for such upgrades at the time of the interconnection under the condition that the customer shall pay for such upgrades at the time the higher-queued customer is ready to interconnect. If the customer does not pay for such upgrades at that time, the EDC will require the customer to immediately disconnect its generating facility so that the higher-queued customer can be accommodated.
 - (f) The parties shall use an interconnection facility study agreement approved by the Commission.
- (6) 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 applicant with a standard small generator interconnection agreement. If the interconnection request is denied, the EDC shall provide the applicant a written explanation.
- (7) An applicant shall have 30 business days, or another mutually agreeable time frame after receipt of the standard small generator interconnection agreement to sign and return the agreement. When an applicant does not sign the agreement within 30 business days, the interconnection request shall be deemed withdrawn unless the applicant requests to have the deadline extended. 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 standard small generator interconnection agreement. The standard small generator interconnection agreement may not be final until:
- (i) The milestones agreed to in the standard small generator interconnection agreement are satisfied.
 - (ii) The small generator facility is approved by electric code officials with jurisdiction over the interconnection.
 - (iii) The applicant provides a certificate of completion to the EDC. Completion of local inspections may be designated on inspection forms used by local inspecting authorities.

(iv) There is a successful completion of the witness test, unless waived.

DISPUTE RESOLUTION

XV Disputes.

- (1) A party shall attempt to resolve all disputes regarding interconnection as provided in this section promptly, equitably, and in a good faith manner.
- (2) When a dispute arises, a party may seek immediate resolution through complaint procedures available through the Commission, or an alternative dispute resolution process approved by the Commission, by providing written notice to the Commission and the other party stating the issues in dispute. Dispute resolution shall be conducted in an informal, expeditious manner to reach resolution with minimal costs and delay. When available, dispute resolution may be conducted by phone.
- (3) When disputes relate to the technical application of this section, the Commission may designate a technical master to resolve the dispute. The Commission may designate a Department of Energy National Laboratory, PJM Interconnection L.L.C., or a college or university with distribution system engineering expertise as the technical master. When the Federal Energy Regulatory Commission identifies a National technical dispute resolution team, the Commission may designate the team as its technical master. Upon Commission designation, the parties shall use the technical master to resolve disputes related to interconnection. Costs for a dispute resolution conducted by the technical master shall be established by the technical master, subject to review by the Commission.
- (4) Pursuit of dispute resolution may not affect an applicant with regard to consideration of an interconnection request or an applicant's queue position.